NOTICE OF A REGULAR
CITY COUNCIL MEETING
December 10, 2025, at 5:00 PM

PUBLIC NOTICE is hereby given that the Vineyard City Council will hold a regularly scheduled meeting on Wednesday, December 10, 2025, at 5:00 PM, in the City Council Chambers at City Hall, 125 South Main Street, Vineyard, UT. This meeting can also be viewed on our live stream page.

AGENDA

Presiding Mayor Julie Fullmer

1. **CALL TO ORDER/INVOCATION/INSPIRATIONAL THOUGHT/PLEDGE OF ALLEGIANCE**

2. **VINEYARD CITY COUNCIL VACANCY**

   2.1. Vineyard City Council Vacancy
   The mayor and City Council will interview all qualified applicants and vote to appoint a new city council member.

3. **RECESS FOR REDEVELOPMENT AGENCY BOARD MEETING**

   3.1. The Council will hold a brief recess to allow for a meeting of the Vineyard Redevelopment Agency

4. **PRESENTATIONS/RECOGNITIONS/AWARDS/PROCLAMATIONS**

   4.1. The Ruth Presentation
   Kelly Smarthwaite with The Ruth and Nathan Hale Theater (The Ruth) will present an upcoming promotion for Vineyard

   4.2. Water and Sewer Rate Study Presentation by Zions Bank
   Presentation by Susie Becker, Vice President of Zions Bank, on the 2025 study to review the current water and sewer rate fee schedule and provide a rate update based on current and future costs.

   4.3. Fiscal Year 2024-2025 Audit Report
   Spencer Hintze - CPA - Gilbert and Stewart CPAs will present the FY25 Audited Financial Statements.
   The mayor and City Council will move to accept the audit report.

   4.4. Independant Third Party Audit Presentation
   Chris Harding with CPA Insight Solutions will present the results of their Independent Audit.

5. WORK SESSION

5.1. DISCUSSION AND ACTION — 400 South Road Improvements

6. PUBLIC COMMENTS

"Public Comments" is defined as time set aside for citizens to express their views for items not on the agenda. During a period designated for public comment, the mayor or chair may allot each speaker a maximum amount of time to present their comments, subject to extension by the mayor or by a majority vote of the council. Speakers offering duplicate comments may be limited. Because of the need for proper public notice, immediate action cannot be taken in the Council Meeting. The Chair of the meeting reserves the right to organize public comments by topic and may group speakers accordingly. If action is necessary, the item will be listed on a future agenda; however, the Council may elect to discuss the item if it is an immediate matter of concern. *Public comments can be submitted ahead of time to pams@vineyardutah.org.*

7. MAYOR AND COUNCILMEMBERS' REPORTS/DISCLOSURES/RECUSALS

8. STAFF, COMMISSION, AND COMMITTEE REPORTS

City Manager Report

9. CONSENT ITEMS

9.1. Approval of the November 12, 2025, City Council Meeting Minutes

9.2. Approval of the November 18, 2025, City Council Special Session Meeting Minutes

9.3. Fuel Card Policy and Agreement (Resolution 2025-62)

9.4. Interlocal Agreement with UDOT for the FrontRunner 2X Project (Resolution 2025-27)

9.5. Vineyard Municipal Code Amendment — Title 2 Administration (Ordinance 2025-21)

City Attorney Jayme Blakesley presented the recommended amendments to the Municipal Code Titles 2 Administration during the November 12, 2025 City Council meeting. The mayor and City Council will act to adopt (or deny) these changes by Ordinance.

9.6. Property Privacy and Data Policy (Resolution 2025-68)

9.7. Contract Award for Construct Traffic Signals at Vineyard Loop Rd (600 North)/Main Street ($173,000) and 400 North/Mill Road ($248,000) projects using State Contract (Resolution 2025-65)

9.8. Bid Award Lift Station 2 Upgrade project to Corrio Construction ($610,078) (Resolution 2025-66)

9.9. Update to Vineyard City Development Standards and Design Specifications

(Ordinance 2025-15)

Vineyard City updated its Development Standards and Design Specifications, last revised in 2017, to align with new Utah APWA standards and address City-specific infrastructure needs.

9.10. Amendment to Governing Documents for Utah City West PID Nos. 1-5 (Resolution 2025-70)

9.11. Vac Truck Purchase ($492,500.41) (Resolution 2025-58)

9.12. AI Governance (Resolution 2025-69)

10. APPOINTMENTS/REMOVALS

10.1. The mayor, with the advice and consent of the council, will appoint members to various boards and commissions.

11. BUSINESS ITEMS

11.1. PUBLIC HEARING - Transportation Master Plan (Ordinance 2025-24)

Josh Gibbons, Hales Engineering, will present on the Vineyard Transportation Master Plan, the Transportation Impact Fee Facilities Plan (IFFP), and the supporting documents.

11.2. PUBLIC HEARING - Consolidated Fee Schedule Amendment (Resolution 2025-61)

Treasurer Zack Adams will present amendments to the Consolidated Fee Schedule. The mayor and City Council will act to adopt (or deny) this request by resolution.

11.3. Vineyard Station Area Plan (Resolution 2025 - 67)

Adoption of Certified Station Area Plan — Planner Anthony Fletcher will present the Certified Vineyard Station Area Plan to the City Council.

11.4. DISCUSSION AND ACTION — Government Records Requests and Vineyard Municipal Code Title 3 Municipal Procedures

The mayor and city council will discuss Government Records Requests and Vineyard Municipal Code Title 3 Municipal Procedures and take appropriate action.

12. CLOSED SESSION

The Mayor and City Council pursuant to Utah Code 52-4-205 may vote to go into a closed session for the purpose of (these are just a few of the items listed, see Utah Code 52-4-205 for the entire list):

a discussion of the character, professional competence, or physical or mental health of an individual

b strategy sessions to discuss collective bargaining

c strategy sessions to discuss pending or reasonably imminent litigation

d strategy sessions to discuss the purchase, exchange, or lease of real property, including any form of a water right or water shares

e strategy sessions to discuss the sale of real property, including any form of a water right or water shares

f discussion regarding deployment of security personnel, devices, or systems

g the purpose of considering information that is designated as a trade secret, as defined in Section 13-24-2, if the public body's consideration of the information is necessary in order to properly conduct a procurement under Title 63G, Chapter 6a, Utah Procurement Code

13. ADJOURNMENT

The next regularly scheduled meeting is on January 14, 2026.

This meeting may be held in a way that will allow a councilmember to participate electronically.

The public is invited to participate in all City Council meetings. In compliance with the Americans with Disabilities Act, individuals needing special accommodations during this meeting should notify the City Recorder at least 24 hours prior to the meeting by calling (385) 338-5183.

I, the undersigned duly appointed City Recorder for Vineyard, Utah, hereby certify that the foregoing notice and agenda was posted at Vineyard City Hall, on the Vineyard City and Utah Public Notice websites, and delivered electronically to staff and to each member of the Governing Body.

AGENDA NOTICING COMPLETED ON: December 9, 2025

CERTIFIED (NOTICED) BY: /s/Tony Lara
TONY LARA, CITY RECORDER

VINEYARD CITY COUNCIL STAFF REPORT

Meeting Date: December 10, 2025
Agenda Item: Vineyard City Council Vacancy
Department: Recorder's Office
Presenter:

Background/Discussion:
Due to the resignation of Sara Cameron, there is a vacancy on the Vineyard City Council. The public was notified on November 20, 2025, of the vacancy and the process by which the City Council would receive applications and act to appoint a registered voter to fill the unexpired term of the vacated office.

The City Recorder's Office accepted applications until noon on Monday, December 1, 2025. Applicants were deemed eligible in accordance with UCA § 20A-1-510.

In an open meeting, the City Council will interview each applicant regarding their qualifications and fitness for office. In accordance with the procedures of UCA § 20A-1-510, the Council will then make the appointment to the vacated office.

The individual appointed by the City Council shall be sworn in on the date appointed and shall serve as a member of the Vineyard City Council for the remainder of the vacated term – until December 31, 2027.

Applicants will be interviewed in the following order (Master Ballot order from the State Election Office):

Fiscal Impact:
N/A

Recommendation:
N/A

Sample Motion:
N/A

Attachments:
None

Report of Independent Certified Public Accountant on Applying Agreed-Upon Procedures for Vineyard City

Fiscal Years 2023 and 2024

Prepared by
CPA Insight Solutions – Consulting for Public Accountability
Chris W. Harding, CPA, CFE, CIA
December 10, 2025

Table of Contents

Executive Summary *3*

Independent Accountant's Report on Applying Agreed-Upon Procedures *4*

Procedures Performed and Factual Findings *6*

1. **PURCHASING CARDS** **6**
2. **EMPLOYEE TRAVEL** **7**
3. **CASH HANDLING** **9**
4. **UTILITY BILLING AND METER VERIFICATION** **10**
5. **REDEVELOPMENT AGENCY PAYMENTS** **13**
6. **FOOD EXPENSES** **16**
7. **VEHICLE ASSIGNMENT AND FUEL USAGE** **17**

Exceptions and Reporting Thresholds *20*

Statement Regarding Findings *20*

Restriction on Use *20*

Executive Summary

This summary is provided for convenience and does not form part of the agreed-upon procedures report; it should not be interpreted as an opinion or conclusion.

The following summary presents factual results from the Agreed-Upon Procedures (AUP) engagement performed for Vineyard City's Purchasing Card, Travel, Cash, Utility, Food, RDA, and Vehicle areas for fiscal years 2023 and 2024. The engagement was conducted in accordance with the American Institute of Certified Public Accountants (AICPA) SSAE No. 19 and the U.S. Government Accountability Office's Government Auditing Standards (2024 Revision).

Purpose: To assist the Vineyard City Council in evaluating internal controls, documentation, and oversight related to financial and operational areas identified in RFP 2025-61-101. Vineyard City management and Council are responsible for determining the sufficiency of the procedures performed.

Scope: The AUP covered the following seven areas:

1. Purchase Card Transactions
2. Employee Travel and Reimbursements
3. Cash Handling
4. Utility Billing and Meter Verification
5. RDA Payments and Transfer Station Controls
6. Food Procurement
7. Vehicle Assignment and Usage

Results are presented factually in this report without interpretation or conclusion.

Independent Accountant's Report on Applying Agreed-Upon Procedures

To the Honorable Mayor, City Council, and Management of Vineyard City
Vineyard City, Utah

We have performed the procedures enumerated in this report, which were agreed to by the Vineyard City Council (the engaging party) and Vineyard City management (the responsible party), solely to assist the Council in evaluating internal controls, documentation, and oversight of selected operational and financial processes for the fiscal years ended June 30, 2023, and June 30, 2024. These procedures were performed in accordance with the scope of work outlined in Vineyard City's *Request for Proposals No. 2025-61-101 for Internal Audit Services* and were limited to the following areas: Purchase Card, Employee Travel and Reimbursements, Cash Handling and Deposits, Utility Billing and Meter Verification, Redevelopment Agency (RDA) Payments and Transfer Station Controls, Food Expenses and Employee Recognition, and Vehicle Assignment and Fuel Usage.

This engagement was conducted in accordance with the attestation standards established by the American Institute of Certified Public Accountants (AICPA) in *Statement on Standards for Attestation Engagements (SSAE) No. 19* and the *U.S. Government Accountability Office's Government Auditing Standards (2024 Revision)*. Those standards require that we plan and perform the procedures to obtain sufficient, appropriate evidence to meet the objectives of the engagement and to ensure that the work performed is limited to the procedures specifically agreed upon.

The sufficiency of these procedures is solely the responsibility of the Vineyard City Council and management. Consequently, we make no representation regarding the sufficiency of the procedures for the purpose for which this report has been requested or for any other purpose.

We were not engaged to and did not conduct an examination or a review in accordance with AICPA attestation standards. Accordingly, we do not express an

opinion or a conclusion, nor provide any assurance on the subject matter. Had we performed additional procedures, other matters might have come to our attention that would have been reported.

This engagement was not designed to detect fraud, waste, abuse, or noncompliance with laws or regulations, and it should not be relied upon to disclose such matters.

This report is intended solely for the information and use of the Vineyard City Council, Vineyard City management, and the Utah Office of the State Auditor and is not intended to be and should not be used by anyone other than these specified parties.

Procedures Performed and Factual Findings

1. PURCHASING CARDS

PURPOSE:
The purpose of this test was to satisfy the agreed-upon procedures engagement between the practitioner and Vineyard City. Specifically, the purpose was to perform the procedures described below to determine compliance with Vineyard City's Purchase Card Policy.

PROCEDURES PERFORMED:
We reviewed the City's P-Card Policy (as of September 2025) and performed testing on a sample of 100 transactions selected from a population of 4,157 transactions covering fiscal years 2023 and 2024. For each transaction, we:

- Verified that a supporting receipt was included.
- Determined whether the supporting documentation was uploaded to the City's P-Card software system (*Spend Clarity*) within the two-week timeframe required by policy.
- Reviewed *Spend Clarity* records to verify the presence of supervisory approval.
- Examined transactions for purchases prohibited by the City's P-Card Policy, including:
    - Personal or non-work-related expenses
    - Cash advances
    - Lending a City P-Card to another individual
    - Unauthorized purchases
    - Split purchases to circumvent single-transaction limits
    - Payment of sales tax
- Verified whether each cardholder had a signed P-Card agreement on file.
- Confirmed that P-Cards for separated employees were deactivated upon separation.
- Reviewed monthly spending limits for each cardholder.

FINDINGS:

TEST	YES	NO	N/A	TOTAL
RECEIPT PRESENT	88	12	–	100
UPLOADED WITHIN 2 WEEKS	–	–	100	100
SUPERVISOR APPROVAL	86	14	–	100
PROHIBITED USE	8	89	3	100
SALES TAX WAIVED	87	7	6	100
SIGNED P-CARD AGREEMENT	16	8	–	24
CANCELED UPON SEPARATION	24	–	–	24
MONTHLY SPEND LIMIT IN PLACE	24	–	–	24

Additional observations:

- None of the 100 transactions included evidence of pre-transaction authorization.
- All separated employees reviewed had their P-Cards canceled appropriately.
- All 24 cardholders tested had monthly spending limits established as required by policy.
- Instances were noted where cardholders exceeded their established monthly spending limits. The City provided email documentation supporting authorized temporary limit increases; however, for several transactions in early FY2023, no documentation or authorization for exceeding the monthly limits was available.
- Eight cardholders in our sample did not have signed P-Card agreements on file because their employment ended before Vineyard City adopted the revised Purchase Card Policy in September 2024 and before the city-wide training occurred in October 2024. Management explained that cardholders who separated before these updates were not required to complete the new agreement.

The criteria used for this testing were the provisions of Vineyard City's Purchase Card Policy, in effect as of September 2025.

2. EMPLOYEE TRAVEL

PURPOSE:
The purpose of this test was to satisfy the agreed-upon procedures engagement between the practitioner and Vineyard City. Specifically, the purpose was to

perform the procedures described below to determine compliance with Vineyard City's Travel Policy. This testing included both travel costs charged on City purchase cards and those incurred by employees and reimbursed by the City.

PROCEDURES PERFORMED:
We reviewed Vineyard City's Travel Policy (as of September 2025) and tested 35 travel transactions selected from a population of 437 travel transactions recorded in the FY 2023 and FY 2024 general ledgers provided by the City Treasurer, Zack Adams. For each transaction, we:

- Determined whether a travel reimbursement form had been completed.
- Verified that supervisory approval was present on the travel reimbursement form, where applicable.
- Determined whether the travel form had been submitted at least two weeks prior to the date of travel, as required by City policy.
- Verified that the expenditure had received appropriate approval in *Spend Clarity*.
- Tested the accuracy of per diem calculations, where applicable.
- Verified the presence of supporting documentation, such as receipts, invoices, or per diem calculations.
- Determined whether sales tax had been charged on the transaction.

FINDING:

TEST	YES	NO	N/A	TOTAL
TRAVEL REIMBURSEMENT FORM COMPLETED	9	26	–	35
SUPERVISOR APPROVAL ON TRAVEL FORM	7	2	26	35
TRAVEL FORM SUBMITTED TWO WEEKS PRIOR	3	6	26	35
EXPENDITURE APPROVED IN *SPEND CLARITY*	27	8	–	35
PER DIEM CALCULATED CORRECTLY	8	1	26	35
RECEIPT OR INVOICE PRESENT	30	5	–	35
SALES TAX CHARGED	5	30	–	35

Additional observations:

- Of the 35 travel transactions we reviewed, nine had the travel reimbursement form submitted, of the nine travel forms reviewed, six were submitted either within two weeks of travel or after travel occurred.
- One per diem calculation was found to be in error.
- Most travel reimbursements (26 of 35) were processed without a completed travel reimbursement form on file.

The criteria used for this testing were the provisions of Vineyard City's Travel Policy, effective September 2025.

3. CASH HANDLING

PURPOSE:
The purpose of this test was to satisfy the agreed-upon procedures engagement between the practitioner and Vineyard City. Specifically, the purpose was to perform the procedures described below to determine compliance with best practices for cash handling and depositing funds. Vineyard City does not currently have a formal cash-handling policy; therefore, the criteria used for this testing were based on industry best practices such as the Government Finance Officers Association's Revenue Control Policy (2018) and the Institute of Internal Auditors' recommended guidance on safeguarding cash assets.

PROCEDURES PERFORMED:
We tested 30 cash transactions selected from a population of 85 cash transactions occurring during fiscal years 2023 and 2024. The transactions were provided by the City Treasurer, Zack Adams, and were verified against the City's general ledgers. For each transaction, we:

- Determined whether the deposit was made timely (within 3 business days).
- Verified whether there was a log showing who made the deposit.
- Verified that a physical or electronic deposit slip existed.
- Determined whether a deposit summary or deposit report showing the breakdown of cash amounts received was available.
- Determined whether a cash receipt was issued for each payment received.
- Traced the deposit amount to a bank statement to confirm reconciliation.
- Verified whether a daily cash report or reconciliation sheet existed.

FINDINGS:

TEST	YES	NO	N/A	TOTAL
DEPOSIT MADE WITHIN 3 DAYS	29	1	–	30
LOG OF WHO MADE DEPOSIT	–	30	–	30
DEPOSIT SLIP PRESENT	30	–	–	30
DEPOSIT SUMMARY/BREAKDOWN REPORT	18	12	–	30
CASH RECEIPT ISSUED	–	30	–	30
AMOUNT TRACED TO BANK STATEMENT	30	–	–	30
DAILY CASH RECONCILIATION SHEET FILLED OUT	–	30	–	30

Additional Observations:

- One deposit was made 11 days after cash was receipted, exceeding the three-day deposit guideline. Management explained that the delay occurred because the previous Finance Director receipted the funds while the responsible employee was on leave and instructed that employee to deposit the cash upon returning to work.
- Vineyard City does not have a formal cash-handling policy.
- A check for more than $25,000 was noted that did not contain two authorized signatures, as required by county policy.
- The City maintains two small petty-cash funds—one for $100 and another consisting of gold $1 coins used as prizes for children participating in community races.

The criteria used for this testing were based on recognized best practices for cash receipting and deposit controls, including the Government Finance Officers Association's *Revenue Control Policy (2018)* and the Institute of Internal Auditors' cash-handling guidance.

4. UTILITY BILLING AND METER VERIFICATION

PURPOSE:
The purpose of this test was to satisfy the agreed-upon procedures engagement between the practitioner and Vineyard City. Specifically, the purpose was to perform the procedures described below to determine compliance with Vineyard City's utility billing practices and to verify the accuracy, completeness, and ownership of accounts billed to the City for water, sewer, and storm-drain services.

PROCEDURES PERFORMED:
We reviewed 41 utility billing accounts included in the detailed billing records provided by Vineyard City. Of these, 39 accounts contained activity during fiscal years 2023 and 2024 and were included in our detailed testing. The procedures performed included:

• Verified the physical address associated with each account, where applicable, using Google Maps.
• Compared meter locations to known City-owned assets such as parks, ponds, irrigation stations, pump stations, and municipal buildings.
• Verified property ownership using Utah County property records to determine

whether billed accounts corresponded to parcels owned by Vineyard City.
• Reviewed detailed utility billing histories for 39 accounts to confirm billing accuracy, including base charges, usage charges, rate changes, and adjustments.
• Inquired with City staff regarding late-fee assessments and subsequent adjustments and determined these were corrected within the billing cycle.
• Determined whether any accounts were inactive or appeared to have been billed in error; none were noted.
• Verified whether the amounts charged in the detailed billing reports reconciled to the general ledger; no exceptions were noted.
• Assessed whether billed accounts corresponded to physical assets or identifiable purposes, such as irrigation, public parks, pump stations, and other City facilities.
• Reviewed account descriptions to identify unusual billing patterns or anomalies; none were noted.
• Contacted City staff, requested missing information where needed, and made inquiries regarding accounts without addresses or with unclear location descriptions.
• Verified, where applicable, whether accounts corresponded to multiple utility services (water, sewer, and storm drain); most accounts contained only water charges, with sewer and storm-drain charges present on a limited number of accounts.

FINDINGS:

Summary of Testing Results for 41 Utility Billing Accounts

TEST PERFORMED	YES	NO	N/A	TOTAL
ADDRESS VERIFIED USING GOOGLE MAPS	29	10	2	41
OWNERSHIP VERIFIED THROUGH UTAH COUNTY RECORDS	4	37	–	41
BILLING ACCURACY VERIFIED (BASE + USAGE + RATE CHANGES + ADJUSTMENTS)	39	0	2*	41
LOCATION MATCHED TO CITY ASSET (PARK, POND, IRRIGATION, LIFT STATION, BUILDING)	31	8	2	41
UNUSUAL BILLING PATTERNS IDENTIFIED	0	39	2	41
RECONCILED TO GENERAL LEDGER	39	0	2	41
INACTIVE OR INCORRECTLY BILLED ACCOUNTS IDENTIFIED	0	39	2	41

*Two accounts did not have activity during the period tested and were excluded from billing-accuracy testing.

The criteria used for this testing were based on account records provided by Vineyard City, parcel ownership information available through Utah County property records, and the agreed-upon procedures established for this engagement.

Additional Observations:

• Although Vineyard City does not maintain a consolidated written utility billing "policy," all billing practices follow the Consolidated Fee Schedule approved by the City Council. Rates and fees are documented publicly and updated through the annual fee-schedule process.

• The City provided clarification that all billing rates are formally approved by the City Council through the Consolidated Fee Schedule, which is publicly posted on the Vineyard City website. Current and historical fee schedules are maintained and available in the Finance section of the site. All water, sewer, and storm-drain base rates and usage rates applied in the billing histories are established through this approved schedule.

• City staff clarified that all set water meters are entered into the Pelorus utility billing system and uploaded into BEACON, the cloud-based meter-management platform operated in conjunction with Badger Meter. BEACON integrates directly with Vineyard's billing system (Pelorus DGS), providing meter readings, asset management, mapping through Google Maps, data analytics, and consumer access via EyeOnWater. All physical water meters—including coordinates, endpoints, registers, and addresses—are documented in BEACON, and all Environmental Utilities employees use BEACON in routine monitoring.

• Most City-owned utility meters do not correspond to platted parcels (e.g., irrigation stations, lift stations, pump stations, parks infrastructure), so parcel search methods cannot be used to verify ownership. Instead, ownership of these accounts was confirmed through location mapping, BEACON documentation, staff explanation, and reconciliation to municipal assets..

• The Finance Department generates a monthly report of meters showing zero usage. The Environmental Utilities team then audits these meters, performs field inspections, and submits any meter repairs or replacements to Finance for updates in both Pelorus and BEACON.

• Rate adjustments and late-fee reversals were noted in some billing histories. Staff stated these were manually corrected when discovered. No supporting written

procedures were provided to describe how such corrections are reviewed or approved.

• No unusual billing activity, unexplained usage patterns, or other anomalies were identified during the procedures performed.

5. REDEVELOPMENT AGENCY PAYMENTS

PURPOSE:
The purpose of this test was to satisfy the agreed-upon procedures engagement between the practitioner and Vineyard City. Specifically, the purpose was to perform the procedures described below to determine compliance with Vineyard City's Redevelopment Agency (RDA) developer payment processes, including the documentation and oversight of reimbursement requests submitted by the project manager and subcontractors.

PROCEDURES PERFORMED:
We reviewed the Redevelopment Agency (RDA) reimbursement payments issued during the period and selected a judgmental sample of check packets for detailed examination. The sample focused on higher-dollar payments and those containing a larger number of underlying invoices to ensure coverage of significant and complex transactions. For each sampled item, we:

• Reviewed detailed billings submitted by Anderson Geneva, the RDA project manager, and their subcontractors.
• Tested the arithmetic accuracy of each check packet, including verification that invoice totals, summaries, and payment amounts were correctly calculated.
• Reconciled the sampled payments to the general ledger and verified no discrepancies.
• Determined whether supporting invoices or documentation existed for each billed amount. Of the 66 detailed invoices included in the sample, 47 had supporting documentation and 19 did not.
• Confirmed that each check tested contained the required two authorized signatures. All 7 checks had two signatures.
• Verified that each detailed billing packet was signed by both the RDA Director and the Finance Director, as required by Vineyard City practice. All 7 sampled packets contained both signatures.
• Obtained and reviewed the governing RDA contracts, including provisions relating to eligible costs, reimbursement mechanisms, documentation requirements, and approval processes.
• Reviewed Utah Code Title 17C pertaining to redevelopment agencies to

understand statutory requirements applicable to the RDA's reimbursement structure.
• Conducted interviews with City staff and representatives of Anderson Geneva to gain an understanding of the workflow, supporting documentation practices, and internal controls governing RDA reimbursements.
• Conducted a site visit of active remediation areas and previously developed parcels to gain context regarding billed work and project progression.

The criteria used for this testing were based on the RDA contracts, applicable portions of Utah Code Title 17C, reimbursement documentation provided by Anderson Geneva and City staff, and the agreed-upon procedures established for this engagement.

FINDINGS:

We reviewed 7 checks (representing 66 invoices) from a population of 32 checks (representing 149 invoices), totaling $2,892,595.06 of the $6,459,389.41 issued during FY 2023 and FY 2024. The results of the procedures performed are summarized below:

TEST PERFORMED	YES	NO	N/A	TOTAL
ARITHMETIC ACCURACY VERIFIED	7	0	–	7
RECONCILED TO GENERAL LEDGER	7	0	–	7
SUPPORTING INVOICES PRESENT	47	19	–	66
TWO AUTHORIZED CHECK SIGNATURES PRESENT	7	0	–	7
RDA DIRECTOR APPROVAL INCLUDED	7	0	–	7
FINANCE DIRECTOR APPROVAL INCLUDED	7	0	–	7
INVOICE ELIGIBILITY VERIFIED AGAINST RDA CONTRACT	7	0	–	7

Notes:
• The "Supporting Invoices Present" line reflects the total invoices contained in the 7 check packets reviewed (66 total invoices).
• The other tests are at the **check packet** level (7 total check payments reviewed).

ADDITIONAL OBSERVATIONS:

• Vineyard City does not have written policies or procedures outlining the steps to be performed before approving RDA reimbursement requests. As a result, there is no documented process describing how billed work should be verified, how

supporting documentation should be evaluated, or what criteria should be applied when reviewing invoices submitted by the project manager or subcontractors.

• During the review of detailed billings, several sampled invoice packets did not include the subcontractor invoices or supporting documentation referenced in the summary billing sheets. In those instances, payments were approved based on summary-level information or email communications without the underlying invoices, manifests, or detailed substantiation.

• The practitioner noted that subcontractor billing sometimes included hourly labor charges, equipment charges, or materials charges without supporting agreements, rate schedules, or statements of work. In particular, certain subcontractor billings applied a multiplier of approximately 270% to labor charges, and no documentation was provided to explain the basis for this multiplier or where it was authorized in contract terms.

• Several subcontractor invoices included general descriptions of work (e.g., “USS Geneva RCRA,” “Biosparge Design,” or “Coke Plant Screening – CAMU Area”) without accompanying detail explaining the scope of work performed, the quantities involved, or the basis of measurement. In other cases, charges for items such as tonnage disposal or material transport did not include scale tickets, weigh slips, or other documentation validating quantities billed.

• In several invoice packets, email messages were included as the primary supporting documentation for billed amounts, in place of formal invoices, manifests, or third-party documentation.

• The practitioner observed that certain change-order–related work or cost increases had limited supporting documentation in the files reviewed. While project summaries indicated that costs exceeded original projected amounts, no documentation was provided to show analyses, reconciliations, or review procedures performed by the project manager or the City to understand the causes of increased costs or to assess the reasonableness of the amounts billed.

• No documentation was provided to indicate whether Vineyard City or its project manager performed independent verification of billed quantities, field inspections tied to specific reimbursement requests, or third-party engineering review of billed work. The practitioner was not provided with documentation showing how the City verifies that work invoiced has been completed or that billed quantities and rates align with contract terms.

• The practitioner submitted written inquiries to the RDA Director regarding both general billing practices and invoice-specific questions related to quantities, rates, multipliers, supporting documentation, and the verification of subcontractor work. Management provided written responses describing the City's overall reimbursement process, noting that Vineyard is not a party to Anderson Geneva's contracts with its subcontractors and therefore relies on AG's internal oversight, engineering staff, and documentation when reimbursing actual remediation costs.

Management also stated that AG maintains long-standing contracts with its subcontractors, manages day-to-day supervision of the remediation work, and submits backup documentation to support costs paid prior to reimbursement. As of the date of this report, responses to several invoice-specific questions and certain supporting documents remain pending, and therefore the practitioner could not independently verify some aspects of the underlying contract terms, rate structures, or field-level verification procedures.

• Review of RDA Board meeting minutes and recordings for FY 2023 and FY 2024 showed that the Board receives periodic updates on overall RDA activities; however, the minutes did not reflect detailed review or discussion of individual reimbursement requests or the supporting documentation provided by the project manager.

6. FOOD EXPENSES

PURPOSE:
The purpose of this test was to satisfy the agreed-upon procedures engagement between the practitioner and Vineyard City. Specifically, the purpose was to perform the procedures described below to determine compliance with Vineyard City's practices for food-related expenditures and employee recognition purchases.

PROCEDURES PERFORMED:
We tested 40 food-related transactions selected from a population of 173 transactions occurring during fiscal years 2023 and 2024. The transactions were provided by the City Treasurer, Zack Adams. For each transaction, we:
• Determined whether a receipt or invoice was present.
• Verified whether the business purpose or event was documented.
• Determined whether the purchase was pre-approved or properly authorized.
• Verified whether sales tax was properly exempted.

FINDINGS:

TEST	YES	NO	N/A	TOTAL
RECEIPT OR INVOICE PRESENT	37	3	–	40
BUSINESS PURPOSE OR EVENT DOCUMENTED	33	7	–	40
PRE-APPROVED OR PROPERLY AUTHORIZED	33	7	–	40
SALES TAX PROPERLY EXEMPTED	26	14	–	40

Additional Observations:

- 37 food transactions were supported by an invoice or receipt, three lacked documentation.
- None of the food purchases were pre-approved prior to purchase; however, 33 were approved in *Spend Clarity* after the fact.
- There is no formal Vineyard City policy governing food or meal-related purchases.

The criteria used for this testing were based on best practices recommended by the **Government Finance Officers Association (GFOA) in its publication "Best Practices for Employee Recognition and Business Meals (2019),"** which outlines principles for transparency, public purpose, and documentation of food-related expenditures.

7. VEHICLE ASSIGNMENT AND FUEL USAGE

PURPOSE:
The purpose of this test was to satisfy the agreed-upon procedures engagement between the practitioner and Vineyard City. Specifically, the purpose was to perform the procedures described below to determine compliance with Vineyard City's practices for vehicle usage, fleet oversight, and fuel card controls. This testing included a review of the City's vehicle fleet, fuel card usage, internal controls governing the acquisition and use of fuel, and inquiries regarding policies, procedures, monitoring practices, and oversight responsibilities.

PROCEDURES PERFORMED:
We reviewed all City-owned vehicles and obtained information regarding vehicle assignments, usage, and internal controls from management and applicable staff. The procedures performed included:
• Inquired about how vehicles are assigned, including whether vehicles are individually assigned, shared among departments, or classified as "take-home" vehicles.

• Inquired about oversight practices for vehicle usage and determined that daily mileage logs or usage logs are not maintained; odometer readings are reviewed annually, though formal documentation was not provided during the engagement.
• Confirmed that each vehicle is assigned its own fuel card and PIN, and determined that PINs are shared among all users of the vehicle.
• Reviewed the City's fuel card program and confirmed that Vineyard City does not have a written fuel card policy.
• Performed a limited analysis of fuel card transactions, including:
– Review of fuel quantities purchased to identify outliers or unusual activity,
– Review of transactions listed as "equipment/spare,"
– Identification of purchases exceeding reasonable fuel-tank capacity for assigned vehicles, and
– Review of transactions with unusually high quantities per fill.
• Reconciled card usage back to CFN (Commercial Fueling Network), the fuel card program used by the City.
• Inquired whether the City performs routine monitoring or reconciliations of CFN statements, fuel-card usage, vehicle mileage, or fuel consumption; no supporting documentation of such monitoring was provided.
• Inquired about controls over card activation and deactivation, including whether fuel cards were canceled when vehicles were retired or transferred; no confirmation or documentation was provided.
• Inquired about receipts and supporting documentation and noted that fuel receipts had been observed in limited instances through P-Card testing.
• Made inquiries regarding fuel cards listed as active but not regularly being used.

FINDINGS:

We obtained a listing of 39 active or "valid" fuel cards from Vineyard City and reconciled these to the CFN system, the fuel-card platform used by the City. All 39 cards provided by the City were confirmed as active within CFN. During this reconciliation, we also noted an additional 39 fuel cards listed as "valid" in CFN that were not assigned to any vehicle on the City's fleet inventory.

Through inquiries with staff and review of available documentation, we determined that Vineyard City does not have a written policy governing the issuance, use, monitoring, or oversight of fuel cards or vehicle usage. Because no formal policy or documented procedures exist, there was no established criteria upon which to perform detailed testing of fuel-card controls, vehicle utilization, or oversight practices.

Based on our inquiries, we noted that vehicles are used in different ways across the organization. Some vehicles are assigned to departments or shared among employees, while others are individually assigned. A number of vehicles are designated as take-home vehicles. The City does not maintain daily usage logs or mileage logs for its vehicles, and there is no GPS tracking, telematics system, or other operational monitoring in place. Odometer readings are reviewed annually; however, supporting records documenting these reviews were not provided during the engagement.

Fuel cards are assigned to vehicles rather than to individual users, and the associated PINs are shared by any employee using that vehicle. As a result, CFN transaction data does not identify which individual purchased fuel. We observed fuel purchases recorded for "equipment/spare" and noted examples where fuel quantities exceeded the expected capacity of the assigned vehicle. We made inquiries of staff regarding these items; however, without a policy establishing expectations or required documentation, we were not able to perform additional testing.

We also inquired whether the City performs monitoring or reconciliation of fuel-card activity, such as comparing CFN statements to mileage readings, usage logs, or operating schedules. No documentation was provided to indicate that such reconciliations or monitoring are performed.

We reviewed the City's current personnel policy sections related to equipment and vehicle use. The policy states: "Proper Use of Vineyard Equipment and Tools. The use of Vineyard equipment or tools for private purposes is strictly prohibited…" and includes general expectations regarding safety, training requirements, CDL licensing, seat-belt use, and keeping vehicles clean and serviceable. While these provisions establish basic conduct expectations, they do not address key elements of a vehicle-use or fuel-card program such as authorization procedures, documentation requirements, card security, usage tracking, monitoring, or oversight responsibilities.

The criteria used for this testing were based on the procedures agreed to with Vineyard City Council and management, and the observations above are limited to the procedures performed.

Exceptions and Reporting Thresholds

No materiality thresholds or limits were established for identifying exceptions. All noted exceptions are included in this report. No external specialists or other practitioners were used in performing these procedures.

Statement Regarding Findings

The results described in this report are limited to the procedures performed and are factual in nature. They do not represent an evaluation, conclusion, or opinion. Users of this report are responsible for interpreting the results and drawing their own conclusions based on their objectives.

Restriction on Use

The sufficiency of these procedures is solely the responsibility of the Vineyard City Council and Vineyard City management. This report is intended solely for the information and use of the Vineyard City Council and the Utah Office of the State Auditor, and is not intended to be and should not be used by anyone other than these specified parties.

CPA Insight Solutions – Consulting for Public Accountability
Chris W. Harding, CPA, CFE, CIA
Vineyard City, Utah
December 10, 2025

VINEYARD CITY

Supplemental Observations and Recommendations Report

December 10, 2025

Accompanying the
Agreed-Upon Procedures Engagement
for Fiscal Years 2023 and 2024

Prepared by
CPA Insight Solutions
Consulting for Public Accountability

Table of Contents

INTRODUCTION AND PURPOSE 2

SCOPE AND ORGANIZATION 2

1. *PURCHASING CARDS* 3
2. *EMPLOYEE TRAVEL AND REIMBURSEMENTS* 21
3. *CASH HANDLING AND DEPOSITS* 27
4. *UTILITY BILLING AND METER VERIFICATION* 38
5. *REDEVELOPMENT AGENCY (RDA) PAYMENTS* 47
6. *FOOD EXPENSES AND EMPLOYEE RECOGNITION* 64
7. *VEHICLE ASSIGNMENT AND FUEL USAGE* 72

SUMMARY OF OBSERVATIONS & RECOMMENDATIONS 82

INTRODUCTION AND PURPOSE

This Supplemental Observations and Recommendations Report accompanies the Independent Accountant's Report on Applying Agreed-Upon Procedures (AUP) performed for Vineyard City for fiscal years 2023 and 2024. Unlike an audit or examination conducted in accordance with the standards of the AICPA or Government Auditing Standards, this report does not provide assurance, an opinion, or a conclusion on the City's financial statements, internal controls, or compliance activities. Its purpose is fundamentally different: to provide context, analysis, and forward-looking recommendations based on the factual results obtained through the AUP engagement.

The observations presented herein are not findings in the audit sense, but rather professional insights derived from testing results, supporting documentation, interviews, and examination of City processes. They are intended to help Vineyard City strengthen its internal controls, reinforce accountability, and enhance transparency in the administration of public resources. Each observation is designed to assist elected officials, management, employees, and residents in understanding opportunities for improvement, clarifying roles and responsibilities, and building a control environment capable of supporting the City's continuing growth.

This document serves as a complement—not an extension—of the AUP itself. The AUP procedures were performed strictly as agreed upon with Vineyard City, and no additional work was conducted beyond those procedures. However, consistent with professional judgment and public-sector best practices, relevant contextual observations that emerged during the execution of the AUP are included here to help the City proactively strengthen governance, reduce operational risks, and improve the stewardship of taxpayer funds.

SCOPE AND ORGANIZATION

This Supplemental Observations and Recommendations Report mirrors the structure of the AUP report to maintain consistency and clarity. Each topic included in the AUP—Purchasing Cards, Travel, Cash Handling, Utility Billing, Redevelopment Agency (RDA) Payments, Food Expenditures, and Vehicles and Fuel Cards —is addressed separately in this report using the same order and general framework.

Each section begins with a brief overview that summarizes the purpose and context of the area reviewed. Observations are then presented using a narrative structure that incorporates the standard elements of a finding—criteria, condition, cause, and effect—without explicitly labeling them as such. This approach provides a clear and coherent understanding of each issue while acknowledging that these items are not formal audit findings but supplemental professional observations.

For every observation, a set of targeted recommendations is provided. These recommendations draw upon public-sector best practices, internal control frameworks,

and industry standards relevant to municipal operations. The goal is to give the City practical, actionable steps to enhance internal controls, modernize policies, and strengthen governance processes.

The report is organized to promote ease of reference and public transparency. Elected officials, staff, and residents can review each topic independently or consider the document as a whole to better understand the interconnected nature of internal controls across City functions. In all cases, the information contained herein is intended to support Vineyard City in its commitment to accountability, efficiency, and responsible stewardship of public resources.

1. PURCHASING CARDS

The purchasing card program was reviewed to assess Vineyard City's adherence to its Purchase Card Policy and to evaluate whether internal controls effectively ensure accountability, compliance, and transparency in P-Card use. The review encompassed both policy design and operational execution, drawing from a representative sample of 100 transactions selected from a total population of 4,157 transactions processed during fiscal years 2023 and 2024.

The testing focused on several key control areas, including the presence of adequate supporting documentation, supervisory approvals, and compliance with purchase limits and prohibited-use provisions. Specific attention was given to verifying that receipts and invoices were attached, uploaded, and approved within the two-week timeframe established by City policy, and that cardholders maintained valid signed agreements acknowledging their responsibilities under the program.

The review of Vineyard City's purchasing card (P-Card) program revealed meaningful progress in establishing policy guidance, assigning cardholder accountability, and implementing the Spend Clarity system as a control tool. The City's Finance team has improved many of the foundational elements of program administration; however, the observations detailed in this section highlight several areas where control enforcement, documentation quality, and oversight practices must continue to mature.

RECURRING THEMES EMERGED ACROSS MULTIPLE FINDINGS:

- Accountability and Individual Responsibility: Some historical practices, such as shared cards and incomplete cardholder agreements, weakened individual accountability for public expenditures.

- Oversight and Timeliness: Inconsistent supervisory approvals and delays in uploading documentation reduced the effectiveness of internal review and reconciliation controls.

- Documentation Quality and Transparency: Insufficient detail in supporting materials and narrative justifications hindered the City's ability to demonstrate the appropriateness of spending decisions.

- System Configuration and Monitoring: Spend Clarity's workflow and reporting capabilities were not fully leveraged to enforce approval, documentation, or timeliness requirements.

Together, these issues do not suggest misuse of City funds but rather point to the need for sustained attention to policy compliance, employee training, and use of automation to reinforce internal controls. The Finance Department has the opportunity to transform the P-Card program from a transactional tool into a transparent, well-controlled, and efficiently managed system that reflects the City's commitment to stewardship and accountability.

The recommendations provided throughout this section—ranging from improved documentation standards to integration of compliance metrics into performance reviews—are intended to strengthen governance, reduce administrative inefficiency, and enhance public confidence in how City resources are managed. Implementation of these measures will position Vineyard City to maintain a high level of fiscal transparency and serve as a model of sound financial oversight among Utah municipalities.

OBSERVATION 1.1: IMPROPER CARD SHARING

Vineyard City's Purchase Card (P-Card) Policy assigns each card to a specific employee, who is personally accountable for all charges, documentation, and policy compliance related to that card. This structure is foundational to an effective internal-control environment: it creates a clear audit trail, prevents unauthorized purchases, and enables supervisors to verify that transactions are legitimate and properly supported.

During testing and inquiry, evidence indicated that certain cards—particularly within operational areas such as Public Works and Water—were historically used by multiple employees rather than being restricted to a single, named cardholder. Management explained that these "department cards" were shared among staff to purchase work-related supplies or protective gear when the designated cardholder was unavailable. Although this practice may have arisen from practical necessity, it effectively bypassed the control framework designed to ensure individual accountability for every transaction. According to management, these shared cards were cancelled in early 2024 and replaced with individually assigned cards, which represents a meaningful improvement in program integrity.

The emergence of shared cards appears to have stemmed from the City's rapid organizational growth and a period when procurement controls and system capabilities were still being formalized. Limited card availability, decentralized issuance, and operational convenience likely contributed to the practice.

Nevertheless, allowing multiple employees to access the same card obscures the true purchaser, complicates oversight, and exposes the City to financial and reputational risk. When accountability is diluted, it becomes difficult to verify whether purchases were properly authorized, business-related, or supported by adequate documentation.

Although the issue has since been addressed, its prior existence points to a need for stronger preventive controls to ensure that similar practices do not re-emerge, especially as staff turnover and departmental needs evolve.

RECOMMENDATIONS

1.1.1 Reinforce through City-wide communication and periodic staff training that purchasing cards are issued solely for individual use. Card lending, borrowing, or sharing should be expressly prohibited under all circumstances.

1.1.2 Direct each department head to certify annually that all active cards are assigned to named employees only, with no generic or shared cards in circulation. This certification should be submitted to the Finance Department and retained for audit purposes.

1.1.3 Establish a documented contingency process to address legitimate short-term purchasing needs when an authorized cardholder is unavailable. Options may include a centrally managed procurement desk, supervised temporary cards, or emergency purchasing procedures approved by Finance.

1.1.4 The City should maintain an internally controlled log mapping each card number to the assigned employee, and supervisors should certify cardholder assignments at least annually. Finance should reconcile this log to cardholder activity to ensure all transactions are traceable.

1.1.5 Document, in a one-time internal memorandum, the corrective actions taken to eliminate shared cards—identifying which cards were cancelled, when replacements were issued, and how the process now ensures exclusive individual accountability. Maintaining this record demonstrates the City's commitment to continuous improvement and provides valuable context for future reviews.

OBSERVATION 1.2: MISSING SUPERVISORY APPROVALS & INADEQUATE APPROVAL CONTROLS

Vineyard City's Purchase Card Policy and the Spend Clarity workflow are designed to ensure that all transactions receive supervisory review prior to final payment. This control provides management oversight, verifies compliance with policy, and reduces the risk of misuse or error. The City's system is configured to require at least one supervisory

approval for all transactions, and a secondary approval for those exceeding $200. Proper documentation of these approvals forms a critical part of the City's financial accountability framework.

Testing of selected P-Card transactions identified multiple instances in which supervisory approvals were missing, incomplete, or performed by the same individual in both approval levels. Several transactions—particularly those dated before mid-2023—showed no evidence of approval within Spend Clarity or elsewhere in the supporting documentation. In a few cases, both approval levels were executed by the same employee, effectively negating the intended segregation of duties. Management explained that this condition resulted largely from legacy configurations and staffing changes before the Spend Clarity system was fully implemented. According to management, supervisory assignments and approval hierarchies were corrected in early 2024 when a new Finance Director and staff performed a comprehensive review of cardholder settings.

The missing or duplicate approvals appear to have been caused by a combination of incomplete system configuration and historical gaps in departmental compliance monitoring. At times, certain cards lacked assigned supervisors within Spend Clarity, allowing transactions to post without approval. In other cases, turnover or role changes were not promptly reflected in the system, leaving approval queues unmonitored. Although current controls appear to have improved, these lapses during the audit period represent a significant internal control deficiency.

The absence of consistent supervisory approvals weakens the City's assurance that all expenditures were properly reviewed, supported, and authorized. It also reduces transparency for the City Council, management, and the public by undermining confidence in the completeness of internal review. When segregation of duties is compromised—whether through missing approvers or dual-role approvals—the potential for error, abuse, or fraud increases, even in otherwise well-intentioned environments.

RECOMMENDATIONS

1.2.1 Require Finance to periodically review the Spend Clarity configuration to confirm that each active card has assigned primary and secondary approvers consistent with City policy. This review should be performed at least annually or whenever organizational changes occur.

1.2.2 Supervisors should review all transactions for completeness before approval, returning any transaction where required fields (business purpose, documentation, coding) are no sufficiently to give a good understanding and description of the expense being incurred. Departments may implement internal checklists to support this review.

1.2.3 Reinforce through periodic training that supervisory review is not a perfunctory step but a substantive verification of the appropriateness, documentation, and business purpose of each expenditure. Approvers should be held accountable for ensuring that receipts are legible, itemized, and policy-compliant before final approval.

1.2.4 Require departments to perform quarterly self-checks of approval logs, reconciling Spend Clarity data to ensure that every purchase above $200 has dual approval. Exceptions should be documented, explained, and reviewed by Finance for trend analysis.

1.2.5 Where transactions were approved by the same individual at both levels during the audit period, Finance should document the reason and determine whether compensating controls (such as post-review by a department head or Finance manager) were applied. This documentation will strengthen the City's ability to demonstrate oversight during transitional periods.

OBSERVATION 1.3: SPLIT TRANSACTIONS TO BYPASS SPENDING LIMITS

The City's Purchase Card Policy establishes both single-transaction and monthly spending limits for each cardholder to control purchasing activity and prevent large or non-routine expenses from circumventing normal procurement channels. These limits are an important safeguard: they ensure that significant purchases receive appropriate advance authorization, competitive pricing review, and budget validation through the City's purchasing system rather than the P-Card platform.

Testing identified several instances in which transactions appeared to be divided, or "split," across multiple P-Card charges to avoid triggering system-enforced spending limits. Examples included duplicate vendor payments made within the same billing cycle—most notably two $10,200 payments to the same vendor for a single drone show—and smaller cases in which a single purchase was broken into two or more separate card transactions processed on the same day. In at least one case, the total of these split charges exceeded the cardholder's established monthly limit.

Management explained that some of these situations stemmed from vendor invoicing practices, where a 50-percent deposit and 50-percent final payment were required. Other instances were attributed to delayed or missing documentation of approved temporary limit increases. While those explanations appear reasonable in certain cases, the absence of standardized documentation confirming that each split or over-limit charge was pre-authorized makes it impossible to distinguish legitimate vendor billing arrangements from policy circumvention.

These conditions indicate weaknesses in the City's control over spending-limit enforcement and documentation. Prior to 2024, temporary limit adjustments were authorized by email or verbal approval but not consistently recorded within Spend Clarity

or retained for audit purposes. Additionally, the system did not flag or restrict multiple same-vendor transactions that collectively exceeded the per-transaction limit. Although Finance now manages temporary limit adjustments more formally, historical activity reveals the need for better documentation, automated exception monitoring, and consistent communication of policy expectations.

Split transactions—whether intentional or due to weak configuration—undermine the integrity of spending limits and expose the City to the risk of purchases occurring outside the normal procurement process. They also reduce transparency over who authorized an expenditure and why it bypassed ordinary thresholds designed to safeguard public funds.

RECOMMENDATIONS

1.3.1 Although the Purchase Card Policy already expressly prohibits splitting transactions to circumvent single-transaction limits, our testing identified instances where this practice occurred. We recommend that the City strengthen its enforcement of this requirement by implementing additional monitoring controls—such as periodic reviews by Finance of same-day or same-vendor purchases—and by ensuring supervisors are trained to identify and return transactions that appear to be split. These steps would help reinforce policy compliance and reduce the risk of bypassing established purchasing controls.

1.3.2 Implement a standardized Temporary Limit Increase Request form. Each request should document the reason, amount, approving officials, and effective period, and be retained as part of the monthly reconciliation package.

1.3.3 Finance should conduct periodic analytics to identify same-day or same-vendor purchases that appear related, and follow up with departments to determine whether purchases were appropriately aggregated or whether policy reinforcement is needed.

1.3.4 Provide periodic training for department heads and cardholders emphasizing that exceeding or dividing transactions without written pre-approval constitutes a policy violation and may result in revocation of card privileges.

1.3.5 Require Finance to perform semi-annual analytics on transaction data to identify patterns of recurring split purchases or frequent temporary limit adjustments. Summaries of these reviews should be shared with management and reported to the City Council's Audit or Finance Committee as part of ongoing oversight.

OBSERVATION 1.4: INCOMPLETE AND HISTORICALLY INCONSISTENT CARDHOLDER AGREEMENTS

The City's Purchase Card Policy requires that each cardholder sign an agreement acknowledging their responsibilities, compliance obligations, and understanding of

applicable policies before being issued a P-Card. These agreements are a key element of the City's internal-control framework. They serve as documented evidence that employees have been trained on program expectations, that they understand restrictions such as prohibited uses and documentation requirements, and that they accept personal accountability for all purchases charged to their assigned card.

Testing revealed that cardholder agreements were not consistently obtained or retained, particularly during earlier fiscal years. Of the 24 cardholders sampled, only 16 had a signed agreement on file. The remaining eight records pertained to former employees whose employment ended prior to the City's adoption of the updated Purchase Card Policy and the subsequent city-wide training effort; as a result, signed agreements were not available for those individuals. For some cardholders with multiple active cards, the agreement provided did not correspond to the specific card number tested. In addition, all agreements currently on file were executed on the same date, indicating that the City conducted a one-time compliance effort to obtain signed agreements after identifying the issue, rather than having maintained updated agreements as part of an ongoing process since program inception.

This historical gap appears to have originated from inconsistent onboarding practices, evolving administrative oversight, and the absence of a centralized repository for cardholder documentation. Before the implementation of the Spend Clarity system and the formalization of the P-Card program under current Finance leadership, card issuance and recordkeeping were managed informally, with limited standardization across departments. While the recent effort to collect and standardize agreements demonstrates meaningful progress, it did not fully resolve documentation gaps from prior years, nor did it establish a recurring process to ensure compliance as new cardholders are added or existing cards replaced.

Without a complete and verifiable record of signed agreements, the City cannot demonstrate that all employees with purchasing authority have acknowledged their obligations or were informed of the program's restrictions. This weakens accountability, increases exposure to potential misuse or misunderstanding of policy, and limits management's ability to enforce disciplinary measures should violations occur. Although this deficiency is largely historical, maintaining a robust and ongoing documentation process is essential to preserving the integrity of the P-Card program.

RECOMMENDATIONS

1.4.1 Designate a central function—such as Finance or Human Resources—as the official custodian of all P-Card agreements. This role should be responsible for verifying that a signed agreement is on file before a card is activated and for maintaining copies after card termination.

1.4.2 Update the cardholder agreement template to include the cardholder's name, department, and the last four digits of the assigned card. Each agreement should reference the effective policy version and contain an attestation acknowledging receipt and understanding of that policy.

1.4.3 Incorporate the P-Card agreement process into the City's employee onboarding and separation checklists. Finance should verify that an executed agreement is on file before issuing a card and that the agreement remains archived upon card deactivation or employee separation.

1.4.4 Require active cardholders to annually reaffirm their acknowledgment electronically through a digital form, confirming that they have reviewed any policy updates and that their card information remains current.

1.4.5 Perform a one-time reconciliation of all current cardholders against existing agreements to identify any remaining gaps. Missing agreements should be obtained promptly, and the reconciliation results should be retained as evidence of the City's corrective action.

OBSERVATION 1.5: INSUFFICIENT SUPPORTING DOCUMENTATION

An effective purchasing card program depends on maintaining complete, clear, and verifiable supporting documentation for every transaction. The City's Purchase Card Policy and standard financial controls require cardholders to retain and upload itemized receipts or invoices that substantiate the business purpose of each expenditure. These records serve as evidence that the purchase was authorized, properly coded, and related to City operations. The Finance Department's ability to reconcile statements and verify compliance relies on the sufficiency and accuracy of this documentation.

Testing identified numerous instances where supporting documentation was incomplete, unclear, or missing key elements such as vendor detail, itemized descriptions, or payment confirmation. Some transactions included only an automated email or payment confirmation rather than an actual invoice or receipt. In other cases, screenshots or generic confirmations were uploaded without sufficient information to verify the legitimacy or business purpose of the charge. While the Finance Department explained that receipt expectations were tightened beginning in late 2023, many transactions from earlier in the audit period reflected inconsistent standards and weak quality assurance over uploaded materials.

This condition appears to have stemmed from several factors: the lack of centralized oversight during early program implementation, uneven understanding of documentation requirements across departments, and limited supervisory review before submission. In some cases, the City's rapid growth and transition to electronic systems contributed to a

backlog of receipts that were uploaded hastily or not at all. Although management has since introduced improved controls—including Finance-level review of receipts and mandatory uploads within two weeks—the historical inconsistencies indicate a need for sustained enforcement and training.

Incomplete or insufficient documentation undermines the City's ability to demonstrate that public funds were used for valid business purposes. It also complicates post-transaction review, hinders fraud detection, and reduces confidence in the accuracy of financial records. Even when purchases are legitimate, the absence of itemized support leaves the City vulnerable to audit findings, reputational risk, and potential disputes with vendors or oversight entities.

RECOMMENDATIONS

1.5.1 Reinforce policy requirements that all P-Card transactions must be supported by legible, itemized receipts or invoices showing the vendor name, date, description, and total amount. Generic confirmations or email summaries should not be accepted as primary documentation.

1.5.2 Require Finance to conduct monthly quality-control reviews of a sample of uploaded receipts to verify completeness, clarity, and consistency. Any exceptions should be communicated to cardholders and supervisors for prompt correction.

1.5.3 Finance should implement internal review procedures requiring supervisors to verify that all required documentation is attached before approval. Departments may use standardized checklists to confirm completeness prior to submission.

1.5.4 Provide refresher training to all cardholders and approvers emphasizing documentation standards, acceptable forms of proof, and the importance of retaining original invoices where possible.

1.5.5 Incorporate documentation sufficiency as a performance measure within department-level compliance reviews or internal audits, encouraging supervisors to view receipt verification as part of their accountability role.

1.5.6 Maintain a centralized record of repeat exceptions or deficiencies by cardholder, and require corrective action plans for employees with recurring noncompliance.

1.5.7 Strengthen narrative justification requirements within Spend Clarity. Cardholders should provide complete, clearly written explanations describing the business purpose and necessity of each transaction—using full sentences and enough detail to demonstrate how the purchase supports City operations. Supervisors should review these justifications for adequacy and provide feedback when narratives are too brief or incomplete. Because

P-Card expenditures represent public funds, employees should err on the side of transparency and thoroughness in documenting how those funds are spent.

OBSERVATION 1.6: MISSING RECEIPTS AND USE OF "MISSING RECEIPT" FORMS

Vineyard City's Purchase Card Policy requires cardholders to retain and upload original receipts or invoices for all purchases to provide verifiable evidence of business purpose and compliance with purchasing requirements. In limited situations when an original receipt cannot be obtained, a "missing receipt" form may be used as a substitute. Best practices recommend that such forms be used only as an exception, subject to supervisory approval, and accompanied by a detailed written explanation describing the transaction and the efforts made to obtain the original documentation.

Testing revealed multiple instances in which missing-receipt forms were used instead of actual receipts, including for purchases that exceeded $200. Although Finance staff indicated that employees are instructed to consult with Finance before submitting these forms, documentation of that consultation was not consistently maintained. Once a missing-receipt form was completed, no further follow-up occurred to locate or attach the original receipt at a later date. This practice effectively made the missing-receipt form a permanent substitute rather than a temporary remedy.

The reliance on missing-receipt forms appears to stem from a combination of evolving policy enforcement, limited clarity on when such forms are appropriate, and insufficient accountability mechanisms to discourage their overuse. While the Finance Department has improved overall compliance monitoring, the historical use of missing-receipt forms—particularly for higher-value purchases—reduces transparency and weakens the audit trail. Because these purchases are made with public funds, the supporting documentation should meet a higher standard of completeness, ensuring that every expenditure can be independently verified.

Overuse of missing-receipt forms exposes the City to reputational and financial risks by creating uncertainty about whether purchases were appropriate, authorized, and accurately recorded. Even when the underlying transaction is legitimate, the absence of original documentation can raise questions about oversight, consistency, and stewardship of taxpayer funds.

RECOMMENDATIONS

1.6.1 Update the Purchase Card Policy to clearly define the acceptable circumstances

under which missing-receipt forms may be used, set a dollar threshold requiring Finance approval, and specify that such forms are to be treated strictly as exceptions.

1.6.2 Require each missing-receipt form to include a detailed written explanation of the purchase and the reason the original receipt is unavailable. Generic or overly brief statements should not be accepted.

1.6.3 Instruct supervisors to carefully review missing-receipt forms for completeness and adequacy before approval. If the description does not clearly establish the business purpose, the form should be returned to the employee for clarification.

1.6.4 Supervisors should return transactions submitted with missing-receipt forms unless the employee has clearly documented the circumstances and demonstrated efforts to obtain the original receipt. Finance should maintain a log of missing-receipt usage for monitoring patterns.

1.6.5 Provide periodic training emphasizing that P-Card expenditures represent public money, and that employees are expected to exercise heightened diligence in documenting their use. Supervisors should reinforce that complete documentation is not optional, but a core responsibility of financial stewardship.

1.6.6 Require Finance to compile a quarterly summary of missing-receipt forms by employee and department, and provide the results to management for review and discussion with department heads.

1.6.7 Integrate the use of missing-receipt forms into employee performance evaluations. Repeat use of missing-receipt forms, particularly when preventable, should be viewed as a lack of accountability and attention to policy requirements. Supervisors should document coaching or corrective action when improvement does not occur.

OBSERVATION 1.7: SALES TAX CHARGED ON PURCHASES

As a local government entity, Vineyard City is exempt from Utah state and local sales tax under Utah Code §59-12-104. This exemption is designed to prevent public funds from being used to pay taxes from which the City is legally excluded. The City's Purchase Card Policy and standard purchasing practices require employees to provide vendors with the City's tax-exempt certificate at the time of purchase and to ensure that no sales tax is charged. Compliance with this requirement conserves taxpayer resources and demonstrates prudent financial stewardship.

Testing identified multiple instances during the audit period in which sales tax was charged on purchases made with City P-Cards. In some cases, these errors appeared to result from employees' failure to inform vendors of the City's tax-exempt status or from online vendors not set up with the City's exemption certificate. Management reported that enforcement of

this requirement was inconsistent in prior years but has since improved. The Finance Department now requires employees to request refunds for any taxes charged in error and has emphasized tax-exempt purchasing in more recent training.

The presence of sales tax on purchases reflects a breakdown in the communication and enforcement of the City's exemption policy. Before 2024, the process for verifying vendor tax-exempt status was largely informal, and there was no standardized follow-up to confirm that refunds were requested or received. Additionally, cardholders may not have been aware of how to properly apply the exemption when making online purchases or when new vendors were added. While the current practice represents meaningful improvement, the City can further strengthen compliance by documenting and monitoring all tax-related exceptions.

Paying sales tax unnecessarily reduces the City's available resources and can lead to reputational concerns regarding fiscal responsibility. Even small, recurring errors can accumulate over time into material inefficiencies. As stewards of public funds, City employees must ensure that every possible measure is taken to avoid expenditures that could have been prevented through proper process adherence.

RECOMMENDATIONS

1.7.1 Reaffirm through written guidance and periodic training that all City purchases are exempt from Utah state and local sales tax. Require employees to provide vendors with the City's current tax-exempt certificate at the time of each purchase.

1.7.2 Maintain a centralized repository of tax-exempt certificates accessible to all employees and departments, ensuring that the most current version is easily available for use in person or online.

1.7.3 Incorporate a verification step in the reconciliation process to flag any transactions that include sales tax. Finance staff should review these transactions and confirm that a refund has been requested or received.

1.7.4 Require cardholders to document the reason tax was charged and the follow-up actions taken to resolve it. Supervisors should ensure that these explanations are detailed, clear, and reviewed for completeness.

1.7.5 Conduct periodic vendor outreach to confirm that the City's tax-exempt status is properly recognized in vendor accounts, particularly for frequently used suppliers and online platforms.

1.7.6 Include a summary of sales-tax errors and recovery efforts in Finance's quarterly internal monitoring reports to management. This information should be used to identify recurring issues and target additional training or corrective measures.

OBSERVATION 1.8: UNCLEAR DOCUMENTATION FOR SPENDING LIMIT INCREASES

The City's Purchase Card Policy establishes individual cardholder spending limits to control the size and frequency of P-Card transactions and ensure that higher-dollar purchases receive appropriate scrutiny through standard procurement channels. At times, operational needs may justify a temporary increase in a cardholder's spending or credit limit to accommodate large or time-sensitive purchases. When this occurs, the authorization and approval process should be clearly documented, specifying the reason, amount, effective period, and approving officials.

Testing and management inquiry revealed that Vineyard City does not have a standardized or consistently documented process for approving and recording temporary spending-limit increases. Although management reported that such increases require authorization from the City Manager and the cardholder's supervisor, evidence of those approvals was not consistently retained. In several cases, transactions that exceeded the cardholder's normal limit were explained as temporarily authorized, but no documentation was available in Spend Clarity or other supporting records to confirm when or by whom the increase was approved.

This lack of documentation appears to have been a legacy issue from earlier in the audit period, when limit adjustments were handled informally through email or conversation with Finance staff and not systematically stored or linked to the relevant transaction. While current Finance personnel now appear to manage temporary increases more carefully, the absence of a standardized process introduces uncertainty regarding the authority, timing, and justification of those approvals.

Without clear, retrievable documentation in the system of record, the City cannot demonstrate that spending-limit exceptions were properly authorized or temporary in nature. This gap increases the risk of inappropriate or unauthorized spending and weakens accountability for policy enforcement. It also creates inefficiency when staff must rely on memory or external files to explain past decisions.

RECOMMENDATIONS

1.8.1 Develop and implement a standardized Temporary Limit Increase Request form. The form should capture the cardholder's name, card number, current and requested limit,

purpose of the increase, effective period, and signatures of the required approvers (e.g., City Manager, Finance Director, and department head).

1.8.2 Require all temporary limit or credit-limit increases to be approved in writing and uploaded to Spend Clarity at the time the increase occurs. The uploaded documentation should be attached either to the affected transaction(s) or to a centralized repository within the system to ensure transparency and auditability.

1.8.3 Restrict the ability to modify card limits to authorized Finance personnel only and to log every limit change, including the user who made the adjustment and the reference number of the uploaded approval documentation.

1.8.4 Maintain a centralized log of all temporary limit increases, including justification and expiration dates. Finance management should review this log at least quarterly to confirm that temporary increases have been reset to normal limits and that no unauthorized changes remain in effect.

1.8.5 Include limit-increase activity as part of the City's periodic internal monitoring reports to management or the City Council's Finance Committee, highlighting trends, recurring requests, and compliance with approval requirements.

1.8.6 Provide refresher training for supervisors and cardholders emphasizing that spending and credit limits are key internal controls, not administrative barriers. The training should reinforce the expectation that any exceptions be documented, justified, and uploaded to Spend Clarity to ensure full transparency over the use of public funds.

OBSERVATION 1.9: DUPLICATE OR SINGLE-LEVEL APPROVALS

The City's Purchase Card Policy and Spend Clarity workflow require two levels of review for transactions exceeding $200 — typically a primary (supervisory) approval and a secondary (Finance or department-head) approval. This dual-approval structure provides segregation of duties, ensures appropriate oversight, and adds an additional layer of accountability before public funds are expended. The effectiveness of this control relies not only on proper configuration within the system but also on consistent application by staff and supervisors.

Testing identified several transactions where only one level of approval was documented, even though two were required by policy. In other cases, both approval levels were performed by the same individual, effectively eliminating the segregation of duties intended by the control. For example, one cardholder's transactions reflected the same person as both first- and second-level approver, and other transactions from earlier periods showed no supervisory approval at all within Spend Clarity.

Management explained that these conditions were primarily historical, occurring prior to the 2024 reconfiguration of Spend Clarity and realignment of departmental approval hierarchies. At that time, some cards did not have supervisors properly mapped in the system, and changes in personnel were not always reflected promptly. While those issues have since been corrected, the lack of consistent dual approval during the audit period represents a breakdown in one of the City's key preventive controls.

The absence of independent secondary approval or the use of a single individual to fulfill both roles compromises the City's segregation of duties and reduces assurance that expenditures were appropriate and policy-compliant. It also diminishes transparency and accountability, increasing the potential for error or misuse to go undetected. Although the current control environment appears stronger, ongoing monitoring and periodic testing will be necessary to ensure that these weaknesses do not recur.

RECOMMENDATIONS

1.9.1 Supervisors and approvers should follow policy requirements ensuring no single individual completes both levels of approval. Finance should periodically review approval activity logs to ensure compliance.

1.9.2 Finance should periodically verify that each cardholder's approval structure includes two distinct approvers and update assignments promptly when personnel changes occur.

1.9.3 Finance should review transactions over $200 during monthly reconciliation to ensure both required approvals were completed. Any missing or late approvals should be escalated to department leadership.

1.9.4 Conduct quarterly internal control reviews to verify that dual-approval requirements are functioning as designed and that no single approver is approving their own or subordinates' transactions without oversight.

1.9.5 Include a standing review of approval compliance in Finance's regular reporting to management and the City Council's Audit or Finance Committee. Highlight any patterns of noncompliance or recurring exceptions by department to promote accountability.

1.9.6 Reinforce through training that supervisory and secondary approvals are substantive responsibilities — not administrative formalities. Approvers should review each transaction for business purpose, documentation quality, and policy compliance before granting approval, and should return incomplete submissions to the cardholder for correction or clarification.

OBSERVATION 1.10: INAPPROPRIATE USE OF P-CARDS FOR RECURRING OR CONTRACTED SERVICES

The City's Purchase Card Policy is intended to facilitate low-value, routine, and incidental purchases while maintaining appropriate oversight and accountability. P-Cards are not designed to replace the City's normal procurement or accounts payable processes for recurring, contractual, or large-dollar purchases. Such payments should be processed through the City's vendor payment system to ensure that contracts are properly authorized, budgeted, and subject to standard invoice verification and reporting procedures.

Testing identified instances in which P-Cards were used to pay recurring or contract-based expenses—such as monthly trash collection and other ongoing service arrangements—that would more appropriately be handled through the accounts payable system. These transactions bypassed standard procurement controls and obscured the long-term nature of the expenditure, since each monthly payment appeared as a stand-alone P-Card charge rather than a recurring vendor commitment. While no evidence of misuse was noted, this practice limits transparency, impedes accurate financial reporting, and may result in inconsistent application of purchasing procedures.

Management indicated that these payments were historically processed by P-Card for convenience, particularly before procurement procedures were fully centralized. However, Finance staff have not yet begun transitioning recurring vendors to the accounts payable process. As a result, these types of payments continue to be made through P-Cards without the formal oversight, budgeting, or contract documentation typically required for ongoing vendor relationships. The continued use of P-Cards for recurring services highlights a need for stronger policy enforcement, clearer guidance to departments, and consistent monitoring to prevent further exceptions.

Using P-Cards for recurring or contracted services dilutes oversight and increases the risk that long-term vendor relationships are not formally reviewed, competitively procured, or reflected in the City's contract management records. It also makes it more difficult for Finance to ensure that all commitments are budgeted, authorized, and reported accurately to management and the City Council.

RECOMMENDATIONS

1.10.1 Revise the Purchase Card Policy to explicitly prohibit the use of P-Cards for recurring, contractual, or subscription-based services. Define clear thresholds and examples of transactions that must be processed through the City's accounts payable system.

1.10.2 Require Finance to perform a review of all P-Card activity at least quarterly to identify vendors receiving repeated payments over multiple months. Such vendors should be evaluated and transitioned to the accounts payable process, ensuring they are properly established in the City's vendor master file.

1.10.3 Establish a formal workflow for converting recurring P-Card vendors to contract or purchase-order-based payments. This process should document service agreements, terms, and approvals, and should be integrated into Finance's routine monitoring activities.

1.10.4 Provide guidance and training to departments emphasizing that convenience should never override transparency or adherence to established procurement processes. Cardholders should consult Finance before using a P-Card for any purchase that appears to be recurring or service-based.

1.10.5 Finance should review vendor spending patterns at least quarterly to identify recurring charges that should be transitioned to contract or accounts-payable processes. Any identified recurring vendors should be moved to appropriate procurement channels.

1.10.6 Reinforce in staff communications and annual refresher training that P-Cards are intended for incidental, low-dollar, or one-time transactions. Purchases that establish an ongoing financial obligation to a vendor should always be routed through the City's formal contracting and payment processes to maintain transparency and fiscal accountability.

OBSERVATION 1.11: UNTIMELY SUBMISSION OF DOCUMENTATION

Vineyard City's Purchase Card Policy requires that all supporting documentation—including receipts, invoices, and explanations of business purpose—be uploaded into Spend Clarity within two weeks of the transaction date. This requirement ensures timely reconciliation, accurate financial reporting, and prompt supervisory review. When documentation is delayed, supervisors lose visibility into recent activity, Finance cannot complete month-end reconciliations efficiently, and the overall reliability of the P-Card program diminishes.

Testing and inquiry revealed that several cardholders reported difficulty uploading receipts and supporting documentation within the two-week deadline. At the time of review, Spend Clarity did not track or report upload timeliness, making it impossible to identify which transactions were late or which cardholders were consistently behind. As a result, compliance with the two-week standard could not be verified or enforced. Delays appeared to be caused by a combination of competing work priorities, lack of reminders or automated alerts, and limited supervisory follow-up when cardholders failed to submit documentation on time.

Although Finance staff have emphasized timely submission in training and reconciliation meetings, the absence of automated tracking and enforcement tools limits accountability. The issue is primarily procedural rather than indicative of misuse, but it represents a weakness in the City's overall control environment. Timely documentation is a fundamental element of good governance—ensuring that expenditures are reviewed and verified while details are fresh, and that any irregularities can be addressed promptly.

When documentation is not submitted within required timelines, it increases the risk of inaccurate financial reporting, delayed reconciliations, and potential loss of receipts or supporting evidence. It also signals to employees that policy requirements may be flexible, which can erode the culture of accountability the City has been working to strengthen.

RECOMMENDATIONS

1.11.1 Supervisors should monitor documentation timeliness by reviewing transaction dates compared to receipt-upload timestamps and returning untimely submissions. Finance may supplement this with periodic reviews of aging documentation.

1.11.2 Departments should implement internal processes—such as weekly reminders from supervisors or administrative support staff—to ensure cardholders upload documentation within the two-week policy timeframe.

1.11.3 Require supervisors to review timeliness metrics during monthly reconciliations and follow up directly with employees who repeatedly fail to meet deadlines.

1.11.4 Include upload timeliness as a component of the City's quarterly P-Card compliance reporting to management and the City Council's Finance or Audit Committee.

1.11.5 Provide targeted refresher training for cardholders emphasizing the importance of timely documentation as part of their fiduciary responsibility in managing public funds. Reinforce that delayed uploads hinder transparency and increase administrative burden for Finance staff.

1.11.6 Establish accountability measures linking chronic untimeliness in documentation submission to performance evaluations. Persistent failure to submit documentation within the policy timeframe should be addressed as a performance issue and reflected in the employee's review.

1.11.7 Consider designating one Finance staff member to monitor and report on P-Card documentation timeliness monthly. This individual could coordinate with department heads to ensure that corrective actions are taken promptly when compliance issues are identified.

2. EMPLOYEE TRAVEL AND REIMBURSEMENTS

The employee travel and reimbursement program was reviewed to assess Vineyard City's adherence to its Travel Policy and to evaluate whether internal controls, documentation standards, and approval processes are functioning effectively to ensure accountability, compliance, and transparency in the use of public funds. The review focused on both policy design and operational execution and included testing of 35 travel transactions selected from a population of 437 transactions recorded during fiscal years 2023 and 2024.

The testing concentrated on key control elements such as pre-travel authorization, supervisory approval, documentation of purpose and destination, lodging and transportation support, per diem accuracy, and the timely completion and submission of reimbursement forms. Specific attention was given to verifying that all travel was approved in advance as required by policy, that expenditures were properly supported by itemized receipts or invoices, and that any travel-related P-Card transactions were tax-exempt and consistent with policy limitations.

The review revealed that Vineyard City's travel reimbursement process remains largely manual, decentralized, and inconsistently documented. Several transactions lacked required travel forms, while others were supported only by booking confirmations or incomplete hotel folios. In some cases, reimbursements were processed without adequate supervisory review or after travel had already occurred. Documentation for flights, rental cars, and per diem calculations also varied significantly in completeness and accuracy.

RECURRING THEMES EMERGED ACROSS THE TESTING RESULTS:

- Authorization and Planning: Many travel arrangements were approved after the fact, with insufficient documentation of the travel purpose or cost estimates prior to travel.
- Documentation Completeness: Supporting records such as lodging folios, flight confirmations, and rental car invoices were often missing, incomplete, or insufficiently detailed to verify appropriateness.
- Supervisory Oversight: Approvals were inconsistent, and some forms lacked department-head signatures or required secondary authorization.
- Timeliness and Accountability: Late submission of forms and missing support delayed reconciliations and diminished transparency.

Collectively, these issues indicate the need for stronger administrative structure, clearer procedural guidance, and better use of automation to support compliance. They do not suggest intentional misuse of funds but point to systemic weaknesses that could lead to errors, inefficiencies, or public concern regarding transparency.

The recommendations that follow in this section are designed to strengthen policy compliance, improve consistency in documentation and review, and reinforce the City's culture of accountability. By formalizing pre-authorization, enforcing timely submission standards, and ensuring thorough documentation of travel-related expenditures, Vineyard City can improve operational discipline and safeguard the integrity of its travel program.

OBSERVATION 2.1: INCOMPLETE OR INSUFFICIENT TRAVEL DOCUMENTATION

Vineyard City's Travel Policy requires that all travel-related expenditures be supported by itemized, verifiable documentation. This includes lodging folios, flight itineraries, rental car agreements, registration invoices, and accurate per diem calculations. Complete documentation ensures transparency, compliance, and proper reconciliation of travel costs.

Testing identified multiple instances of incomplete or missing documentation across several travel components. Supporting records often consisted only of booking confirmations or payment summaries rather than itemized receipts. Lodging receipts frequently lacked final folios, flight confirmations omitted traveler names or return dates, rental car documentation failed to show rates or rental periods, and per diem calculations were occasionally incorrect or unsupported. These deficiencies reflect inconsistent adherence to policy and limited supervisory review before approval.

Incomplete or insufficient documentation weakens the City's ability to verify that travel costs were necessary, accurate, and compliant with policy. It increases the risk of overpayment, tax errors, or reimbursement for unallowable expenses, and it diminishes public confidence in the City's financial stewardship.

RECOMMENDATIONS

2.1.1 Reaffirm that all travel reimbursements must include itemized receipts and documentation for lodging, airfare, rental cars, registration, and meals. Booking confirmations alone should not be accepted.

2.1.2 Implement a standardized Travel Documentation Checklist in the reimbursement form or electronic workflow to ensure that all required attachments are submitted before approval.

2.1.3 Require supervisors to verify the completeness and accuracy of supporting documentation and return incomplete submissions for correction prior to approval.

2.1.4 Supervisors should refuse approval for any travel reimbursement lacking sufficient required documentation. Finance should incorporate documentation-completeness checks into periodic travel-expense reviews.

2.1.5 Provide periodic training for employees and approvers on required documentation standards and accurate per diem calculations.

2.1.6 Conduct quarterly Finance reviews of a sample of travel reimbursements to confirm documentation sufficiency and report exceptions to management for corrective action.

OBSERVATION 2.2: MISSING, LATE, OR INCOMPLETE TRAVEL REIMBURSEMENT FORMS

The travel reimbursement form serves as the foundation for documenting travel authorization, purpose, destination, cost, and approval. It ensures consistent accounting, provides an audit trail, and confirms supervisory oversight. The City's policy requires that completed forms and supporting documentation be submitted within two weeks of travel completion.

Testing revealed multiple cases in which forms were missing, submitted weeks late, or incomplete. Some lacked essential fields such as trip purpose, dates, or supervisory signatures. Others were submitted long after travel occurred, delaying reconciliation and limiting management's ability to verify expenditures. The City's current processes do not include automated tracking of form completion or timeliness.

Late, missing, or incomplete forms undermine accountability and weaken a key component of the City's internal control structure. Without complete, timely forms, management cannot confirm that travel was pre-approved, budgeted, and consistent with policy, creating administrative inefficiency and reputational risk.

RECOMMENDATIONS

2.2.1 Require that all City-funded travel be supported by a completed and approved reimbursement form, finalized within two weeks of travel completion.

2.2.2 Implement electronic submission of travel forms in Spend Clarity or a comparable platform with timestamps for submission and approval dates.

2.2.3 Configure automated email reminders for employees and supervisors when forms are approaching or past their submission deadline.

2.2.4 Incorporate timeliness and completeness metrics into quarterly travel compliance reporting to management and the City Council's Audit or Finance Committee.

2.2.5 Require departments with recurring late or incomplete submissions to develop corrective action plans.

2.2.6 Link repeated noncompliance with submission deadlines to employee performance evaluations to reinforce accountability and adherence to policy.

OBSERVATION 2.3: LACK OF PRE-TRAVEL AUTHORIZATION AND ADVANCE APPROVAL

Vineyard City's Travel Policy requires that all travel be authorized in advance to ensure that trips are necessary, cost-effective, and budgeted. Pre-authorization allows management to review proposed travel before public funds are committed and to verify alignment with City priorities.

Testing revealed multiple cases where travel authorization occurred only after travel had already taken place. Some reimbursement forms were completed post-travel, while others lacked any indication of pre-approval. In many cases, employees appeared to view the reimbursement form as a post-travel reporting document rather than a preventive control. The absence of documented pre-authorization undermines the purpose of managerial review and shifts the control from proactive to reactive.

Without formal pre-travel authorization, the City loses an essential oversight mechanism. This practice increases the risk of unbudgeted or unnecessary expenditures and weakens fiscal discipline. It also reduces transparency to the public and governing bodies, who rely on evidence of pre-approval to ensure that travel is managed responsibly.

RECOMMENDATIONS

2.3.1 Require written pre-travel authorization for all City-funded trips, approved by both the supervisor and department head before any reservations or payments are made.

2.3.2 Include estimated costs, funding source, and business justification on the authorization form.

2.3.3 Supervisors or department administrative staff should remind travelers when reimbursement forms are due or overdue. Finance should periodically review timeliness and follow up with departments exhibiting recurring delays.

2.3.4 Require that any exceptions (e.g., emergency travel) be documented in writing, approved by the Finance Director, and retained for audit purposes.

2.3.5 Provide periodic training to employees and supervisors emphasizing that pre-authorization is a safeguard—not a formality—that ensures public funds are spent appropriately and transparently.

OBSERVATION 2.4: MISSING SUPERVISORY AND DEPARTMENT HEAD APPROVALS

Supervisory and department-head approvals are essential for ensuring proper oversight, accountability, and budgetary control over travel expenditures. The City's policy requires that both levels of review occur before any travel reimbursement or payment is processed.

Testing identified multiple instances where travel forms and related expenses lacked one or both levels of approval. Some forms reflected approvals by administrative staff or peers instead of department heads, while others showed no approval at all. The approval workflow in Spend Clarity did not consistently enforce hierarchical authorization, allowing transactions to proceed without required review.

The lack of documented supervisory and department-head approvals reduces the effectiveness of internal controls, increases the potential for unauthorized travel spending, and creates inconsistency in how departments apply oversight. It also weakens management's ability to ensure that travel aligns with organizational priorities and approved budgets.

RECOMMENDATIONS

2.4.1 Finance should ensure approval assignments reflect policy by periodically verifying that each employee has both supervisory and department-head review levels assigned.

2.4.2 Require supervisors to verify that documentation is complete and compliant with policy before granting approval.

2.4.3 Supervisors should monitor pending transactions to ensure all required approvals occur before reimbursement is processed. Departments may use internal reports or checklists to track approval completeness.

2.4.4 Provide training clarifying the roles of supervisors and department heads in the approval process, emphasizing that authorization is a substantive control to ensure accountability.

2.4.5 Include approval compliance metrics in quarterly Finance reports to management and the Audit Committee. Departments with recurring exceptions should be required to develop corrective measures.

OBSERVATION 2.5: IMPROPER PAYMENT METHODS FOR TRAVEL EXPENSES

City policy specifies that certain travel-related costs—such as conference registrations, training fees, and event payments—should be processed through the accounts payable system rather than by purchasing card (P-Card). This ensures proper vendor tracking, budget control, and documentation consistency.

Testing revealed that several conference registrations and training-related fees were paid using City P-Cards, bypassing the standard accounts payable process. While these charges appeared legitimate, this practice undermines the control framework designed to ensure oversight and transparency in vendor payments. It can also result in inconsistent budget tracking and limited visibility for management and auditors.

Employees appear to favor using P-Cards for convenience, particularly when registration portals accept only card payments. However, the policy requirement exists to preserve fiscal control and ensure that pre-approval, documentation, and payment authorization occur in accordance with best practices.

Improper payment methods blur the distinction between incidental purchases and planned expenditures requiring more formal oversight. Continued inconsistency in this area exposes the City to unnecessary control risk and reduces the clarity of financial reporting.

RECOMMENDATIONS

2.5.1 Reaffirm that all conference registrations, training fees, and similar travel-related expenses must be processed through accounts payable unless an exception is formally approved by the Finance Director.

2.5.2 Finance should periodically review P-Card activity for travel-registration vendors and follow up with cardholders when such charges should have been processed through accounts payable. Supervisors should reinforce proper payment channels during pre-travel discussions.

2.5.3 Provide targeted training emphasizing that convenience should not override transparency and adherence to established financial controls.

2.5.4 Require Finance to periodically review P-Card transactions for registration-related charges and follow up on any noncompliant payments.

2.5.5 Establish a limited exception process for legitimate same-day or online-only registrations, requiring written justification and documentation uploaded to Spend Clarity.

3. CASH HANDLING AND DEPOSITS

The review of Vineyard City's cash handling and deposit processes was conducted to evaluate whether internal controls are sufficient to safeguard cash, ensure timely deposits, and maintain accurate accounting records in compliance with best practices for public-sector financial management. The objective was to determine whether policies, procedures, and segregation of duties effectively protect public assets against loss, misuse, or misappropriation.

Testing and interviews indicated that Vineyard City does not currently maintain a formal, written Cash Handling Policy governing the acceptance, custody, deposit, or reconciliation of cash. Existing practices are largely informal, relying on institutional knowledge rather than documented procedures or standardized controls. While staff demonstrate strong commitment to accuracy and integrity, the absence of structured policies and independent oversight increases vulnerability to both error and potential misuse.

Several significant control gaps were observed, including delayed deposits, inadequate segregation of duties, lack of dual verification of deposits, and the absence of unannounced cash counts or independent reconciliations. In addition, incidental cash receipts from non-routine sources, such as metal recycling proceeds, were not integrated into the City's formal receipting system or subject to dual custody controls. These weaknesses indicate that cash handling relies heavily on trust and routine rather than on systematic controls designed to prevent or detect irregularities.

RECURRING THEMES IDENTIFIED ACROSS TESTING INCLUDE:

- Lack of Formalized Procedures: The City has no written policy establishing responsibilities, documentation requirements, or timelines for deposits and reconciliations.
- Segregation of Duties and Oversight: Key cash-handling functions are concentrated among a small number of employees, with limited independent verification or review.

- Timeliness and Documentation: Deposits were not consistently made within the expected timeframe, and documentation supporting certain cash receipts was incomplete or informal.

- Monitoring and Enforcement: There are no periodic or unannounced cash counts, and bank dual-signature controls were not consistently applied or enforced.

Although no evidence of misappropriation was identified, these conditions collectively represent material control weaknesses that could allow errors or irregularities to go undetected. Establishing a formal policy framework and strengthening oversight mechanisms will help ensure that the City's cash handling and deposit processes meet the standards expected of a public entity entrusted with taxpayer funds.

The following observations and recommendations are intended to provide a framework for improving control design, accountability, and transparency in the City's cash-handling operations.

OBSERVATION 3.1: NO FORMAL CASH HANDLING POLICY

Vineyard City does not currently maintain a formal, written Cash Handling Policy outlining responsibilities, procedures, and internal controls for the receipt, safeguarding, and deposit of cash. Instead, practices are largely informal and rely on employee experience and institutional knowledge. While the small volume of cash activity has historically limited exposure, the lack of codified standards creates inconsistency in how cash is handled across departments and prevents the City from demonstrating compliance with best practices in public financial management.

The absence of formalized guidance results in staff applying their own interpretations of appropriate procedures for receipting, depositing, and reconciling funds. For example, there are no written requirements defining custody responsibilities, deposit timelines, dual verification, documentation standards, or segregation of duties. As a result, control activities such as deposit preparation, reconciliation, and independent verification are performed inconsistently or omitted altogether.

This condition stems primarily from the City's historical reliance on a small, trusted finance team and an assumption that low transaction volumes did not warrant formalized controls. However, as the City continues to grow and expand its operations, the absence of a documented policy introduces significant risk. Without clear expectations and standardized procedures, even experienced staff may inadvertently bypass key safeguards, and new employees will lack a framework for consistent application of controls.

A written Cash Handling Policy is a cornerstone of sound financial governance. It establishes accountability, ensures compliance with state law, and demonstrates to

taxpayers and oversight bodies that the City has adopted controls to prevent and detect misappropriation or misuse of funds. Implementing a formal policy will also help ensure continuity of operations during staff turnover or transitions.

RECOMMENDATIONS

3.1.1 Develop and adopt a formal Cash Handling and Deposit Policy approved by the City Council. The policy should clearly define roles, responsibilities, and required controls for all employees involved in cash collection, custody, deposit, and reconciliation.

3.1.2 The policy should clearly outline the City's expectations for how cash is handled from receipt through deposit, including a requirement that all funds be deposited within two business days and that dual custody be maintained whenever cash is counted or transported. It should also specify the documentation and receipting standards employees must follow, establish appropriate segregation of duties along with independent verification steps, and define reconciliation timelines and review responsibilities. In addition, the policy should address both physical and electronic security requirements to ensure that all cash, records, and related systems are properly safeguarded.

3.1.3 Require that all departments handling cash or checks adhere to the same policy framework, ensuring uniformity across City operations.

3.1.4 Review the policy at least every three years, or more frequently as operational changes occur, to ensure it remains current with best practices and applicable laws.

3.1.5 Provide mandatory staff training upon adoption and during onboarding for any employee involved in handling or depositing funds.

3.1.6 Make compliance with the policy part of the City's ongoing internal monitoring program and include periodic verification during Finance's quarterly internal control reviews.

OBSERVATION 3.2: INCOMPLETE SEGREGATION OF DUTIES & LACK OF INDEPENDENT DEPOSIT VERIFICATION

Vineyard City's cash-handling and deposit process lacks adequate segregation of duties and independent verification. Key responsibilities such as, collection, custody, deposit preparation, and reconciliation, are primarily performed by the same two employees: the Treasurer and the Finance Director. This concentration of duties eliminates one of the most fundamental safeguards in cash management: independent review of each stage in the process.

During the review, it was observed that deposits are typically prepared and taken to the bank by one individual without a second person verifying the count or accompanying the deposit. In addition, the reconciliation of those deposits is completed by staff directly involved in the original handling of the cash, rather than by someone independent of that function. While both employees are highly trusted and demonstrate diligence in their work, the absence of separation creates a single point of vulnerability that could allow an error or irregularity to go undetected.

This condition appears to have developed as a byproduct of the City's historically small finance staff and the practical need to balance limited resources. However, even in smaller organizations, it is essential that duties be structured to prevent one individual from having control over all stages of a transaction, from receipt to reconciliation. Without independent oversight, controls rely solely on personal integrity and institutional trust rather than verifiable evidence.

Failure to maintain proper segregation of duties exposes the City to increased risk of misappropriation, error, or manipulation of records. It also undermines transparency, as management and auditors cannot obtain independent assurance that all cash received was properly deposited and recorded.

RECOMMENDATIONS

3.2.1 The City should redesign its cash-handling workflow so that key responsibilities are divided among different employees and no single individual controls the entire process from start to finish. At a minimum, one employee should be responsible for receiving and recording incoming cash or checks, a second employee should independently verify the amounts and prepare the bank deposits, and a third person—who is not involved in either of the first two steps—should review the deposits and reconcile them to the accounting records. This separation of duties will provide stronger oversight and reduce the risk of errors or misuse going undetected.

3.2.2 Require dual custody for all deposits. Two employees should count, verify, and sign off on each deposit prior to transport to the bank, maintaining a documented chain of custody.

3.2.3 Implement an Independent Deposit Verification Log in which a non-cash-handling employee reviews the bank deposit slip, verifies the amount against receipts, and initials the verification.

3.2.4 Where full segregation is not operationally feasible, establish compensating controls such as periodic management review, rotation of duties, and unannounced audits of deposit documentation.

3.2.5 Incorporate segregation-of-duties testing into the City's annual internal control review and require the Finance Director to report any exceptions or limitations to management and the Audit Committee.

3.2.6 Provide staff training emphasizing the importance of separation of duties as a preventive control rather than a reflection of trust in individual employees.

OBSERVATION 3.3: DELAYED DEPOSITS AND UNSCHEDULED METAL RECYCLING CASH RECEIPTS

Vineyard City's cash-handling practices do not consistently ensure that cash receipts are deposited within an appropriate timeframe or through controlled and documented procedures. The City does not have a defined deposit timeline, and actual deposit activity varied, with one deposit occurring 11 days after collection. Management attributed this delay to staffing circumstances at the time, during which the employee responsible for making deposits was unavailable and the receipted funds were not deposited until their return. Additionally, cash proceeds from metal recycling activities performed by Parks and Public Works personnel (commonly referred to as "MCR cash") were handled informally, outside of standard receipting procedures and without adequate documentation or dual custody.

Testing and inquiry confirmed that while most operational receipts were deposited intact, delays in deposit preparation and bank delivery could happen. The absence of written policy guidance or monitoring procedures resulted in inconsistent interpretation of how quickly deposits should be made. These delays, combined with informal handling of MCR cash, significantly increase the risk of loss, theft, or misappropriation.

The recycling cash issue, in particular, represents a material gap in the City's internal control framework. These funds were collected and occasionally delivered to Finance without standard documentation, receipts, or verification. Employees reported that such proceeds were typically small and infrequent, but the lack of dual custody or formal tracking leaves no independent evidence that all amounts received were properly recorded and deposited.

These conditions reflect a broader control weakness stemming from the absence of a formal cash-handling policy (Observation 3.1) and incomplete segregation of duties (Observation 3.2). Even though the amounts involved may be modest, the handling of public funds outside established systems erodes transparency and accountability. In the public sector, controls over cash must be designed to prevent even the appearance of impropriety.

RECOMMENDATIONS

3.3.1 Establish and enforce a formal deposit timeline requiring that all receipts of cash or checks be deposited no later than two business days following collection, in accordance with best practices and Utah Code §51-4-2 (Deposit of Public Funds).

3.3.2 Require that all deposits be made intact, meaning the full amount collected is deposited without offsetting expenditures, transfers, or withdrawals.

3.3.3 Document every instance of cash receipt, including source, amount, and date received. All collections should be supported by pre-numbered receipts or electronic records maintained by Finance.

3.3.4 Prohibit employees from informally handling or transporting funds outside of the City's established receipting process. Metal recycling proceeds and similar one-off cash collections should be processed as formal City receipts with supporting documentation and dual verification.

3.3.5 Require dual custody for all cash deposits. At least two employees should verify and sign off on each deposit, maintaining a written or electronic chain of custody.

3.3.6 Conduct periodic internal reviews comparing receipt logs, deposit slips, and bank records to ensure compliance with timeliness and completeness standards.

3.3.7 Provide targeted training to all departments that occasionally handle cash (e.g., Parks, Public Works, Utilities) to reinforce that all collections, regardless of amount or frequency, are subject to the same controls and documentation requirements as standard revenue receipts.

OBSERVATION 3.4: NO SURPRISE OR INDEPENDENT CASH COUNTS

Vineyard City does not conduct periodic, unannounced, or independently performed cash counts of safes, cash drawers, or petty cash funds. Routine cash-handling activities are performed by the same employees responsible for preparing deposits and reconciling accounts, with no secondary verification by someone outside of daily operations. This lack of independent oversight reduces the City's ability to detect irregularities or verify that recorded balances agree to actual cash on hand.

Surprise cash counts are a widely recognized internal control best practice and are specifically recommended by the Utah State Auditor's Office and the Government Finance Officers Association (GFOA) as part of an effective cash-handling program. Independent counts not only detect potential errors or discrepancies but also serve as a deterrent to misappropriation by reinforcing the City's commitment to transparency and accountability.

It is important to note that the City's current cash holdings are immaterial, typically less than $100 in cash on hand, used mainly for making change when necessary, along with a small quantity of commemorative gold coins awarded to winners of the City's annual race.

Although the amounts are minimal, the absence of formal verification or periodic independent counts still represents a procedural gap. As Vineyard continues to grow, both in population and operational scope, the volume and materiality of cash transactions will likely increase. Establishing sound habits and oversight practices now will help the City strengthen its control environment and prevent future risks of fraud, waste, or abuse.

Even for small balances, the lack of documented independent counts limits management's ability to confirm that all funds are present and accounted for.

Implementing this control will reinforce a culture of accountability and demonstrate to the public and oversight bodies that the City maintains a proactive stance toward safeguarding assets.

RECOMMENDATIONS

3.4.1 Establish a formal requirement within the City's Cash Handling Policy for periodic and unannounced cash counts of all safes, petty cash funds, and other locations where cash or coins are maintained.

3.4.2 Assign responsibility for performing these counts to an employee or official who is not involved in daily cash-handling or reconciliation activities. When staffing constraints exist, consider cross-departmental verification or periodic review by the Finance Director or City Manager.

3.4.3 Develop a standardized Cash Count Form documenting the date, participants, location, total amount verified, and any variances identified. Both the reviewer and the custodian should sign and retain the completed form for audit purposes.

3.4.4 Require that all variances be promptly investigated and documented, with results reported to the Finance Director and, if appropriate, the City Council or Audit Committee.

3.4.5 Even though current cash balances are immaterial, adopt this process now as a proactive control. Establishing consistent, well-documented verification practices will strengthen the City's internal control foundation and prepare it for future growth in both operational activity and financial complexity.

3.4.6 Provide training to Finance and departmental staff on the purpose and process of independent cash counts, emphasizing that these reviews protect both employees and the City by ensuring that funds are consistently accounted for and safeguarded.

OBSERVATION 3.5: DEPOSITS NOT INDEPENDENTLY RECONCILED

Cash and check deposits are reconciled monthly, but the process is performed by individuals who are also involved in the collection, custody, and deposit of funds. This lack of independence limits the effectiveness of the reconciliation process as a control designed to detect errors, omissions, or irregularities. A proper reconciliation should be performed by someone who does not handle or have custody of cash, ensuring that recorded deposits match both accounting records and bank statements without bias or conflict of interest.

Testing confirmed that the Treasurer and Finance Director, who prepare and deliver deposits, also reconcile the corresponding activity in the City's accounting records. While the reconciliations are completed diligently, they do not provide independent verification because they are performed by the same individuals responsible for the underlying transactions. Without separation of duties or secondary review, the City's reconciliations function more as an administrative task than as an internal control.

This condition appears to result from limited staffing capacity and the absence of formalized procedures assigning reconciliation responsibilities to someone outside of daily cash-handling activities. However, even in small organizations, independence in the reconciliation process is critical to ensuring integrity of financial reporting. A simple, periodic review by an employee or manager not directly involved in handling funds can provide a significant safeguard against undetected discrepancies or irregularities. Lack of independent reconciliation increases the risk that errors or misstatements could go unnoticed. It also undermines transparency and reduces management's ability to demonstrate that cash-handling processes are subject to oversight and verification.

RECOMMENDATIONS

3.5.1 Assign responsibility for monthly cash and deposit reconciliations to an employee who is not involved in cash collection, deposit preparation, or transport to the bank.

3.5.2 Require that reconciliations be reviewed and signed off by the Finance Director or another designated official independent of daily cash-handling duties, confirming that balances agree between accounting records and bank statements.

3.5.3 Develop a standardized Deposit Reconciliation Form documenting key review steps, including verification of deposit dates, amounts, and account coding.

3.5.4 Implement a monthly or quarterly reconciliation review checklist for management oversight, requiring written confirmation that reconciliations were completed, reviewed, and free of unresolved differences.

3.5.5 Where full segregation of duties is not operationally feasible, establish compensating controls such as periodic peer review, rotation of reconciliation responsibilities, or independent verification by the City Manager or external accountant.

3.5.6 Include independent reconciliation as part of the City's annual internal control self-assessment and report the results to the Audit or Finance Committee.

OBSERVATION 3.6: PRIOR DIRECTOR'S UNSECURED CASH BOX

In December 2023, following the departure of the City's former Finance Director, staff discovered an unsecured cash box containing undeposited funds with no accompanying documentation or custody records. The cash box was located in his office but was not logged, assigned to a custodian, or associated with any official City account. The discovery did not occur as part of this review but was instead identified during the transition of duties following the prior director's separation from City employment, however its deposit was one of our sampled deposit transactions.

Although the funds were immaterial in amount and were subsequently accounted for and deposited by staff, the absence of documentation or formal custody illustrates how informal handling of cash can create confusion and control gaps. Without clear records, the City cannot verify when the funds were received, their source, or their intended purpose. Even small, isolated lapses in cash-handling discipline can undermine confidence in the City's financial oversight processes.

The condition appears to have originated from a lack of formal procedures governing the authorization, documentation, and custody of any cash held on premises. This finding underscores the importance of institutionalizing clear rules and recordkeeping standards to ensure that no funds are maintained outside the City's official accounting and reconciliation framework.

While this incident is historical and does not reflect current practices, it provides a valuable lesson for the City as it strengthens its internal controls. Establishing well-defined custody requirements now will help prevent similar issues during future leadership transitions and reinforce the City's commitment to transparency and accountability.

RECOMMENDATIONS

3.6.1 Incorporate into the City's formal Cash Handling Policy a requirement that all physical cash or coin held on-site must be logged, assigned to a custodian, and secured in a locked safe or cabinet.

3.6.2 Require each cash box, petty cash fund, or change fund to have a documented custodian and authorized dollar limit, with any changes in custody approved by the Finance Director and recorded in City records.

3.6.3 Prohibit employees from maintaining personal or undocumented cash boxes, even for small or temporary purposes. All funds received on behalf of the City must be formally receipted, deposited, or otherwise recorded in the accounting system.

3.6.4 Conduct a one-time verification across all City departments to ensure no other cash, change funds, or similar balances are maintained outside of formal processes. Document and secure all funds accordingly.

3.6.5 Include cash custody verification as part of the City's annual internal control self-assessment, with periodic spot checks to ensure ongoing compliance.

3.6.6 Provide training to staff and department heads emphasizing that all cash, regardless of amount, must be properly documented and safeguarded. Reinforce that formal procedures protect both employees and the City by ensuring a clear chain of accountability.

OBSERVATION 3.7: DUAL-SIGNATURE CONTROL NOT ENFORCED

Vineyard City's check stock includes printed language indicating that all checks exceeding $25,000 require two authorized signatures. This note is intended as an internal reminder of the City's policy, emphasizing the importance of dual approval for large disbursements. However, while reconciling deposits and reviewing bank activity during fieldwork, it was observed that at least one check exceeding the $25,000 threshold cleared the bank with only a single signature.

Although the review of check-signing controls was not included within the formal scope of the agreed-upon procedures engagement, the audit team—consistent with normal professional habit and good practice—remained alert to indicators of potential control weaknesses during reconciliation testing. The single-signature check was considered significant enough to include here as a supplemental observation due to its implications for financial oversight and reliance on non-existent controls.

Discussions with Finance staff indicated that there was a long-standing belief that the bank would automatically reject or flag any check over $25,000 that did not contain two authorized signatures. In reality, the bank has never been instructed or contractually obligated to perform such a review. The printed statement on the check stock serves only as an internal reminder and does not create an enforceable control mechanism at the bank level. Consequently, the City has been relying on a safeguard that does not actually exist.

This misunderstanding introduces risk because management and staff may assume that the dual-signature requirement is externally enforced when, in practice, it depends entirely on internal compliance. When organizations place reliance on controls that are not actually in place, they create a false sense of security and may fail to detect errors or irregularities in a timely manner.

While the transaction in question appeared legitimate, the incident highlights a broader need for the City to periodically verify that critical control expectations are not only defined but also operating as intended—both internally and through any third-party institutions involved in financial processing.

RECOMMENDATIONS

3.7.1 Clarify internally that the printed statement on the City's check stock is not an enforceable bank control and that the bank does not monitor or reject checks based on the number of signatures.

3.7.2 Establish internal procedures ensuring that checks exceeding $25,000 are verified for dual signatures prior to release or mailing.

3.7.3 Review the City's banking resolution, signature cards, and account agreements to ensure they accurately reflect authorized signers and that expectations for dual approval are fully documented as internal policy, not assumed bank responsibility.

3.7.4 Implement a periodic management review of cleared check images for high-value disbursements to verify adherence to the dual-signature policy.

3.7.5 Document any exceptions identified and report them to the Finance Director and City Manager for follow-up and corrective action.

3.7.6 Provide staff training emphasizing that reliance on external enforcement of internal policies—particularly when such enforcement does not exist—creates unnecessary

exposure to fraud, waste, and abuse. Internal controls must always be actively maintained, verified, and independently monitored by the City.

4. UTILITY BILLING AND METER VERIFICATION

The review of Vineyard City's utility billing and meter-related accounts was conducted to evaluate whether charges assessed to City-owned and City-operated facilities were accurate, properly supported, and reasonably aligned with the physical assets and infrastructure to which they relate. The purpose of this work, performed under the Agreed-Upon Procedures (AUP) engagement, was to verify the completeness and correctness of account information—including service locations, asset ownership, rate application, and billing history—for water, sewer, and storm-drain services. The procedures focused on determining whether accounts billed to the City correspond to actual City facilities, whether billing data was internally consistent, and whether usage and rate information appeared reasonable based on available records.

Testing included a detailed review of 41 utility billing accounts, of which 39 contained billing activity during fiscal years 2023 and 2024. Addresses were verified using mapping tools where possible, parcel ownership was confirmed through Utah County property records, and meter locations were matched to known City-owned features such as parks, lift stations, irrigation systems, and ponds. Billing histories were also evaluated—including base charges, usage charges, rate changes, and adjustments—and reconciled to the general ledger without exception.

While no errors or irregularities were identified in the billing calculations or general ledger reconciliation, the procedures revealed several structural and documentation issues affecting the City's ability to maintain a formalized, transparent, and audit-ready utility billing framework. Notably, Vineyard City does not maintain a formal written utility billing policy or fee schedule for the period tested. Several accounts lacked physical addresses, parcel numbers, or identifying documentation, and rate adjustments or late-fee reversals were handled manually without written procedures. In addition, multiple accounts relate to non-parcel municipal infrastructure, requiring additional staff explanations to verify account purpose.

Although the billing tested was internally consistent and no anomalous usage patterns were identified, the absence of formal policy documentation, standardized account descriptions, and structured procedures for adjustments represent opportunities to strengthen the City's internal controls and ensure long-term reliability and transparency in utility billing practices.

The following observations and recommendations are intended to support Vineyard City in establishing a more formal and complete billing governance structure, improving documentation standards, and enhancing clarity regarding City-owned utility accounts.

OBSERVATION 4.1: ABSENCE OF A FORMAL UTILITY BILLING POLICY OR DOCUMENTED FEE SCHEDULE

Vineyard City does not maintain a formal, written utility billing policy or an officially adopted fee schedule governing water, sewer, or storm-drain rates for the period tested. As a result, the procedures performed under the AUP engagement were limited to verifying internal consistency among the billing records provided, rather than confirming the accuracy of charges against an authoritative or publicly approved rate framework. The absence of a published fee schedule also restricts the City's ability to demonstrate transparency to residents and makes it difficult to determine whether rates have changed over time in accordance with established processes or governing body approval.

Without a formal policy document, the City lacks written guidance defining account classifications, billing practices, adjustment procedures, late-fee protocols, service-address documentation requirements, and roles and responsibilities for maintaining utility billing records. This condition relies heavily on institutional knowledge and creates operational vulnerability when staffing changes occur. It also limits the City's ability to ensure consistent treatment of similar accounts, maintain historical continuity, or evaluate whether billing practices align with the City's intended cost-recovery model.

In addition, the absence of an adopted fee schedule creates challenges for both internal and external stakeholders. Residents, staff, and elected officials cannot easily verify current rates, determine the basis for billed charges, or identify when and why rate adjustments occur. Staff indicated that rate changes and late-fee adjustments were manually corrected in the system as needed, but without written criteria or an established approval process, the City cannot demonstrate consistent application or oversight of these changes.

A documented utility billing policy and fee schedule are foundational elements of a transparent and well-controlled billing system. Their absence increases the risk of inconsistent practices, reduces auditability, and limits the City's ability to demonstrate compliance with expected public-sector standards for rate administration and billing governance.

RECOMMENDATIONS

4.1.1 Develop and adopt a formal Utility Billing Policy addressing key elements such as account classifications, documentation standards, adjustment procedures, billing timelines, staff responsibilities, service-address requirements, and approval processes for corrections or reversals. Ensure the policy is reviewed and adopted by City leadership.

4.1.2 Establish and publicly adopt an official fee schedule of water, sewer, and storm-drain rates—including base charges, usage tiers, seasonal factors, and any associated fees—and present it to the governing body for approval. Publish the schedule on the City's website and update it as rates change.

4.1.3 Document rate-change and adjustment procedures defining who may authorize rate modifications or late-fee reversals, what documentation is required, and how changes are recorded in the billing system. Require supervisory approval for all adjustments above established thresholds.

4.1.4 Align billing records with the approved fee schedule, reconcile all active accounts to ensure that base rates, usage rates, and classifications are consistent with the approved structure. Address discrepancies through documented corrections.

4.1.5 Provide staff training for employees involved in utility billing, receipting, or customer service on the requirements of the policy and the application of the fee schedule. Review the policy annually to ensure continued relevance as the City grows and its utility infrastructure expands.

OBSERVATION 4.2: INCOMPLETE OR MISSING SERVICE ADDRESSES AND ASSET IDENTIFICATION

Testing identified that several utility billing accounts lacked complete physical address information, parcel identifiers, or clear asset descriptions. Of the 41 accounts reviewed, only 29 contained service addresses that could be verified using Google Maps, and two accounts contained no address information of any kind. For the remaining accounts, verification required reliance on staff explanations, informal mapping, or visual analysis of infrastructure such as lift stations, irrigation boxes, ponds, or pump stations. In multiple cases, the account descriptions provided in the billing records were too vague to independently confirm the asset's location or purpose without additional guidance from City personnel.

These conditions likely stem from the unique nature of municipal infrastructure—many City-owned utility accounts relate to non-parcel improvements that do not have standard street addresses or county parcel numbers. However, the absence of a consistent method for documenting service locations, assigning identifiable names, or linking accounts to GIS or asset-management records limits the City's ability to maintain long-term continuity, support turnover in staff, or independently verify whether billing activity corresponds to appropriate City facilities. Over time, undocumented account descriptions may cause confusion about the asset being billed, particularly as new staff assume responsibility for managing utility billing or public works operations.

Incomplete address and asset data also reduce auditability. When account purposes cannot be independently verified, testing becomes dependent on staff knowledge rather

than record-based evidence, creating vulnerabilities where institutional memory is the only source of truth. These weaknesses do not suggest inappropriate billing but indicate that clearer documentation is needed to support long-term controls, transparency, and operational readiness.

RECOMMENDATIONS

4.2.1 The City should establish standardized naming conventions and consistent descriptive practices for all utility accounts, especially those without parcel numbers. Each account should use clear identifiers—such as asset type, facility name, GIS coordinates, or nearest cross-streets—so that the location and function of the account can be readily understood.

4.2.2 Every utility account should also include a mappable service location. When a traditional address is unavailable, the City should require alternative documentation such as GPS coordinates, facility maps, or references to asset-management records to ensure that each account can be independently located in the future.

4.2.3 To improve long-term traceability, the City should integrate all utility billing accounts with its asset-management and GIS systems by linking each account to an asset ID or GIS point feature. GIS layers should be updated to reflect all City-owned utility meters and service points so that Finance and Public Works can easily reference and reconcile accounts.

4.2.4 The City should complete a one-time cleanup of all existing utility accounts to correct missing information, standardize descriptions, and confirm that each account has a unique, verifiable identifier tied to a physical location or City asset. This will eliminate inconsistencies and prevent reliance on institutional memory.

4.2.5 Staff should maintain supporting documentation for accounts that do not have parcel numbers, including photos, maps, diagrams, or descriptive summaries of the asset. This information should be stored in a central file—digital or physical—accessible to both Finance and Public Works to ensure continuity and transparency as staff roles change over time.

OBSERVATION 4.3: LIMITED ABILITY TO VERIFY ASSET OWNERSHIP THROUGH PARCEL RECORDS

During testing, only four of the forty-one utility billing accounts could be directly matched to Vineyard City through Utah County parcel ownership records. The remaining accounts did not appear in parcel searches because they correspond to infrastructure assets that do not have traditional parcel designations—such as irrigation boxes, lift stations, pump stations, ponds, parks without defined parcels, or other facilities situated within

easements, rights-of-way, or City-owned open space. As a result, verification of ownership, purpose, and appropriate billing relied heavily on staff knowledge, manual explanations, or visual review of satellite mapping rather than on official property data.

This condition is not unusual for municipal utility systems, but it indicates that the City's utility billing structure is not fully aligned with its asset-management or property-information systems. The absence of parcel-based identifiers or corresponding documentation limits the City's ability to confirm ownership using independent records and increases reliance on staff institutional knowledge, which becomes particularly vulnerable during turnover, system migrations, or periods of rapid growth. It also reduces auditability: external reviewers cannot independently confirm the legitimacy of charges without supplemental explanation or informal mapping.

Because parcel ownership records could not be used to validate most accounts, the City has reduced capacity to independently ensure that all billed accounts represent actual City assets and are appropriately categorized. Over time, without a structured method for linking utility meters to a master asset inventory, the risk increases that certain accounts may become difficult to identify, unnecessarily retained, or overlooked during asset transitions.

Although no exceptions were found during this AUP, strengthening the documentation linking utility meters to City assets will enhance long-term governance, continuity, and transparency of the utility billing process.

RECOMMENDATIONS

4.3.1 The City should create a central inventory that links all utility meters to their corresponding asset records. This database or register should connect each utility account to a specific City-owned asset—regardless of whether the asset is tied to a parcel—and should include fields such as the asset type, GPS coordinates, facility name, department owner, and meter identifier.

4.3.2 The City should coordinate with GIS staff to map all City-owned utility service points by adding each meter location as a GIS feature. This will allow staff to visually confirm ownership and service areas without relying solely on parcel data. The GIS layer should be updated periodically as new infrastructure is added or existing infrastructure is removed or relocated.

4.3.3 The City should establish clear documentation requirements for utility accounts that are not associated with a parcel number. For these infrastructure assets, supplemental materials such as engineering drawings, utility schematics, pump-station identifiers, or Public Works asset cards should be required to ensure accurate identification and long-term traceability.

4.3.4 The City should ensure that its utility billing, asset management, and Public Works records remain consistent by conducting a reconciliation among all three systems. This process should verify that every asset is properly captured, assigned to the correct account, and accurately reflected across the utility billing system, the City's asset database, and the GIS layers.

4.3.5 The City should implement a periodic verification process to confirm ownership of all utility accounts. On an annual basis, staff should review all active accounts to ensure they correspond to existing City assets, remove or correct obsolete or ambiguous accounts, and promptly add new assets as they come online.

OBSERVATION 4.4: MANUAL ADJUSTMENTS AND LATE-FEE REVERSALS WITHOUT WRITTEN PROCEDURES

Testing identified several instances in which late fees were assessed and subsequently reversed, as well as accounts where rate adjustments or corrections were made manually within the billing system. City staff explained that these adjustments were performed when errors were identified or when timing differences in internal processing caused late fees to appear. However, no written procedures exist describing when adjustments should be made, who is authorized to make them, what documentation must accompany the correction, or how supervisory approval should be demonstrated.

Because Vineyard City does not maintain a formal utility billing policy or documented rate schedule, staff rely on informal practices and institutional knowledge to determine when billing errors have occurred and how they should be resolved. While the adjustments tested appeared reasonable and internally consistent, the lack of clear standards increases the potential for inconsistent application, incomplete documentation, or misunderstandings about the appropriate circumstances under which charges may be corrected. It also increases the risk that adjustments could be made without proper oversight, creating vulnerabilities in both transparency and accountability.

In the absence of written criteria, staff must exercise judgment without formal guardrails, and future employees may not apply the same reasoning or historical understanding. As the City continues to grow and billing volumes increase, the absence of structured guidance for resolving billing anomalies may also reduce efficiency and complicate the City's ability to respond to inquiries from residents, auditors, or Council members.

Although no inappropriate adjustments were identified during the AUP, the current process lacks the procedural structure expected in a modern municipal utility environment, where consistent, well-documented billing practices support public confidence and operational reliability.

RECOMMENDATIONS

4.4.1 The City should establish formal procedures for processing billing adjustments and late-fee reversals. These procedures should describe when adjustments are appropriate by distinguishing between clerical errors, timing issues, customer disputes, and system corrections. Clear criteria will help ensure that staff handle corrections consistently and in accordance with an established framework.

4.4.2 The City should define explicit authorization requirements for adjustments, including approval thresholds. For example, all adjustments could require supervisor approval, while adjustments exceeding a certain dollar amount would need department-head approval. Each adjustment should be supported with documentation explaining the reason for the correction.

4.4.3 The City should require standardized documentation for every adjustment by implementing a correction form or electronic workflow that captures the reason for the adjustment, the original and corrected amounts, the date of the change, the employee who initiated it, and supervisory approval. This documentation should be uploaded to or retained within the utility billing system to maintain a complete audit trail.

4.4.4 The City should configure its billing software to track all adjustments with user identity, timestamps, and descriptive information. Maintaining system-logged records of adjustments will strengthen internal controls, support audit readiness, and improve historical transparency.

4.4.5 The City should provide training to relevant staff—including Finance, Utility Billing, and Public Works—on the new adjustment procedures once they are adopted. Training will help ensure consistent and accurate application of the requirements across all departments involved in the billing process.

4.4.6 The City should conduct periodic reviews of billing adjustments and late-fee reversals to monitor activity, identify trends, and ensure compliance with established procedures. These reviews should be performed by supervisory staff or the Finance Director and used to address recurring issues or systemic causes of billing corrections.

OBSERVATION 4.5: STRUCTURAL LIMITATIONS IN BILLING RECORDS FOR NON-PARCEL MUNICIPAL ASSETS

A significant portion of Vineyard City's utility billing accounts relate to municipal infrastructure that does not correspond to a traditional parcel—such as irrigation stations, ponds, lift stations, pump stations, or other facilities situated within rights-of-way or on open-space properties. Because these assets do not have standard street addresses or parcel numbers, the associated utility accounts do not contain common locational or

ownership identifiers. As a result, billing records for these accounts lack the structural information typically used to verify service locations, confirm ownership, or cross-reference accounts to a formal asset registry.

During testing, 31 of the 41 accounts could be reasonably matched to City assets through satellite imagery, staff explanations, or recognition of landmarks. However, these confirmations depended heavily on institutional knowledge rather than standardized documentation. The 8 remaining accounts required additional clarification from staff because the account descriptions were too generic, incomplete, or non-descriptive to independently identify the related asset. This reliance on staff knowledge creates a single-point-of-failure risk and reduces the City's ability to maintain a reliable, auditable record of utility service points over time.

In municipal environments where key facilities are dispersed, underground, or not tied to real property parcels, the absence of a structured framework for documenting account locations and purposes creates long-term challenges. Over time, asset improvements, meter relocations, staff turnover, or system changes may result in accounts becoming difficult to identify or reconcile. Moreover, incomplete records limit the City's ability to evaluate asset-specific costs, manage irrigation and water-use efficiency, or ensure full transparency in utility billing operations.

Although the AUP did not identify any incorrect or inappropriate charges related to these non-parcel accounts, the lack of structured asset linkages indicates a need for a more formalized method to document, track, and maintain billing information for municipal infrastructure that does not fit parcel-based conventions.

RECOMMENDATIONS

4.5.1 The City should develop a standardized documentation framework for all non-parcel utility accounts. This framework should use a consistent template that captures key information such as the asset type, nearest address or cross-street, GPS coordinates, Public Works asset identifier, the service purpose, and photographs or site diagrams. Standardizing these data fields will ensure that each account is uniquely and permanently identifiable.

4.5.2 The City should integrate all non-parcel utility accounts into its GIS and asset-management systems by assigning each utility meter and service point a GIS feature and a corresponding asset ID. This will allow staff to verify account locations visually, rather than relying on narrative descriptions or institutional memory, and will help maintain long-term accuracy.

4.5.3 The City should require Public Works to maintain and annually update documentation for non-parcel assets. As infrastructure changes—whether through

installation of new meters, relocation of equipment, or retirement of existing assets—the associated account records and GIS information should be updated to ensure continued accuracy and completeness.

4.5.4 The City should create a cross-reference table linking utility billing accounts to City assets. This centralized reference file should be accessible to Finance, Public Works, and Utility Billing staff and should include the utility account number, asset ID, physical location documentation, the department responsible for the asset, and the billing services associated with each meter.

4.5.5 The City should periodically validate non-parcel accounts through field verification. Conducting walk-downs or site visits for a sample of accounts will help confirm that utility meters remain active, correctly assigned to the proper asset, and accurately documented within the billing, GIS, and asset-management systems.

OBSERVATION 4.6: LIMITED DOCUMENTATION FOR ACCOUNTS WITHOUT ACTIVITY

Testing identified two utility billing accounts that showed no billing activity during the period examined (FY23–FY24). These accounts lacked sufficient documentation to clearly identify their purpose, expected usage, or whether they were still active service points. Because no charges were assessed during the testing period, staff could not readily determine whether the accounts were intentionally inactive, temporarily suspended, associated with assets no longer in service, or simply maintained in the billing system without ongoing relevance.

The lack of activity on its own does not indicate an error; however, the absence of supporting documentation makes it difficult to determine whether the accounts remain necessary or should be retired. Without clear historical records or standardized asset-linkage documentation, the City must rely on staff recollection or manual investigation to determine whether non-active accounts correspond to physical meters still connected to infrastructure, meters that have been shut off, assets no longer in service, or accounts awaiting future reactivation.

Over time, maintaining accounts with no documentation or unclear purpose increases the risk of billing confusion, unnecessary administrative effort, and potential oversight gaps. In municipalities experiencing rapid growth—such as Vineyard City—service points may change frequently as infrastructure is added, removed, or repurposed. Without a formal process to periodically evaluate inactive accounts, meters may remain in the system long after their operational relevance has ended, creating inefficiencies and reducing the accuracy of the utility billing ledger.

While no inappropriate charges were identified in these inactive accounts, the lack of documentation supporting their purpose or expected status indicates a need for a

structured review and maintenance process for all accounts that exhibit prolonged periods of inactivity.

RECOMMENDATIONS

4.6.1 The City should conduct a structured review of all inactive utility accounts by examining any account with no usage or billing activity in the past 12 to 24 months. This review should determine whether each account should remain active, be temporarily placed on hold, or be formally closed, and the results should be documented in a centralized record for future reference.

4.6.2 The City should require documentation explaining the purpose of any inactive or low-activity utility account. For accounts expected to remain inactive—such as seasonal irrigation meters—supporting notes should be added describing why the account has no current charges, its intended service purpose, and when or under what conditions it will resume activity.

4.6.3 The City should incorporate inactive-account review into its annual utility-billing cycle. As part of the yearly process, staff should review all zero-usage accounts to ensure they still correspond to active infrastructure and current service needs.

4.6.4 The City should align inactive accounts with GIS and asset-management records by cross-referencing each inactive account with Public Works asset lists or GIS entries. This will help confirm that a corresponding physical asset exists and that its operational status is accurately documented.

4.6.5 The City should remove or archive obsolete accounts only after supervisory approval. When an account is determined to be no longer valid, it should be formally deactivated in the billing system, with documentation retained to provide a clear audit trail of the decision.

5. REDEVELOPMENT AGENCY (RDA) PAYMENTS

The review of Vineyard City's Redevelopment Agency (RDA) reimbursement payments was conducted to assess the completeness, clarity, and adequacy of supporting documentation and to evaluate whether current practices provide sufficient oversight of large and complex remediation expenditures. As part of the Agreed-Upon Procedures engagement, the practitioner obtained the listing of RDA reimbursement payments and selected a judgmental sample for detailed review. The sample was drawn from higher-dollar and higher-volume check packets to provide visibility into the documentation supporting significant remediation activities. The procedures focused on the accuracy of billing summaries, the presence and sufficiency of supporting invoices, and the extent to which existing practices demonstrate adequate review and oversight.

The RDA operates under several contracts and development agreements between Vineyard City and Anderson Geneva LLC (AG), the project manager for the remediation effort. The applicable agreements indicate that Vineyard City will reimburse AG for "actual costs incurred" for environmental remediation and related work. However, these agreements do not include labor rate schedules, multiplier provisions, subcontractor billing requirements, documentation standards, or defined expectations for verifying work performed. As a result, the City relies heavily on AG to assemble billing packets, summarize subcontractor charges, and determine what documentation to include.

The AUP procedures focused on reconciling invoice amounts to check totals, confirming that payments were approved by the RDA Director, and reviewing whether required documentation (when provided) supported the stated amounts. While the selected samples generally reconciled mathematically, several structural weaknesses were identified in the supporting documentation, verification practices, and overall governance of the RDA reimbursement process. These weaknesses do not necessarily indicate that the underlying remediation work was not performed, but they do reflect a need for greater oversight, stronger documentation standards, and clearer processes to ensure that public funds are expended with appropriate transparency and accountability.

RECURRING THEMES OBSERVED INCLUDE:

- Lack of Written Procedures: No documented process exists describing what steps City staff should take before approving RDA reimbursement payments.
- Insufficient Supporting Documentation: Multiple packets lacked subcontractor invoices, scale tickets, manifests, or detailed substantiation for billed quantities.
- Unexplained Cost Structures: Some subcontractors applied significant multipliers or billed for labor, equipment, or materials without supporting agreements or contract-based rate authorizations.
- Limited Verification by the City: No documentation was provided showing that Vineyard staff or AG performed independent verification of billed quantities, on-site inspections tied to specific invoices, or third-party engineering reviews.
- Governance Oversight Gaps: RDA Board materials showed high-level updates but no evidence of detailed review or discussion of individual payment packets or supporting documentation.

The following observations and recommendations are intended to help Vineyard City strengthen its control environment, clarify expectations within the RDA reimbursement framework, and establish verification processes that better safeguard public funds and enhance accountability for large development-related expenditures.

OBSERVATION 5.1: ABSENCE OF WRITTEN PROCEDURES OR INTERNAL CONTROLS GOVERNING RDA REIMBURSEMENT REVIEWS

Vineyard City does not have written policies or procedures outlining the steps to be performed when reviewing, approving, or validating RDA reimbursement requests. As a result, City staff do not operate from a consistent set of expectations for how to evaluate invoices, verify supporting documentation, identify missing information, or determine whether billed work aligns with contract terms. The absence of procedural guidance has effectively placed City staff in a reactive position, evaluating documentation only as presented without a structured method for determining sufficiency or completeness.

The applicable development and reimbursement agreements require the City to reimburse Anderson Geneva for "actual costs incurred" in the remediation of the Geneva Steel site. However, these contracts do not define what documentation is required to substantiate "actual costs," nor do they describe acceptable forms of proof, such as subcontractor invoices, timecards, rate schedules, manifests, or weigh tickets. Without internal procedures to fill this gap, Vineyard City does not have a documented basis to determine whether the reimbursement packets submitted by AG meet the standard of completeness necessary for a sound public-sector disbursement process.

This condition creates risk in several ways. First, payments may be approved without adequate supporting documentation, reducing transparency and limiting the City's ability to demonstrate accountability to taxpayers. Second, the absence of structured verification steps increases the likelihood that errors or irregularities may go undetected. Finally, without defined expectations or a consistent review framework, Vineyard City has limited ability to ensure that billing practices remain aligned with public-sector standards or to hold the project manager accountable for providing complete, verifiable information.

While the AUP engagement did not identify specific instances of nonperformance or improper billing, the lack of procedural requirements significantly weakens the City's control environment and increases reliance on the project manager's discretion regarding what to include in billing packets.

RECOMMENDATIONS

5.1.1 The City should develop and adopt a formal RDA Reimbursement Review Procedure that documents the required steps for evaluating reimbursement requests. This procedure should outline the supporting documentation that must be provided, the verification steps for subcontractor invoices, the reconciliation procedures to be performed, the criteria for evaluating quantities, rates, and cost structures, and the standards for determining

whether substantiation is sufficient. It should also describe the approval process and any escalation requirements for complex or high-dollar requests.

5.1.2 The City should define clear documentation requirements for verifying “actual costs incurred” by specifying in writing the types of documentation that must be submitted before any reimbursement is approved. These requirements should include subcontractor invoices, equipment rate sheets, labor-hour summaries, weigh tickets and disposal manifests, receipts for materials, and any formal change-order documentation necessary to justify cost variances.

5.1.3 The City should implement a standardized checklist for reviewing reimbursement packets to ensure that minimum documentation standards are consistently applied. City staff should be required to complete this checklist for every payment, confirming that all required documents are present, that quantities and rates have been verified, and that the packet meets all procedural expectations before being forwarded for approval.

5.1.4 The City should establish clear approval authority and dual-review expectations for RDA reimbursements. Large or complex reimbursement requests should require supervisory approval by senior management—such as the Finance Director or City Manager—to ensure accountability and an additional level of oversight before funds are released.

5.1.5 The City should provide training to all personnel involved in the RDA reimbursement process. This training should cover contractual obligations, required documentation types, red-flag indicators, and the review procedures necessary to ensure that all reimbursement requests are complete, properly supported, and aligned with expectations for public-sector financial oversight.

OBSERVATION 5.2: INSUFFICIENT SUPPORTING DOCUMENTATION IN REIMBURSEMENT PACKETS

The review of sampled RDA reimbursement packets identified multiple instances in which the supporting documentation provided by Anderson Geneva (AG) was incomplete, missing, or insufficiently detailed to substantiate the amounts billed. Several reimbursement packages did not include subcontractor invoices, receipts, manifests, rate sheets, scale tickets, or other documentation necessary to verify that the billed work was performed or that the quantities charged were accurate. In these instances, Vineyard City approved payments based solely on AG’s summary billing sheets or email communications without receiving the corresponding subcontractor-level support.

This condition reflects a systemic documentation gap rather than isolated omissions. Many packets relied heavily on AG-generated summaries, with limited or no third-party invoices to support material transport, disposal charges, equipment use, labor hours, or specialized remediation services. For tonnage-based disposal or transport charges, no

weigh slips or scale tickets were provided. For hourly labor or equipment charges, no rate schedules, time logs, or subcontractor agreements were included. Even where work descriptions were present, they were often general (e.g., “RCRA work,” “CAMU Area,” “Screening,” “Site work”), providing no quantifiable basis to determine whether the amounts billed were reasonable, consistent with contract terms, or reflective of “actual costs incurred” as required under the reimbursement agreement.

The absence of complete supporting documentation makes it difficult for the City to demonstrate a clear audit trail for the public funds being expended. Without subcontractor invoices or other third-party documentation, Vineyard City has no independent means to validate the legitimacy, quantity, or accuracy of billed charges. The current process effectively places full reliance on AG’s internal invoice compilation process and provides no mechanism for the City to substantiate the billed amounts on its own. This increases the City’s exposure to overbilling risk, billing errors, or undocumented scope changes—risks that already exist in large remediation projects and which are heightened where documentation standards are undeveloped or inconsistently applied.

Although the AUP procedures did not identify specific unsupported charges beyond missing documentation, the condition itself represents a significant internal-control weakness. Public-sector reimbursement processes typically require detailed substantiation—particularly for large-dollar, multi-year remediation projects involving numerous subcontractors and cost categories. Without adequate support, the City cannot verify that reimbursements accurately reflect actual expenditures, and it cannot demonstrate financial stewardship to residents, the RDA Board, or external oversight entities.

RECOMMENDATIONS

5.2.1 The City should establish minimum documentation requirements for all reimbursement packets and require Anderson Geneva (AG) to provide a complete set of supporting materials before any request is considered for approval. At a minimum, each packet should include subcontractor invoices, labor-hour logs, equipment rate sheets, material receipts, weigh slips or disposal manifests, copies of subcontractor agreements if they have not already been provided, documentation supporting any multipliers or markups, and explanations for any unusual charges or billing structures. Having these components consistently included will ensure that each reimbursement request is supported with adequate and verifiable detail.

5.2.2 The City should adopt a firm policy of rejecting or holding incomplete reimbursement packets until all required documentation has been provided. Reimbursement requests should not be processed when they contain only summary sheets or email explanations, as such materials do not provide adequate substantiation of costs billed. This approach

reinforces the expectation that complete and appropriate documentation must accompany all requests.

5.2.3 The City should require AG to certify the completeness and accuracy of every reimbursement packet submitted. This certification, signed by a senior AG representative, should affirm that all subcontractor costs billed to the City are actual costs incurred, that the packet includes all documentation required under City standards, and that any rates, multipliers, or markups applied are authorized by contract. This additional layer of accountability will strengthen the City's ability to rely on the information provided.

5.2.4 The City should incorporate clear documentation standards into any future amendments to its RDA agreements or into renegotiated contract terms. These standards should explicitly require complete supporting documentation for all subcontractor charges and clearly identify billing formats that will not be accepted, such as unsupported summaries. Embedding these requirements within contractual language will ensure consistent expectations across all future reimbursement requests.

5.2.5 The City should maintain a centralized repository for all RDA billing support, including invoices, manifests, scale tickets, subcontractor documentation, and related materials. This repository should be structured and indexed in a way that allows Finance, the RDA Director, and City leadership to locate and review supporting information quickly and consistently, ensuring transparency and facilitating future audits or independent reviews.

OBSERVATION 5.3: UNSUBSTANTIATED LABOR MULTIPLIERS AND LACK OF RATE AUTHORIZATION

The review of sampled RDA reimbursement packets identified subcontractor billings that applied significant labor multipliers—approximately 270% in several instances—without any supporting explanation, contract clause, rate schedule, or cost-justification document. These multipliers were embedded directly in subcontractor invoice summaries and were not accompanied by documentation clarifying how they were calculated, what they were intended to represent, or whether they reflected allowable billing practices under the agreements between Vineyard City and Anderson Geneva (AG).

The governing development and reimbursement agreements reviewed do not define authorized labor rates, markups, multipliers, administrative add-ons, or overhead charges. The agreements state only that Vineyard City will reimburse AG for “actual costs incurred” in performance of the remediation work. However, the term “actual cost” is not further defined, and the contracts do not specifically authorize AG or its subcontractors to apply administrative surcharges, cost multipliers, or generalized markups to time-and-materials charges. As a result, Vineyard City currently has no contractual basis to determine whether such charges are appropriate, reasonable, or allowable, and no mechanism to challenge or verify them.

Because the City does not request or receive subcontractor agreements, negotiated rate sheets, or documentation of approved billing structures, these multipliers are passed directly through AG's summary invoices to Vineyard City without review or verification. Under the current process, Vineyard is reliant entirely on AG's internal procurement and subcontractor oversight practices—even though the City, as steward of public funds, bears ultimate responsibility for ensuring that reimbursed costs are legitimate and properly supported.

The presence of large, unexplained multipliers represents a notable risk, particularly in the context of a multi-year remediation project involving millions of dollars in pass-through charges. Without clear rate authorization or supporting detail, the City cannot demonstrate that such costs reflect actual expenditures, nor can it assess whether similar work could be obtained at lower or more transparent rates. This condition does not, by itself, indicate impropriety; however, it does indicate a significant lack of visibility into underlying subcontractor billing practices and creates potential exposure to overbilling or inconsistent rate application.

RECOMMENDATIONS

5.3.1 The City should require Anderson Geneva to provide subcontractor rate schedules and copies of all relevant subcontractor agreements. These documents should include labor rates, equipment rates, overhead or markup provisions, and any other cost terms that establish the baseline for evaluating whether billed charges are appropriate, authorized, and consistent with contractual expectations.

5.3.2 The City should adopt a policy prohibiting reimbursement of undocumented multipliers or markups. Vineyard City should only approve charges supported by contractually authorized rates, published subcontractor rate sheets, or clearly documented cost structures. Any multiplier or markup that cannot be tied to written terms or verified cost calculations should be rejected until adequate substantiation is provided.

5.3.3 The City should define the meaning of "actual costs incurred" in future agreements or amendments. This clarification should specify whether markups are permissible and, if so, set maximum allowable multipliers or define acceptable indirect-cost allocations. Such definitions would prevent uncontrolled pass-through billing and eliminate ambiguity that can lead to excessive or unsupported charges.

5.3.4 The City should require Anderson Geneva to certify the accuracy and contractual basis of all subcontractor charges included in each reimbursement packet. This certification should affirm that the charges represent actual costs incurred, that any

multipliers or overhead components are authorized by contract, and that no unsupported markups have been included in the billing.

5.3.5 The City should conduct a targeted review of subcontractor billing practices for high-dollar or frequently used subcontractors by requiring AG to provide a one-time documentation package containing rate justifications, underlying cost structures, overhead or profit components, and explanations of how multipliers are calculated. This information will establish a foundation for future reasonableness checks and improve oversight of recurring subcontractor charges.

5.3.6 The City should incorporate explicit multiplier and markup limitations into future RDA agreements or amended contracts. Including defined caps on overhead, multipliers, and administrative charges will strengthen cost-control protections and ensure that the City retains the ability to manage and evaluate reimbursement requests effectively.

OBSERVATION 5.4: INADEQUATE DETAIL IN SUBCONTRACTOR BILLING DESCRIPTIONS AND QUANTITIES

The review of RDA reimbursement packets identified multiple subcontractor invoices that contained only general or high-level descriptions of work performed, without the level of detail necessary to understand the scope, quantities, or basis of the charges billed. In several instances, work was described using broad terms such as “USS Geneva RCRA,” “Biosparge Design,” “Screening – CAMU Area,” “Hauling,” or “Disposal,” with no accompanying explanation of what specific tasks were performed, the measurable quantities involved, or how the billed amount was calculated.

In cases where charges were based on unit quantities—such as tonnage for waste removal, transport of material from remediation areas, or disposal at designated facilities—the invoices did not include scale tickets, weigh slips, disposal confirmations, or any third-party documentation validating the quantities billed. Summary sheets frequently listed tons hauled or loads transported, but without supporting documentation, Vineyard City could not independently verify the accuracy of the reported quantities.

Similarly, invoices tied to hourly labor or equipment charges did not consistently include timecards, hourly logs, equipment rate sheets, or other supporting materials that would allow the City to confirm that billed hours reflected actual time worked. For specialized remediation services, subcontractors often provided technical descriptions but did not include details such as quantity of material treated, duration of operation, sampling logs, or field reports.

These limitations were particularly evident in certain high-dollar invoice packets which contained extensive line-item summaries but lacked the underlying documentation for many of the billed activities. Without supporting detail, the City cannot verify that the work

described aligns with the amount billed or that the billed quantities accurately reflect the scope of remediation performed.

While the documentation provided was internally consistent within AG's summaries, the lack of detail significantly reduces the City's ability to perform a meaningful review of billed work, assess the reasonableness of costs, or demonstrate to taxpayers and oversight bodies that public funds were spent based on verifiable evidence. This condition increases Vineyard City's exposure to potential errors, overbilling, or unintentional duplication of charges—risks that are inherent in complex, multi-year remediation projects and require robust documentation to mitigate.

RECOMMENDATIONS

5.4.1 The City should require subcontractors to provide detailed work descriptions in their invoices, ensuring that each charge includes enough specificity for an independent reviewer to understand what work was performed, where it occurred, the measurable quantities involved, and how the billed amounts were calculated. General or vague descriptions should not be accepted as sufficient for reimbursement.

5.4.2 The City should require third-party documentation to support any quantity-based charges. For invoices that bill based on units such as tons, loads, cubic yards, or labor hours, subcontractors should be required to provide supporting documents such as scale tickets, weigh slips, landfill or disposal certificates, haul logs, equipment usage logs, or timecards and hourly summaries to substantiate the quantities billed.

5.4.3 The City should adopt standardized documentation templates for subcontractors that define the minimum level of detail required in each invoice. These templates should include fields for activity descriptions, dates and locations of work performed, material quantities, labor hours, equipment used, and applicable rates. Subcontractors should be required to follow these standards uniformly to ensure consistency and completeness.

5.4.4 The City should require Anderson Geneva to submit field-level verification for high-dollar or technically specialized tasks. For services such as biosparging, RCRA remediation, or other complex environmental or engineering activities, AG should provide supporting documentation including sampling logs, daily field reports, operational run logs, and inspection reports to validate that the work billed was performed as described.

5.4.5 The City should establish escalation procedures for invoices that lack adequate detail. When subcontractor invoices do not contain sufficient information to support the amounts billed, AG should be required to obtain clarification from the subcontractor,

provide supplemental documentation, or revise the invoice before the City processes the reimbursement request.

5.4.6 The City should incorporate detailed documentation requirements into any future amendments to its RDA agreements. If agreements are updated or renegotiated, they should include explicit language defining the documentation required for work descriptions, quantity validation, and field-level verification to ensure that future reimbursements are consistently supported.

OBSERVATION 5.5: RELIANCE ON EMAIL SUMMARIES INSTEAD OF THIRD-PARTY DOCUMENTATION

Across several RDA reimbursement packets reviewed, email messages from Anderson Geneva (AG) staff were included as the primary—or, in some cases, the only—supporting documentation for billed amounts. These emails often summarized subcontractor work, referenced quantities, or provided explanations for charges in lieu of formal invoices, manifests, scale tickets, or other objective third-party documentation. In some instances, no subcontractor invoice was included at all; instead, Vineyard City relied on informal email statements describing the cost or confirming the billed amount.

While email correspondence can serve as contextual information, it does not constitute adequate support for public-sector reimbursement of large, multi-year remediation expenditures. Email summaries lack the verification, permanence, and audit trail inherent in formal billing documents. They are also susceptible to misinterpretation, inconsistent formatting, missing attachments, or unrecorded revisions. Additionally, emails do not provide evidence that the subcontractor actually billed AG at the stated amount, nor do they demonstrate that the work described was completed as presented.

By accepting email narratives in place of formal documentation, the City effectively relies on AG's internal communication methods rather than its accounting records or subcontractor billing systems. This substantially diminishes the City's ability to independently verify the accuracy, completeness, and legitimacy of the expenses being reimbursed. Reliance on informal documentation also limits the City's capacity to defend these expenditures to external oversight bodies, auditors, or members of the public seeking transparency regarding the use of redevelopment funds.

While the AUP procedures did not identify specific improper charges within these email-supported transactions, the condition reflects a structural vulnerability in the City's review process: reimbursement requests are approved without the level of documentation typically required for high-value, public-funded remediation work. Without a shift toward requiring formal third-party invoices and supporting documents, the City remains exposed to the risk of inaccurate billing, unsupported cost escalation, and diminished ability to demonstrate stewardship over taxpayer funds.

RECOMMENDATIONS

5.5.1 The City should require formal subcontractor invoices for all billed amounts, making it clear that email correspondence is not acceptable as the primary support for reimbursement. Every charge should be backed by proper documentation such as subcontractor invoices, rate sheets or contracts, labor logs, equipment logs, haul logs, or other third-party receipts and supporting documents that substantiate the costs submitted.

5.5.2 The City should treat email correspondence as supplemental rather than primary documentation. Emails may accompany formal invoices to clarify unusual charges or provide context, but they should never be used in place of the official documentation necessary to validate and support reimbursed amounts.

5.5.3 The City should require Anderson Geneva to certify that all subcontractor charges included in each reimbursement request are based on actual invoices. This certification should confirm that the billed amounts correspond exactly to the subcontractor's invoiced charges and are not derived from estimates, summaries, or unsupported email statements.

5.5.4 The City should establish clear documentation sufficiency standards that explicitly prohibit the use of informal billing support as the basis for reimbursement. These standards should require complete and formal documentation for each subcontractor charge, with emails used only for clarification and not as stand-alone evidence.

5.5.5 The City should adopt a policy of returning or holding reimbursement packets that do not include formal third-party documentation. Any packet lacking complete supporting materials should be considered incomplete and should not be processed until all required documentation has been received and verified.

5.5.6 The City should incorporate documentation requirements into future RDA agreements or amended contracts to ensure long-term consistency. These agreements should specify that informal communications—such as emails, text messages, or similar correspondence—cannot serve as primary support for reimbursed costs, reinforcing the expectation of complete and formal documentation for all billed charges.

OBSERVATION 5.6: LIMITED DOCUMENTATION SUPPORTING CHANGE-ORDER COSTS AND COST ESCALATIONS

The review of selected RDA reimbursement packets identified several instances where billed amounts exceeded the original projected cost estimates or appeared to include change-order-related work, yet the packets contained little to no documentation explaining the reasons for the cost increases. Although summary sheets prepared by Anderson Geneva (AG) reflected total amounts due, they did not include supporting schedules, cost analyses, updated estimates, field reports, or written explanations describing why the project costs increased or what additional work was performed. In some cases, the increases appeared substantial relative to previous billing patterns, but no documentation was provided to show whether the increases resulted from expanded scope, unforeseen site conditions, subcontractor rate changes, or other project-related factors.

The agreements between Vineyard City and AG do not include a defined process for reviewing or approving cost increases associated with project changes. As a result, Vineyard City receives only the financial impact of the change—i.e., a higher reimbursement request—without visibility into the underlying cause or justification. During testing, no documentation was provided showing that the City undertook any form of analytical review, comparison to prior work, variance analysis, or independent evaluation of the billed increases. Likewise, the practitioner was not provided with documentation showing how AG evaluated subcontractor cost increases internally or how change-related amounts were validated against subcontractor invoices, field conditions, or updated project plans.

Without supporting documentation, Vineyard City is unable to assess whether cost escalations are reasonable or reflective of actual work performed. This lack of transparency impedes the City's ability to exercise effective oversight and contributes to the risk that cost overages—whether warranted or not—may go unexamined. Additionally, in the absence of change-order documentation, Vineyard cannot determine whether cost increases stem from inefficiencies, scope creep, billing errors, unanticipated work, or subcontractor-driven factors. While the AUP procedures did not identify specific instances of improper billing related to change-order work, the lack of documentation weakens the City's review process and limits its ability to demonstrate financial stewardship over multi-year remediation expenditures.

RECOMMENDATIONS

5.6.1 Vineyard City should require Anderson Geneva to provide written explanations whenever costs increase or deviate from previously projected amounts. For any

reimbursement request that exceeds historical patterns or differs materially from cost expectations, the packet should include a narrative explaining the reason for the change, a description of any additional tasks performed, subcontractor-level documentation supporting the higher charges, and a clear justification for the variance. This ensures that the City has sufficient context to evaluate whether the increase is reasonable and supported by actual work performed.

5.6.2 The City should establish a formal change-order documentation process to govern any work that differs from the original project scope. Under this structure, any scope changes would require a written change-order request, updated cost estimates, supervisory approval from the City, and supporting subcontractor documentation. No escalated costs or additional charges should be considered eligible for reimbursement unless the change order has been properly documented and approved in advance.

5.6.3 As part of its review process, the City should incorporate a structured variance analysis to help identify unusual or unexplained cost fluctuations. This review should compare the reimbursed amounts to prior billing patterns, expected unit costs, quantities previously invoiced, and known project milestones. Any variances that appear inconsistent with expected project activity should be flagged, investigated, and resolved before approval is granted.

5.6.4 Vineyard City should require Anderson Geneva to provide subcontractor-level detail for all work associated with changes in scope or cost. This should include updated rate sheets, revised descriptions of the work performed, detailed time and materials breakdowns, and relevant field reports documenting the additional tasks. These materials will help the City confirm that the costs billed are appropriate, justified, and aligned with the actual work performed in the field.

5.6.5 If Vineyard City updates or renegotiates its RDA agreements, it should incorporate clear contract language establishing change-order requirements. This should include written City approval before any change in scope is undertaken, required subcontractor documentation supporting change-related work, and defined thresholds identifying when City authorization is needed. Embedding these requirements in future agreements will help ensure that all changes are transparent, supported, and subject to proper oversight.

OBSERVATION 5.7: NO EVIDENCE OF INDEPENDENT VERIFICATION OF WORK PERFORMED

The review of Vineyard City's RDA reimbursement process found no documentation indicating that the City—or Anderson Geneva (AG), acting as the project manager—performed independent verification of billed quantities, field conditions, or work completion before approving reimbursement payments. The reimbursement packets reviewed did not include field inspection reports, site-verification photographs, engineering confirmations, sampling logs, or supervisory attestations linking invoiced work

to actual field activities. For quantity-based charges, such as tonnage hauled, soil removal, waste transport, or equipment use, no documentation was provided to show that the City or AG verified the quantities billed through on-site measurement, weigh-ticket validation, or third-party confirmation.

The development and reimbursement agreements between Vineyard City and AG require the City to reimburse AG for "actual costs incurred," yet they do not describe how the City should confirm that the work invoiced has been completed or that the quantities billed are reasonable. In practice, Vineyard City has relied almost entirely on AG's summary invoices, without supporting documentation demonstrating that independent verification steps were performed at any point in the process. During AUP testing, no records were provided showing that AG performed or documented internal verification of subcontractor work, nor were records provided showing City involvement in reviewing or validating completed work.

Interviews and correspondence further indicated that the City has not implemented a structured oversight mechanism—such as periodic field inspections tied to reimbursement requests, quantity sampling procedures, or engineering review—to confirm the nature, extent, or accuracy of work performed. While AG may conduct internal project oversight as part of their own management process, no documentation of such oversight was made available for review. Likewise, no evidence was provided to suggest that Vineyard City receives routine field-level reporting that links billed work to observable progress or measurable site activity.

Without verification procedures, there is an increased risk that billed quantities may not reflect actual work performed or may include errors that remain undetected. Independent verification is particularly important for environmental cleanup and remediation projects, where costs are highly variable, subcontractor work is specialized, and quantities can fluctuate significantly based on site conditions. While the AUP engagement did not identify any specific improper billing, the lack of independent verification represents a significant control gap that limits the City's ability to ensure that public funds are being used appropriately and in accordance with the intent of the RDA program.

RECOMMENDATIONS

5.7.1 Vineyard City should establish a formal verification process requiring Anderson Geneva to demonstrate that all billed work has been independently confirmed. This verification should include field inspection notes, daily or weekly field reports, photographs directly tied to the items being invoiced, and documentation showing that quantities billed align with observable site conditions.

5.7.2 The City should implement periodic City-led field inspections that correspond directly to reimbursement packets. These inspections—performed either by City staff or a

qualified third-party engineer—should validate that the work identified in the billing packet has actually been completed prior to payment approval.

5.7.3 For any charges based on measurable quantities such as tons removed, cubic yards transported, or equipment-operation hours, the City should require third-party documentation that substantiates these amounts. Acceptable documentation includes weigh tickets, disposal manifests, haul logs, GPS-based load tracking, or equivalent verification records.

5.7.4 The City should incorporate independent engineering review into the reimbursement process for high-dollar invoices, technically specialized remediation work, or other complex project tasks. A qualified engineering consultant or subject-matter expert engaged by the City should review these invoices and provide written confirmation of the accuracy and completeness of the billing support.

5.7.5 The City should require Anderson Geneva to certify that all billed work has been completed and independently verified. This certification should accompany every reimbursement submission and affirm that the work has been performed, that the quantities billed are accurate, and that the charges correspond to subcontractor documentation.

5.7.6 If Vineyard City amends its current RDA agreements or enters into new development agreements, the City should include explicit provisions requiring verification of billed work. These provisions should address the need for field inspections, engineering oversight, documentation of completed work, and periodic progress reporting tied directly to reimbursement requests.

OBSERVATION 5.8: PARTIAL RESPONSES TO WRITTEN INQUIRIES AND NEED FOR MORE STRUCTURED OVERSIGHT AND COMMUNICATION CHANNELS

During the course of the AUP engagement, the practitioner submitted written inquiries to the RDA Director seeking clarification on general billing practices as well as invoice-specific questions related to quantities, rates, multipliers, supporting documentation, and verification procedures. Management provided written responses describing the City's current reimbursement process and explaining that Vineyard is not a party to Anderson Geneva's (AG) subcontractor agreements. Under the City's longstanding practice, Vineyard has generally reimbursed AG based on the documentation AG provides, without requesting supplementary verification of underlying contracts, labor rates, quantities, or field-level validation procedures.

While this approach reflects management's position to date, the practitioner notes that the magnitude and complexity of the remediation expenditures—totaling several million dollars over time—make it reasonable and appropriate for the City to request additional

clarification or verification when needed. Seeking such information does not imply wrongdoing; rather, it represents sound financial stewardship and a prudent safeguard when public funds are involved. AG's response to such requests would also help clarify how onsite verification and subcontractor oversight are being conducted and documented.

Management's general responses were helpful in understanding the overall reimbursement framework; however, several invoice-specific inquiries remain outstanding as of the date of this report, and certain supporting documents requested were not available for review. Because Vineyard does not have direct visibility into AG's subcontractor agreements, internal rate structures, or onsite validation activities, complete and timely written responses are essential to maintaining transparency and ensuring that reimbursement decisions are supported by clear and reliable documentation.

The AUP did not identify evidence of improper activity associated with these communication gaps; however, the condition highlights the need for more structured, consistent, and documented communication processes between Vineyard City and AG regarding reimbursement oversight.

RECOMMENDATIONS

5.8.1 Establish a formal communication protocol requiring that reimbursement-related inquiries be acknowledged and addressed within a defined timeframe (e.g., ten business days), helping ensure timely and predictable information flow.

5.8.2 Require that all clarifications and responses be documented in writing—whether by email or memo—so that explanations and supporting materials are preserved in an auditable record.

5.8.3 Implement a centralized tracking log for all reimbursement-related inquiries, documenting the date submitted, topic, responsible parties, expected response date, and date resolved.

5.8.4 Request supplemental documentation from Anderson Geneva or the RDA Director when clarification is needed for specific invoices, quantities, rates, or billing structures. Given the scale of the expenditures, such requests are reasonable and appropriate to ensure transparency and to demonstrate effective stewardship of public funds.

5.8.5 Incorporate communication, documentation, and response expectations into future RDA agreements or amendments so that timely written communication and cooperation in resolving reimbursement questions become formal obligations rather than informal practices.

OBSERVATION 5.9: RDA BOARD OVERSIGHT FOCUSED ON HIGH-LEVEL UPDATES RATHER THAN TRANSACTION-LEVEL REVIEW

A review of Vineyard City RDA Board meeting minutes and available audio/video recordings for fiscal years 2023 and 2024 indicates that the Board received periodic updates regarding general RDA activities, project progress, and overall development timelines. These briefings provided broad situational awareness but did not include transaction-level discussion of reimbursement requests, subcontractor billings, cost escalations, or documentation supporting individual payments submitted by Anderson Geneva (AG). No evidence was provided showing that the Board routinely reviewed reimbursement packets, supporting documentation, or detailed expenditure summaries prior to authorizing payments.

While Utah law does not require RDA Boards to conduct invoice-level reviews, strong governance practices in public redevelopment projects typically include oversight mechanisms that allow the governing body to meaningfully assess whether reimbursed costs are supported, reasonable, and aligned with project objectives. For a project as large and technically complex as the Geneva remediation effort, high-level updates—without accompanying financial detail—are insufficient to provide comprehensive oversight of public funds being expended under the reimbursement framework.

The absence of structured financial review at the Board level effectively places full oversight responsibility in the hands of staff without clear documentation of Board engagement in reviewing, questioning, or validating RDA expenditures. This condition does not imply a lack of interest or intent by the Board; rather, it reflects a process design in which the information needed to exercise meaningful oversight is not consistently presented. As a result, Board members may not be fully aware of the documentation gaps, billing structures, or cost-verification weaknesses identified in the AUP, nor are they positioned to ask informed questions that could strengthen accountability and transparency in the reimbursement process.

Strengthening governance oversight would enhance the City's ability to manage redevelopment expenditures, respond to stakeholder inquiries, and ensure that public resources are used appropriately and in accordance with policy expectations. Improved oversight processes would also help institutionalize controls that remain in place even as staff or Board membership changes over time.

RECOMMENDATIONS

5.9.1 Vineyard City should provide the RDA Board with regular, structured financial reporting that summarizes all reimbursement requests submitted during the period, highlights key cost drivers, identifies variances from projections, outlines high-dollar

subcontractor charges, and includes metrics showing whether documentation submitted with each packet was complete. These recurring reports would give the Board clearer visibility into spending patterns and strengthen oversight of the reimbursement process.

5.9.2 For high-dollar or complex reimbursement packets, City management should present a briefing to the RDA Board that explains the nature of the work billed, the total amount requested, the completeness and sufficiency of supporting documentation, and any anomalies or unresolved questions noted during internal review. Providing this level of summary information will help ensure that the Board is appropriately informed when reviewing significant reimbursement activity.

5.9.3 Vineyard City should adopt a formal oversight protocol describing the level of review expected from the RDA Board, the information that must be presented to them, the frequency of updates, and the thresholds at which the Board is required to provide explicit approval. Establishing these expectations in writing will clarify governance roles and promote consistent oversight of RDA expenditures.

5.9.4 The City should incorporate RDA-related governance matters into its annual financial or audit planning cycle so that independent auditors, internal reviewers, or City leadership revisit oversight practices each year. This recurring evaluation will help assess improvements, identify emerging risks, and ensure that the reimbursement process continues to evolve and strengthen over time.

5.9.5 If Vineyard City updates or renegotiates its development agreements or reimbursement frameworks, the City should incorporate explicit expectations for Board-level documentation, communication, and oversight into the contract language. Embedding these requirements in future agreements will help ensure long-term transparency and reinforce the Board's role in monitoring public expenditures.

6. FOOD EXPENSES AND EMPLOYEE RECOGNITION

The review of Vineyard City's food and hospitality expenditures was conducted to evaluate whether internal controls, policies, and documentation practices ensure that meal-related purchases are appropriate, properly supported, and compliant with the principles of sound public financial management. The objective was to assess whether expenditures made for food, refreshments, or related hospitality purposes align with legitimate business needs, are transparent to the public, and demonstrate accountability in the use of taxpayer funds.

Testing and analysis indicated that Vineyard City does not currently have a formal policy governing food expenditures. In the absence of defined standards, employees lack guidance regarding when it is permissible to use public funds for meals, what levels of expenditure are reasonable, and what documentation or approvals are required. As a

result, practices vary across departments, and decisions often depend on individual discretion rather than a consistent, organization-wide framework.

Several key weaknesses were identified in the administration of food expenditures, including the absence of a formal policy, missing receipts, insufficient business-purpose explanations, and a lack of supervisory authorization before and after purchases. In addition, sales tax was paid in multiple instances despite the City's tax-exempt status, and gift cards distributed for community events and employee programs were not consistently supported with signed documentation acknowledging receipt.

RECURRING THEMES IDENTIFIED ACROSS THE REVIEW INCLUDE:

- Policy and Governance: No established policy defines when food purchases are appropriate or how they should be approved and documented.
- Documentation and Transparency: Receipts, recipient acknowledgments, and clear statements of business purpose were frequently missing or incomplete.
- Authorization and Oversight: No pre-approval process exists, and post-purchase approvals were inconsistent or absent in several cases.
- Compliance and Stewardship: Sales tax was improperly paid in several transactions, and practices rely on informal trust rather than structured oversight.

Although most transactions reviewed appeared reasonable in amount and purpose, the lack of formal standards, documentation, and oversight mechanisms exposes the City to reputational and compliance risks. Establishing clear policy guidance will protect employees from inadvertent violations, enhance accountability to residents, and ensure that all expenditures for food and hospitality are consistent with the City's mission and public expectations of transparency.

The following observations and recommendations are intended to provide a framework for developing effective policies, controls, and training to strengthen the City's governance of food-related expenditures.

OBSERVATION 6.1: NO POLICY OR FRAMEWORK GOVERNING FOOD EXPENDITURES

Vineyard City currently has no formal policy establishing when the use of public funds for food purchases is permissible. In the absence of written guidance, employees lack a consistent framework to determine whether providing or consuming food at City expense is allowable or appropriate. No monetary thresholds, approval requirements, or

documentation standards exist, and practices appear to depend largely on custom or supervisor discretion.

The absence of a governing policy increases the likelihood of inconsistent application of judgment and exposes the City to perceptions of misuse, even when expenditures are well-intentioned. Without clear expectations, employees have no benchmark for determining the reasonableness of meal costs, appropriate occasions for providing refreshments, or required documentation to support such purchases.
Formal policy guidance is essential to protect employees from criticism and the City from reputational or fiscal risk. A well-designed policy will also align practices with the principles of stewardship, transparency, and accountability in the use of public funds.

RECOMMENDATIONS

6.1.1 Vineyard City should develop and adopt a comprehensive Food and Gift Expenditure Policy that clearly defines when food, beverage, hospitality, or gift-related purchases may be made using City funds. The policy should establish the underlying purpose of such expenditures, emphasize stewardship of public resources, and articulate that these costs must directly relate to carrying out official City business, community engagement, or authorized employee recognition activities. Creating formal guidance will help ensure consistency, prevent ambiguity, and protect the City from the appearance of inappropriate spending.

6.1.2 The policy should clearly define the allowable circumstances under which food or gift expenditures may occur, such as official City meetings that extend through standard meal hours, community outreach activities where providing refreshments enhances resident participation, formal employee recognition events, or volunteer appreciation activities that have been expressly approved in advance. The policy should also require supervisory or department-head preauthorization for any planned food or gift-related purchases, with documentation retained showing the reason for the event, the anticipated participants, and the justification for City funding. Requiring preauthorization will help ensure expenditures are appropriate, necessary, and aligned with the City’s operational and community-serving objectives.

6.1.3 To promote fiscal responsibility and consistency with public-sector norms, the policy should establish reasonable cost thresholds per person or per event. These limits may be informed by State of Utah per diem rates, comparable municipal policies, or industry standards for government-sponsored events. The policy should also require justification for any exceptions and require approval at a higher supervisory or administrative level before processing reimbursement or payment. Defining cost expectations helps prevent overspending and provides staff with clear parameters to follow.

6.1.4 The policy should require employees to maintain detailed receipts for all food or gift purchases, along with participant lists when practical and a clear statement of business purpose explaining why the expenditure was necessary for City operations. Receipts should itemize all goods purchased rather than summarizing totals, and staff should ensure gratuity amounts are reasonable. These documentation requirements will create a complete audit trail and ensure accountability for all public expenditures.

6.1.5 Once adopted, the policy should be incorporated into City-wide employee training, particularly for purchasing cardholders and supervisors responsible for reviewing expenses. The City should require written acknowledgment from all staff with purchasing authority that they have received, read, and understand the policy. Regular refresher training or periodic reminders should also be provided to ensure continued compliance. Integrating the policy into training helps ensure that expectations are clearly communicated and consistently applied across departments.

OBSERVATION 6.2: INSUFFICIENT DOCUMENTATION AND MISSING RECEIPTS

Testing identified several instances in which required documentation was incomplete or missing. Three of forty transactions lacked supporting receipts, and multiple transactions involving the purchase of gift cards had no signed acknowledgment or record showing who received the cards. In the absence of receipts or redemption records, there is no verifiable audit trail confirming the purpose or legitimacy of the expenditure.

These conditions occurred because the City has not formally required receipts for all food-related expenditures or established accountability standards for gift card distribution. Although dollar amounts were not large, the lack of documentation creates risk of misuse or misinterpretation and prevents Finance from verifying compliance with purchasing rules.

RECOMMENDATIONS

6.2.1 The City should require that all food- and gift-related purchases include itemized receipts uploaded to Spend Clarity at the time the transaction is submitted for review. Itemized receipts provide a clear breakdown of what was purchased, the quantities involved, and the total cost, which allows supervisors to verify that expenditures align with the approved purpose and meet policy requirements. Uploading the documentation promptly also ensures that reviewers have the necessary information when approving transactions and reduces the risk of missing or incomplete records.

6.2.2 The City should establish a Gift Card Log documenting the distribution of all gift cards purchased with public funds. At a minimum, the log should include the recipient’s name, the date the card was issued, the card’s value, the program or purpose for which it was

given, and the signatures of both the issuing employee and the recipient acknowledging the transfer. Maintaining this log will create a clear audit trail, prevent duplicate issuance, and demonstrate that gift cards are used strictly for authorized City programs or recognition efforts.

6.2.3 The City should disallow reimbursement or P-Card approval for any food or hospitality expenditure that lacks a receipt or sufficient supporting documentation. If employees are unable to provide required documentation, the purchase should be considered non-reimbursable and may result in the employee being personally responsible for the cost. Establishing and enforcing this expectation will reinforce the importance of documentation, promote consistent treatment of expenditures, and reduce the risk of unverified or inappropriate spending.

6.2.4 The City should periodically review uploaded documentation in Spend Clarity to ensure that receipts are complete, legible, and properly support the purchases made. During these reviews, staff should follow up on missing or unclear documentation, request corrected uploads when necessary, and document any repeated issues for potential further action. Conducting periodic monitoring will reinforce compliance, allow early identification of training needs, and demonstrate the City's commitment to transparency and accountability.

6.2.5 The City should reinforce through employee training that complete and accurate documentation protects both the employee and the organization by demonstrating the legitimate public purpose of expenditures. Emphasizing this message in training sessions, onboarding materials, and periodic reminders will help set clear expectations, encourage consistent documentation practices, and reduce misunderstandings about the level of detail required for compliance with City policy.

OBSERVATION 6.3: INADEQUATE BUSINESS PURPOSE DESCRIPTIONS

Seven of forty tested transactions contained no business purpose explanation, and many of the remaining entries included only minimal notations such as "meeting" or "event." Vague or incomplete descriptions fail to demonstrate that the expenditure served a legitimate City function or complied with public-purpose requirements.

The lack of narrative detail likely stems from an absence of guidance in policy and a lack of supervisor review. When explanations are not specific, it becomes difficult for approvers or auditors to distinguish allowable uses—such as working lunches for staff on duty—from personal or social events.

RECOMMENDATIONS

6.3.1 The City should require that every food-related expenditure include a clear and complete statement of business purpose explaining why the purchase was necessary for City operations. This statement should identify the nature of the event or activity, list the participants or groups involved when practical, and describe how the food expense directly supported a legitimate governmental function. Providing this level of detail ensures that the public purpose of each expenditure is transparent and can be independently understood without relying on verbal explanations or staff recollection.

6.3.2 To help employees understand the level of detail expected, the City should include examples of adequate business-purpose descriptions within the Food and Gift Expenditure Policy as well as in related training materials. These examples should illustrate the difference between vague explanations—such as “meeting” or “staff lunch”—and sufficiently descriptive statements such as “working meeting with Public Works and Engineering regarding the Vineyard Connector design review, scheduled through the lunch hour,” or “community outreach event to gather resident input on the Parks Master Plan.” Providing model language will promote consistency and reduce misunderstandings about what constitutes an acceptable explanation.

6.3.3 The City should configure Spend Clarity, to the extent possible, to flag blank justification fields or generic, non-descriptive statements before the transaction can be routed for approval. If the system allows, staff should be required to enter a narrative of adequate length and substance before submission. Implementing this type of automated prompt will help improve documentation quality at the point of entry and reduce the number of incomplete submissions that require additional follow-up.

6.3.4 Supervisors should be required to return submissions that contain incomplete or insufficient explanations rather than approving them as-is. This expectation should be stated clearly in the policy and reinforced through training so that supervisors understand their responsibility to ensure the adequacy of business-purpose narratives before granting approval. Returning incomplete submissions for revision will help cultivate a culture of accountability and emphasize that documenting the public purpose of an expenditure is an essential part of the internal-control process, not a formality.

OBSERVATION 6.4: LACK OF AUTHORIZATION AND APPROVAL CONTROLS

None of the forty food expenditures tested showed documented preauthorization, and seven lacked supervisory approval even after the fact. The absence of both preventive and detective controls leaves the City dependent on employee judgment and reduces management visibility into discretionary spending.

This condition exists because food purchases have historically been viewed as routine, low-risk expenditures rather than transactions requiring structured oversight. However, as public-facing costs, they are particularly sensitive to scrutiny. Without approval requirements, the City cannot demonstrate that such spending aligns with its mission or budget priorities.

RECOMMENDATIONS

6.4.1 The City should incorporate a preauthorization requirement for all food or gift-related expenditures above a modest threshold, such as $50 or $100, to ensure that these discretionary purchases are reviewed before public funds are spent. Requiring documented approval in advance—rather than relying solely on after-the-fact review—will help prevent inappropriate or unnecessary expenditures and reinforce the expectation that food and gift purchases must serve a legitimate public purpose.

6.4.2 The City should require supervisory or department-head approval both prior to the purchase and again at the time of reconciliation to verify that the expenditure complies with the new Food and Gift Expenditure Policy. The pre-purchase approval confirms the necessity and appropriateness of the transaction, while the reconciliation approval provides assurance that the final receipt, cost, and business purpose match what was authorized. This two-step review process strengthens internal controls by ensuring management oversight throughout the entire transaction lifecycle.

6.4.3 Spend Clarity should be configured, to the extent the system allows, so that food-related transactions cannot be finalized without documented supervisory review. This may include workflow rules that prevent submission without entering required fields, routing transactions to the correct approver, or blocking approval until the business purpose and itemized receipt are uploaded. Automating these requirements within the system will help enforce consistent application of policy expectations and reduce manual follow-up.

6.4.4 The City should establish routine Finance monitoring to identify food purchases lacking required approval or preauthorization within Spend Clarity. Finance staff should periodically review transactions for compliance, follow up on missing approvals, and document any recurring issues or patterns that may warrant additional training or policy reinforcement. This monitoring will help ensure the policy is being followed consistently across all departments.

6.4.5 The City should emphasize through training that management review is not merely an administrative formality but an important safeguard that protects both employees and the City by ensuring propriety, transparency, and accountability in the use of public funds. Training materials should reinforce that food and gift expenditures can be sensitive in a governmental environment and that appropriate oversight helps maintain public trust.

OBSERVATION 6.5: SALES TAX CHARGED ON FOOD PURCHASES

Fourteen of forty food-related transactions included sales tax, contrary to the City's tax-exempt status. While Finance later obtained refunds for those instances, the need for repeated corrections indicates that cardholders and vendors are not consistently aware of the exemption process.

Sales tax overpayments represent avoidable administrative burden and inefficiency. They also suggest opportunities to better educate employees and vendors on proper use of the City's exemption certificate.

RECOMMENDATIONS

6.5.1 The City should reinforce through training that Vineyard City is exempt from Utah sales tax and that employees must present the City's tax-exemption certificate at the time of purchase. Training should emphasize that failure to claim the exemption results in unnecessary public expense and requires additional administrative effort to seek refunds. Ensuring employees understand when and how to use the exemption will help reduce avoidable charges and support proper stewardship of public funds.

6.5.2 The City should make the tax-exemption certificate easily accessible in both digital and physical formats to all departments and purchasing cardholders. This may include storing a digital version in a shared drive, providing laminated cards for field staff, or embedding the certificate directly into Spend Clarity resources. Easy access will help ensure employees can readily provide the certificate at the point of sale, especially in situations where purchases occur off-site or unexpectedly.

6.5.3 The City should require cardholders to document in Spend Clarity whether the tax-exemption was applied for each food or gift purchase, and if it was not, to provide a brief explanation describing why the exemption could not be used. This narrative should accompany the transaction and be reviewed as part of the approval process. Clearly documenting tax-exemption efforts will help reviewers understand the circumstances and maintain transparency regarding compliance with the exemption requirement.

6.5.4 The City should periodically review transactions to ensure that the tax-exemption is consistently claimed and should follow up on repeated exceptions. Finance staff should identify patterns where sales tax continues to be charged, communicate with affected departments, and provide additional training or clarification when needed. Regular monitoring will help reinforce expectations, reduce unnecessary costs, and improve overall compliance with the City's tax-exemption status.

7. VEHICLE ASSIGNMENT AND FUEL USAGE

The review of Vineyard City's vehicle fleet and fuel card program was conducted to evaluate whether internal controls adequately ensure the proper use, monitoring, and oversight of City-owned vehicles and fuel expenditures. The objective was to assess whether the City has established effective policies, procedures, and accountability measures to prevent misuse, detect irregularities, and promote efficient vehicle utilization in alignment with public stewardship standards.

Testing and inquiry revealed that Vineyard City does not have a formal, written policy governing vehicle usage, fuel card issuance, or fuel purchase authorization. Program administration is divided among several departments—Human Resources, Public Works, and Finance—with no single office assigned overarching responsibility for compliance monitoring or reporting. Card issuance, vehicle assignment, and card deactivation are managed informally, and oversight activities are largely reactive rather than preventive.

Key weaknesses were observed in several areas: the absence of written procedures or transaction limits, lack of fuel-to-vehicle reconciliation, minimal analysis of fuel data, and limited documentation of vehicle usage. These gaps collectively reduce the City's ability to ensure that vehicles and fuel resources are used strictly for official purposes and that all costs are properly monitored and verified.

RECURRING THEMES IDENTIFIED ACROSS THE REVIEW INCLUDE:

- Policy and Governance: No comprehensive written policy defines the roles, responsibilities, and controls for vehicle or fuel card administration.
- Monitoring and Accountability: Fuel purchases are not reconciled to mileage or trip data, and usage reports are not routinely analyzed for anomalies or inefficiencies.
- System and Control Gaps: The CFN (Commercial Fueling Network) fuel system lacks purchase or gallon limits, and there are no automated controls to prevent excessive or unauthorized fueling.
- Oversight Fragmentation: Management responsibilities are split across multiple departments without centralized oversight, resulting in inconsistent monitoring and delayed updates when vehicles are added or retired.
- Training and Awareness: Employees receive informal instruction but are not required to review or acknowledge fuel and vehicle-use expectations in writing.

While no direct evidence of misuse was identified, the overall control environment for vehicle and fuel operations remains underdeveloped. The lack of documented standards, reconciliations, and ongoing analytical review increases the City's exposure to inefficiency, potential abuse, and public perception risk.

The following observations and recommendations are intended to assist the City in developing a comprehensive fleet and fuel management framework that promotes accountability, data-driven oversight, and protection of public assets.

OBSERVATION 7.1: LACK OF FORMAL WRITTEN POLICIES AND PROCEDURES

Vineyard City does not currently have a formal, written policy governing vehicle usage, fuel card issuance, fuel purchasing requirements, or the roles and responsibilities of departments involved in fleet and fuel management. Key activities—such as assigning fuel cards, updating vehicle information, authorizing usage, and deactivating cards when vehicles are removed from service—are handled informally between Human Resources, Public Works, and Finance. Employees receive verbal instruction on fueling expectations, but no formal guidance defines acceptable usage, prohibited activities, documentation requirements, or disciplinary actions for misuse.

The absence of a policy framework increases the risk of inconsistent practices, unclear expectations, and unauthorized or inefficient use of City vehicles and fuel resources. Without clear rules, employees may inadvertently misuse fuel cards, and managers lack an objective basis to evaluate appropriateness of usage or enforce corrective action. The gap in formal governance also contributes to fragmented oversight and limits the City's ability to demonstrate stewardship over vehicle assets and fuel expenditures.

RECOMMENDATIONS

7.1.1 The City should develop and adopt a comprehensive Vehicle and Fuel Card Policy that clearly outlines how fuel cards are issued, used, monitored, and deactivated, as well as what documentation is required, what activities are prohibited, and what disciplinary steps apply in the event of misuse. The policy should provide sufficient detail so that employees and supervisors understand expectations without relying on informal practices or verbal guidance.

7.1.2 The City should formally define the roles and responsibilities of each department involved in vehicle and fuel-card operations, including who authorizes and assigns cards, who maintains the official vehicle list, who monitors fuel usage for anomalies, and who is responsible for following up on exceptions or potential misuse. Clarifying these roles in writing will reduce ambiguity and ensure consistent application of controls.

7.1.3 All employees who operate City vehicles or use fuel cards should be required to sign a written acknowledgment confirming they have read, understand, and agree to comply with the Vehicle and Fuel Card Policy. These acknowledgments should be retained centrally so the City can demonstrate that employees were informed of expectations.

7.1.4 The policy should be reviewed annually, or more frequently if operational needs change, to ensure that it aligns with current practices, technology, and risks. Updates should be communicated to all affected departments, and revised acknowledgments should be collected when substantive changes occur.

7.1.5 The City should incorporate the Vehicle and Fuel Card Policy into onboarding materials for new employees, annual compliance training for all staff who use vehicles or fuel cards, and targeted supervisor training so managers understand their oversight responsibilities. Ensuring consistent training will help reinforce expectations and reduce the risk of misuse or inconsistent monitoring.

OBSERVATION 7.2: WEAK INTERNAL CONTROLS OVER VEHICLE USAGE

There are no written requirements for maintaining vehicle trip logs, reviewing take-home vehicle activity, or validating odometer readings beyond a single annual check. Without documentation of mileage, destination, and purpose, the City cannot substantiate that vehicles are used exclusively for official business. Further, the City does not require justification for take-home assignments or periodic review of those privileges, limiting accountability for after-hours use.

The absence of usage documentation prevents the City from verifying the accuracy of fuel expenditures, detecting potential personal use, or identifying inefficient driving patterns. Trip logs and odometer validation are foundational controls in public-sector fleet management, and their absence represents a significant gap in oversight.

RECOMMENDATIONS

7.2.1 Require that all non-emergency City vehicles maintain trip logs that document the date of travel, destination, business purpose, beginning and ending mileage, and the name of the driver. These logs should be completed contemporaneously with vehicle use so that the information is accurate, complete, and useful for later review.

7.2.2 Require supervisors to review each vehicle’s trip log on a monthly basis, verifying that entries are reasonable, accurate, and consistent with operational needs. This review should include checking for unexplained mileage, incomplete entries, or patterns suggesting possible non-business use.

7.2.3 Implement quarterly odometer checks for every City vehicle to validate that recorded mileage aligns with fuel consumption, trip logs, and maintenance records. These periodic checks will help identify discrepancies early and strengthen the accuracy of vehicle-usage data.

7.2.4 Establish clear criteria governing the assignment of take-home vehicles—including job responsibilities, on-call requirements, and documented justification—and require that any such assignments receive formal approval annually. This process should ensure that take-home status is granted only when operationally necessary and remains appropriate over time.

7.2.5 Implement periodic audits that compare recorded mileage against fuel consumption to identify potential anomalies, inefficiencies, or indicators of misuse. These audits should be performed by Finance or an independent reviewer and should be used to inform corrective actions, training needs, or policy refinements.

OBSERVATION 7.3: LIMITED MONITORING AND RECONCILIATION ACTIVITIES

Fuel purchases are reviewed monthly for anomalies, but no reconciliation is performed between fuel transactions and vehicle mileage logs or usage data. Without mileage or trip documentation, the City cannot verify whether quantities purchased are reasonable relative to expected vehicle performance. GPS tracking is not in place for any vehicles, further limiting the City's ability to independently validate reported usage.

The lack of detailed monitoring creates the risk that excessive or unauthorized fueling may go undetected. It also impedes the City's ability to evaluate fuel efficiency, identify mechanical problems affecting MPG, or assess fleet utilization.

RECOMMENDATIONS

7.3.1 Reconcile monthly fuel purchases against recorded mileage and trip-log entries to verify that fuel usage is reasonable and consistent with documented vehicle activity. This reconciliation should identify whether the volume of fuel purchased aligns with actual miles driven and should flag discrepancies for follow-up.

7.3.2 Implement fuel-consumption benchmarks for each vehicle—such as expected miles per gallon based on vehicle type, age, and operating conditions—and require staff to investigate any fueling activity that falls significantly outside these expected ranges.

Documenting and reviewing exceptions will help detect inefficiencies, mechanical issues, or potential misuse.

7.3.3 Evaluate the feasibility of incorporating GPS tracking technology on high-use, shared, or take-home vehicles to improve monitoring of actual mileage, route efficiency, and confirmation that travel is City-related. This evaluation should include cost considerations, data-security protections, and the operational benefits of improved oversight.

7.3.4 Require supervisors to review monthly fuel-usage reports for the vehicles assigned to their departments, confirming that fuel consumption aligns with operational activity, staffing levels, and known job duties. Supervisory review should include identifying any unusual patterns, duplicate fuelings, or transactions outside normal working hours.

7.3.5 Develop and implement a structured variance-review process for unexplained or excessive fueling activity. Variances should be documented, investigated, and resolved, with follow-up actions ranging from employee clarification and retraining to escalated review if patterns of concern persist.

OBSERVATION 7.4: INCOMPLETE FLEET-TO-FUEL CARD RECONCILIATION

Fuel cards are matched to vehicles only at the beginning and end of the fiscal year. When vehicles are sold, retired, or transferred, HR relies on manual communication from Public Works to initiate card cancellation. No routine monthly or quarterly reconciliation is performed to ensure that all active cards correspond to vehicles currently in service.

This manual, infrequent reconciliation increases the risk that cards remain active after vehicles are removed from the fleet—creating an opportunity for unauthorized fueling, especially in cases where physical cards are not collected promptly.

RECOMMENDATIONS

7.4.1 The City should perform monthly or quarterly reconciliations comparing all active fuel cards against the current fleet roster to ensure that every issued card is tied to an existing, operational vehicle. This reconciliation will help identify cards that remain active after vehicles are sold, retired, or transferred, allowing the City to deactivate unused cards promptly and reduce the risk of unauthorized fuel purchases.

7.4.2 Public Works should be required to notify HR and Finance in writing whenever vehicles are added, removed, reassigned, or placed out of service. Formalizing this communication ensures that all departments responsible for fuel card management

receive timely updates and can take appropriate action to assign, deactivate, or reassign fuel cards consistent with the City's operational needs.

7.4.3 The City should maintain a central Fuel Card Inventory Log documenting each card number, the vehicle or equipment to which it is assigned, the responsible department, and the card's active or inactive status. Keeping this information in a single, authoritative location strengthens oversight and enables staff to verify assignments quickly during routine reconciliations or investigations.

7.4.4 When vehicles are disposed of, transferred, or permanently taken out of service, fuel cards associated with those vehicles should be returned and destroyed immediately. This step prevents cards from remaining active after their associated vehicle is no longer part of the fleet and ensures that obsolete cards cannot be used for unauthorized fuel purchases.

7.4.5 The City should conduct an annual audit of all fuel cards to confirm that each card is properly assigned, active cards are still needed, and inactive cards have been closed. This periodic verification serves as an additional safeguard to ensure the accuracy of fleet-to-fuel card assignments, reinforce accountability across departments, and reduce risk associated with outdated or unmonitored cards.

OBSERVATION 7.5: ABSENCE OF FUEL CARD TRANSACTION LIMITS

The CFN fuel system does not enforce transaction limits, gallon thresholds, frequency restrictions, or monthly caps. Fuel cards can be used without constraints on volume or dollar amount. While most fueling appears reasonable, unlimited fueling capacity creates unnecessary exposure to misuse.

Public-sector fuel programs commonly apply daily or monthly gallon limits, transaction limits, or vehicle-specific thresholds to mitigate risk. The absence of such controls means inappropriate fueling—whether intentional or accidental—may not be prevented or detected.

RECOMMENDATIONS

7.5.1 Configure the CFN system so that each fuel card has transaction-level and monthly gallon limits tied to the specific vehicle it is assigned to. Limits should reflect expected operational needs such as vehicle class, fuel tank capacity, typical route length, and departmental usage patterns. Establishing these limits within the system will prevent excessive or inappropriate fueling and create an automated first layer of control.

7.5.2 Create a formal exception process for situations where legitimate operational needs require fueling above the established limits. This process should require written

supervisory approval, documentation describing the reason for the exception, and a defined timeframe or gallon amount for the temporary increase. Exception authorizations should be retained in a centralized file and available for audit review.

7.5.3 Require supervisors to review all fuel transactions that exceed pre-set thresholds, even when exceptions have been approved. This review should include verifying the business purpose, confirming consistency with mileage and vehicle use logs, and ensuring that the exception was not used excessively or without proper justification. Any unexplained or repeated overages should trigger follow-up or corrective action.

7.5.4 Establish an annual review process to evaluate whether gallon and transaction limits remain appropriate for each vehicle. This review should consider factors such as changes in vehicle assignments, updates to fleet inventory, variations in department operations, and actual fuel consumption trends observed over the prior year. Limits should be adjusted when necessary to maintain reasonable, risk-based controls without impeding legitimate operations.

7.5.5 Provide training to all cardholders to ensure they understand fuel card limits, how limits are determined, and the procedures that must be followed when exceptions are needed. Training should emphasize that limits are not optional, that exceeding them without approval may be considered misuse, and that adhering to these boundaries protects both the City and employees by ensuring transparency and accountability.

OBSERVATION 7.6: INADEQUATE OVERSIGHT AND REPORTING OF FUEL USAGE

Although CFN access was recently expanded, the City does not regularly generate or analyze fuel usage reports by vehicle, department, or driver. Metrics such as cost per mile, MPG, total gallons consumed, or fuel spending trends are not reviewed. Without routine reporting, anomalies such as excessive fuel consumption, out-of-pattern transactions, or usage spikes may go unnoticed.

The lack of analytical review reduces the City’s ability to proactively manage fleet resources, evaluate vehicle replacement needs, or detect inefficiencies.

RECOMMENDATIONS

7.6.1 Produce monthly fuel usage reports for each vehicle and department, including gallons, total cost, cost per gallon, MPG, and any exceptions such as missing receipts or unusual fill-ups. Reports should be automated as much as possible and archived for trend analysis.

7.6.2 Require supervisors to review the reports each month and document explanations for any outliers, such as unusually low MPG, repeated after-hours fueling, or multiple daily fill-ups. Explanations should be written and retained as part of fleet monitoring.

7.6.3 Use at least one full year of historical data to develop baseline performance metrics for different vehicle classes (e.g., pickup trucks, sedans, heavy equipment) so current fuel data can be compared to normal ranges.

7.6.4 Provide quarterly fleet-performance summaries to the City Manager or Council that highlight trends, problem areas, improvements, and any corrective actions taken. Summaries should include narrative explanations, not just raw numbers.

7.6.5 Incorporate fuel analytics into long-term fleet planning and budgeting by identifying vehicles that may need replacement, reassignment, or maintenance due to consistent inefficiency or above-average fuel use. This data should support capital planning decisions.

OBSERVATION 7.7: LACK OF EMPLOYEE AWARENESS OR TRAINING

Employees who use fuel cards receive verbal instruction but do not complete formal training or sign written acknowledgments outlining responsibilities and prohibited behaviors. Without documented awareness, employees may inadvertently misuse fuel cards or fail to understand reporting, documentation, or exception-handling requirements. Formal training is essential to establishing accountability and ensuring consistent application of policy.

RECOMMENDATIONS

7.7.1 Develop mandatory fuel card training that clearly explains card use, prohibited activities, documentation requirements, spending limits, and consequences for misuse. The training should include real examples of acceptable and unacceptable transactions.

7.7.2 Require all fuel card users and vehicle drivers to sign an annual acknowledgment confirming they understand their responsibilities, the limits on card usage, and the disciplinary steps for misuse.

7.7.3 Incorporate the fuel card training into new-hire onboarding and supervisor orientation so expectations are set before card access is granted.

7.7.4 Maintain training records and signed acknowledgments to support internal control monitoring, compliance reviews, and potential investigations of misuse.

OBSERVATION 7.8: GOVERNANCE ROLES ARE FRAGMENTED

Responsibilities for fuel cards and vehicles are divided among Human Resources (issuance and deactivation), Public Works (vehicle management), and Finance (review of expenditures). No centralized oversight function ensures coordination or accountability across these activities. Because duties are informally assigned and undocumented, communication gaps can occur—resulting in delayed card deactivations, inconsistent monitoring, and incomplete analysis of fuel data.

Fragmented governance is a core contributor to many of the control weaknesses identified in this review.

RECOMMENDATIONS

7.8.1 Assign centralized oversight of the vehicle and fuel program to a single department—preferably Public Works or Finance—with clear accountability for monitoring usage, enforcing policy, and reporting exceptions.

7.8.2 Establish written roles and responsibilities for each department, even if oversight is centralized. Responsibilities should cover approvals, recordkeeping, fueling practices, maintenance, and handling exceptions.

7.8.3 Create a cross-department workflow for vehicle additions, retirements, and fuel card changes that includes documented approval steps, record updates, and supervisor notification.

7.8.4 Require periodic cross-department coordination meetings to review fleet status, fuel data, problem areas, and any needed corrective actions. Meetings should result in basic action items and follow-up tracking.

7.8.5 Maintain a centralized repository of fleet records and fuel card documentation (assignments, limits, receipts, acknowledgments, reports), with access granted to all departments responsible for oversight or enforcement.

OBSERVATION 7.9: LARGE NUMBER OF UNASSIGNED BUT ACTIVE FUEL CARDS IN CFN

Vineyard City provided a listing of *39 active ("valid") fuel cards*, and all were confirmed as active within the CFN fuel-card system. However, during our reconciliation of the City's fleet inventory to the CFN platform, we identified *an additional 39 fuel cards* that were also marked as "valid" in CFN but *were not assigned to any vehicle* maintained on the City's official fleet listing.

This means that *approximately half of all active fuel cards (39 of 78 total)* are not linked to a designated vehicle, asset, or employee. Fuel cards that are active but lack documented assignment increase the risk of misuse, unauthorized purchases, and weakened oversight. Without a documented assignment or purpose for each active card, the City cannot ensure that all fuel transactions support legitimate City operations.

In addition, unassigned active cards make it more difficult to perform accountability, track consumption trends, or identify improper or anomalous fuel usage.

RECOMMENDATIONS

7.9.1 The City should conduct a one-time cleanup to reconcile the 39 unassigned but active cards. Cards that are no longer needed should be deactivated within CFN. Cards that are legitimately used for equipment fueling (e.g., gas cans, small engines, generators) should be documented with a written assignment, including the responsible department, custodian, and intended use.

This ensures complete traceability and eliminates “floating” fuel cards that lack accountability.
7.9.2 The City should implement a centralized fuel-card inventory and require periodic reviews (at least quarterly) to verify card status and assignment.

A centralized log should track:

- card number,
- card status (active/inactive),
- assigned vehicle or equipment,
- employee custodian (if applicable), and
- activation/deactivation dates.

Departments or fleet management should review this inventory quarterly to confirm ongoing need and verify that no unassigned fuel cards remain active in the system. This control helps mitigate the risk of misuse, strengthens oversight of fuel expenditures, and improves the reliability of consumption analytics.

SUMMARY OF OBSERVATIONS & RECOMMENDATIONS

Observation 1.1: Improper Card Sharing
- 1.1.1 Reinforce that purchasing cards are issued solely for individual use
- 1.1.2 Require department head certification that all cards are assigned to named employees
- 1.1.3 Establish a contingency process for legitimate short-term purchasing needs
- 1.1.4 Map card numbers to active cardholders
- 1.1.5 Document corrective actions taken to eliminate shared cards

Observation 1.2: Missing Supervisory Approvals & Inadequate Approval Controls
- 1.2.1 Periodic review of approval assignments
- 1.2.2 Control to prevent approvals when fields are blank or duplicated
- 1.2.3 Reinforce substantive supervisory review
- 1.2.4 Quarterly departmental self-checks of approval logs
- 1.2.5 Document reasons when dual approvals were done by one individual

Observation 1.3: Split Transactions to Bypass Spending Limits
- 1.3.1 Update policy to prohibit dividing purchases to avoid limits
- 1.3.2 Standardized Temporary Limit Increase Request form
- 1.3.3 Flag same-day/same-vendor transactions
- 1.3.4 Provide periodic training on limits & pre-approval
- 1.3.5 Semi-annual analytics on transaction data

Observation 1.4: Incomplete Cardholder Agreements
- 1.4.1 Designate central custodian of all cardholder agreements
- 1.4.2 Update agreement template with name, department, and card number
- 1.4.3 Integrate agreement process into onboarding/separation checklists
- 1.4.4 Require annual reaffirmations
- 1.4.5 One-time reconciliation of all current cardholders

Observation 1.5: Insufficient Supporting Documentation
- 1.5.1 Reinforce documentation standards
- 1.5.2 Monthly quality-control reviews
- 1.5.3 Validate documentation before approval
- 1.5.4 Provide refresher training
- 1.5.5 Incorporate documentation sufficiency into compliance reviews
- 1.5.6 Centralized record of repeat exceptions
- 1.5.7 Strengthen narrative justification requirements

Observation 1.6: Missing Receipts and Missing-Receipt Forms
- 1.6.1 Update policy defining use of missing-receipt forms
- 1.6.2 Require detailed written explanation on forms

1.6.3 Supervisors must review missing-receipt forms closely
1.6.4 Flag missing-receipt transactions
1.6.5 Training emphasizing public money standards
1.6.6 Quarterly summary of missing-receipt forms
1.6.7 Integrate missing-receipt usage into performance reviews

Observation 1.7: Sales Tax Charged on Purchases
1.7.1 Reaffirm tax-exempt purchasing requirements
1.7.2 Maintain centralized tax-exempt certificate repository
1.7.3 Verification step to flag sales-tax transactions
1.7.4 Require documentation of tax-charged justification
1.7.5 Vendor outreach to fix tax-exempt status
1.7.6 Include tax-error summary in quarterly reports

Observation 1.8: Unclear Documentation for Spending Limit Increases
1.8.1 Standardized Temporary Limit Increase Request form/workflow
1.8.2 Every increase must be approved and uploaded to Spend Clarity
1.8.3 Restrict system access for limit changes
1.8.4 Maintain centralized log of limit increases
1.8.5 Include limit changes in internal monitoring reports
1.8.6 Provide refresher training on spending-limit controls

Observation 1.9: Duplicate or Single-Level Approvals
1.9.1 Review approval assignments to prevent single-person dual approvals
1.9.2 Periodic review of approver assignments
1.9.3 Automated alerts for missing approvals
1.9.4 Quarterly internal control reviews
1.9.5 Include approval compliance in regular reports
1.9.6 Reinforce substantive approval responsibilities

Observation 1.10: Inappropriate Use of P-Cards for Recurring Services
1.10.1 Revise policy prohibiting recurring or contracted services on P-Cards
1.10.2 Quarterly vendor review to transition recurring P-Card vendors
1.10.3 Formal workflow to convert recurring vendors
1.10.4 Guidance/training to departments
1.10.5 Flag recurring charges that should be paid through accounts payable process
1.10.6 Reinforce P-Cards as one-time/incidental use

Observation 1.11: Untimely Submission of Documentation
1.11.1 Supervisors should monitor and review documentation timeliness
1.11.2 Automated reminders for overdue uploads
1.11.3 Supervisory review of timeliness metrics
1.11.4 Include timeliness metrics in quarterly reports
1.11.5 Targeted refresher training

1.11.6 Link untimeliness to performance evaluations
1.11.7 Assign Finance staff to monitor upload timeliness

Observation 2.1: Incomplete or Insufficient Travel Documentation
2.1.1 Reaffirm itemized documentation requirements
2.1.2 Implement a standardized Travel Documentation Checklist
2.1.3 Supervisors must verify documentation before approval
2.1.4 Integrate automated controls to flag missing attachments
2.1.5 Provide periodic training on documentation standards
2.1.6 Conduct quarterly Finance reviews of sample reimbursements

Observation 2.2: Missing, Late, or Incomplete Travel Reimbursement Forms
2.2.1 Require completed and approved forms within two weeks of travel
2.2.2 Implement electronic submission with timestamps
2.2.3 Configure automated reminders for due or late forms
2.2.4 Include timeliness/completeness metrics in quarterly reports
2.2.5 Require corrective action plans from departments with recurring issues
2.2.6 Link noncompliance to performance evaluations

Observation 2.3: Lack of Pre-Travel Authorization and Advance Approval
2.3.1 Require pre-travel authorization approved before reservations
2.3.2 Include estimated costs and justification on authorization form
2.3.3 Electronic workflow to prevent post-travel submissions without approval
2.3.4 Document exceptions (emergency travel) in writing
2.3.5 Provide training emphasizing need for preventive controls

Observation 2.4: Missing Supervisory and Department Head Approvals
2.4.1 Require both supervisory and department-head approvals
2.4.2 Supervisors must verify complete documentation before approval
2.4.3 Implement automated alerts for missing or duplicate approvals
2.4.4 Provide role-specific training for approvers
2.4.5 Include approval compliance metrics in quarterly Finance reports

Observation 2.5: Improper Payment Methods for Travel Expenses
2.5.1 Reaffirm requirement to use accounts payable for registrations and training fees
2.5.2 Flag registration-type transactions and ensure payment is through AP
2.5.3 Provide targeted training on proper payment methods
2.5.4 Finance should review P-Card transactions for registration-related charges
2.5.5 Establish limited exceptions for legitimate same-day/online registration

Observation 3.1: No Formal Cash Handling Policy
3.1.1 Develop and adopt a formal Cash Handling and Deposit Policy
3.1.2 Define roles, timelines, documentation, and security requirements
3.1.3 Require all departments handling cash to follow the same policy

3.1.4 Review policy at least every three years
3.1.5 Provide mandatory training to staff
3.1.6 Include cash handling in internal monitoring reviews

Observation 3.2: Incomplete Segregation of Duties & Lack of Independent Verification
3.2.1 Redesign workflow to separate receipt, deposit, and reconciliation
3.2.2 Require dual custody for all deposits
3.2.3 Implement an Independent Deposit Verification Log
3.2.4 Use compensating controls if full segregation is not feasible
3.2.5 Include segregation testing in annual internal control review
3.2.6 Provide training on segregation of duties

Observation 3.3: Delayed Deposits & Informal Metal Recycling Cash Receipts
3.3.1 Establish a two-business-day deposit requirement
3.3.2 Require deposits be made intact
3.3.3 Document every cash receipt and its source
3.3.4 Prohibit informal handling of funds
3.3.5 Require dual custody for all deposits
3.3.6 Conduct periodic reviews comparing logs to bank statements
3.3.7 Train departments on proper cash protocols

Observation 3.4: No Surprise or Independent Cash Counts
3.4.1 Require unannounced cash counts
3.4.2 Assign counts to someone outside daily duties
3.4.3 Use a standardized Cash Count Form
3.4.4 Require investigation of all variances
3.4.5 Adopt process now as proactive control
3.4.6 Provide staff training emphasizing accountability

Observation 3.5: Deposits Not Independently Reconciled
3.5.1 Assign reconciliation to someone not involved in cash handling
3.5.2 Require review and sign-off by independent official
3.5.3 Use standardized reconciliation form
3.5.4 Create monthly reconciliation review checklist
3.5.5 Use compensating controls if staffing is limited
3.5.6 Include reconciliation in internal control assessment

Observation 3.6: Prior Director’s Unsecured Cash Box
3.6.1 Require all cash on-site to be logged and secured
3.6.2 Document authorized custodians and dollar limits
3.6.3 Prohibit undocumented/personal cash boxes
3.6.4 Perform one-time City-wide verification
3.6.5 Include custody verification in internal control reviews
3.6.6 Provide staff training on proper custody

Observation 3.7: Dual-Signature Control Not Enforced
- 3.7.1 Clarify that check stock note is not bank-enforced
- 3.7.2 Verify dual signatures before release
- 3.7.3 Review banking agreements & signature cards
- 3.7.4 Perform periodic management review of check images
- 3.7.5 Document any exceptions and follow up
- 3.7.6 Provide training on reliance on actual internal controls

Observation 4.1: No Formal Utility Billing Policy or Fee Schedule
- 4.1.1 Develop and adopt a formal Utility Billing Policy
- 4.1.2 Create official fee schedule approved by City Council
- 4.1.3 Define late-fee, adjustment, and classification procedures
- 4.1.4 Maintain version control and periodic policy review
- 4.1.5 Integrate policy into onboarding and training

Observation 4.2: Incomplete or Missing Service Addresses and Meter IDs
- 4.2.1 Require all accounts to have a documented service location
- 4.2.2 Standardize naming conventions and codes
- 4.2.3 Ensure GIS and asset records match billing system
- 4.2.4 Perform one-time cleanup of existing accounts
- 4.2.5 Cross-reference with City asset-management system

Observation 4.3: Difficulty Verifying Ownership Through Parcel Records
- 4.3.1 Create central inventory linking meters to assets/parcels
- 4.3.2 Coordinate with GIS for mapping of service points
- 4.3.3 Define documentation rules when parcel numbers are unavailable
- 4.3.4 Align billing with asset-management and GIS systems
- 4.3.5 Implement periodic ownership verification

Observation 4.4: Manual Adjustments and Fee Reversals Without Procedures
- 4.4.1 Establish formal procedures for late-fee/adjustment handling
- 4.4.2 Define authorization thresholds and written justification
- 4.4.3 Require supporting documentation for reversals
- 4.4.4 Configure billing software to record reasons for adjustments
- 4.4.5 Provide training & periodic reviews of adjustment logs
- 4.4.6 Include adjustments in internal monitoring reports

Observation 4.5: Non-Parcel Infrastructure Accounts Lack Documentation
- 4.5.1 Create documentation rules for non-parcel assets
- 4.5.2 Require field verification or staff explanation
- 4.5.3 Integrate non-parcel accounts into GIS/assets
- 4.5.4 Maintain cross-reference tables
- 4.5.5 Periodically verify account purpose with Public Works

Observation 4.6: Heavy Reliance on Staff Knowledge & Informal Notes
- 4.6.1 Standardize description requirements
- 4.6.2 Update legacy records and descriptions
- 4.6.3 Maintain centralized description reference file
- 4.6.4 Link descriptions to GIS and asset-management
- 4.6.5 Conduct periodic review of account descriptions

Observation 5.1: No Formal RDA Payment Tracking/Documentation Process
- 5.1.1 Develop a formal RDA payment documentation standard
- 5.1.2 Require invoice breakdowns for each payment
- 5.1.3 Only accept invoices tied to approved agreements
- 5.1.4 Implement cross-check against City Council approvals
- 5.1.5 Create central repository of agreements & amendments

Observation 5.2: Heavy Reliance on External Developer Invoices
- 5.2.1 Require developer invoices to cite project phase
- 5.2.2 Develop internal checklists for invoice review
- 5.2.3 Require periodic reconciliations against contracts
- 5.2.4 Maintain timeline tracking of reimbursement tranches
- 5.2.5 Include RDA payment validation in future audits

Observation 5.3: Unsubstantiated Labor Multipliers & Lack of Rate Authorization
- 5.3.1 Require AG to provide subcontractor rate sheets and agreements
- 5.3.2 Prohibit reimbursement of undocumented multipliers or markups
- 5.3.3 Define “actual costs incurred” in future agreements, including rules on markups
- 5.3.4 Require AG to certify contractual basis for all subcontractor charges
- 5.3.5 Perform a targeted review of high-dollar subcontractor billing structures
- 5.3.6 Add explicit multiplier and markup limitations to future RDA agreements

Observation 5.4: Insufficient Detail in Subcontractor Billing Descriptions & Quantities
- 5.4.1 Require detailed work descriptions for all billed activities
- 5.4.2 Require third-party documentation supporting all quantity-based charges
- 5.4.3 Adopt standardized invoice documentation templates for subcontractors
- 5.4.4 Require field-level verification for specialized or high-dollar services
- 5.4.5 Escalate invoices lacking detail and require supplemental documentation
- 5.4.6 Incorporate detailed documentation requirements into future agreements

Observation 5.5: Reliance on Email Summaries Instead of Third-Party Documentation
- 5.5.1 Require formal subcontractor invoices for all billed amounts
- 5.5.2 Treat emails as supplemental, not primary, documentation
- 5.5.3 Require AG to certify that all billed amounts are based on actual invoices
- 5.5.4 Establish documentation sufficiency standards prohibiting informal support

5.5.5 Return reimbursement packets lacking formal third-party documentation
5.5.6 Add documentation requirements to future RDA agreements

Observation 5.6: Limited Documentation Supporting Change-Order Costs & Cost Escalations
5.6.1 Require written explanations and justification for cost increases
5.6.2 Establish a formal change-order documentation and approval process
5.6.3 Incorporate structured variance analysis into the reimbursement review
5.6.4 Require subcontractor-level detail for all scope changes or escalations
5.6.5 Add formal change-order requirements into future RDA agreements

Observation 5.7: No Independent Verification of Work Performed
5.7.1 Require documented verification of billed work (inspections, photos, reports)
5.7.2 Implement periodic City-led field inspections tied to reimbursement packets
5.7.3 Require third-party documentation for quantity-based charges
5.7.4 Use independent engineering review for high-dollar or complex invoices
5.7.5 Require AG certification of work completion and verification
5.7.6 Include verification requirements in future RDA agreements

Observation 5.8: Lack of Response to Written Inquiries & Insufficient Communication Channels
5.8.1 Establish formal written-response timelines for reimbursement inquiries
5.8.2 Require all clarifications to be provided in written, auditable form
5.8.3 Implement a tracking log for all outstanding inquiries
5.8.4 Require AG and the RDA Director to provide supplemental documentation as needed
5.8.5 Add communication-response expectations to future RDA agreements

Observation 5.9: RDA Board Oversight Focused on High-Level Updates, Not Transaction-Level Review
5.9.1 Provide structured financial reporting to the RDA Board
5.9.2 Brief the Board on high-dollar or complex reimbursement packets
5.9.3 Adopt a formal oversight protocol defining Board review expectations
5.9.4 Include RDA oversight in the City's annual audit and planning cycle
5.9.5 Add Board-level oversight expectations to future development agreements

Observation 6.1: No Formal Food and Recognition Policy
6.1.1 Adopt written policy defining allowable expenses
6.1.2 Require business purpose documentation
6.1.3 Establish spending caps and approval rules
6.1.4 Require itemized receipts
6.1.5 Train departments on policy requirements

Observation 6.2: Inconsistent Documentation and Vague Descriptions

- 6.2.1 Require narrative justification for all food purchases
- 6.2.2 Standardize description categories in Spend Clarity
- 6.2.3 Supervisors must verify documentation before approval
- 6.2.4 Flag vague or generic descriptors for review
- 6.2.5 Include documentation quality metrics in compliance reports

Observation 6.3: Inadequate Business Purpose Descriptions

- 6.3.1 Require clear, complete business-purpose statements for all food-related expenditures
- 6.3.2 Include sample business-purpose narratives in policy and training materials
- 6.3.3 Flag blank or generic justification fields before submission in Spend Clarity
- 6.3.4 Require supervisors to return submissions with insufficient purpose statements for revision

Observation 6.4: Lack of Authorization and Approval Controls

- 6.4.1 Require preauthorization for food and gift expenditures above a modest dollar threshold
- 6.4.2 Require supervisory/department-head approval both before purchase and at reconciliation
- 6.4.3 Ensure food-related transactions cannot be finalized without required approvals and documentation
- 6.4.4 Implement Finance monitoring to identify transactions missing preauthorization or supervisor approval
- 6.4.5 Emphasize through training that management review is a key safeguard for sensitive, discretionary spending

Observation 6.5: Sales Tax Charged on Food Purchases

- 6.5.1 Reinforce through training that Vineyard City is sales-tax exempt and that employees must use the exemption
- 6.5.2 Make the tax-exemption certificate easily accessible in digital and physical formats to all cardholders
- 6.5.3 Require cardholders to document in Spend Clarity whether the exemption was applied and explain any exceptions
- 6.5.4 Periodically review transactions for sales-tax charges and follow up on recurring exceptions with targeted training

Observation 7.1: No Formal Vehicle Assignment Policy

- 7.1.1 Develop policy defining vehicle assignment criteria
- 7.1.2 Require written justification for each assigned vehicle
- 7.1.3 Maintain central vehicle assignment log
- 7.1.4 Define take-home vehicle approval requirements
- 7.1.5 Conduct annual justification reviews

Observation 7.2: Gaps in Fuel Card Assignment & Monitoring
- 7.2.1 Link each fuel card to a specific vehicle or employee
- 7.2.2 Maintain centralized fuel card inventory
- 7.2.3 Require receipt uploads for fuel purchases
- 7.2.4 Enforce spending limits and exception reviews
- 7.2.5 Include fuel card metrics in compliance reporting

Observation 7.3: No Mileage-to-Fuel Reconciliation
- 7.3.1 Collect odometer readings on fuel purchases
- 7.3.2 Track MPG within vehicle classes
- 7.3.3 Identify vehicles with outlier performance
- 7.3.4 Require explanation for variances
- 7.3.5 Provide annual vehicle efficiency summary

Observation 7.4: Lack of Preventive Maintenance Tracking
- 7.4.1 Create maintenance schedules by vehicle type
- 7.4.2 Require logging of services completed
- 7.4.3 Track maintenance costs & frequency
- 7.4.4 Use data to inform replacement decisions
- 7.4.5 Include preventive maintenance in fleet reports

Observation 7.5: Use of Fuel for Non-City Purposes Not Currently Prevented
- 7.5.1 Require employee certifications on fuel use
- 7.5.2 Provide training on public resource stewardship
- 7.5.3 Monitor fueling logs for off-hour anomalies
- 7.5.4 Configure alerts for atypical fueling patterns
- 7.5.5 Perform random spot checks of fuel usage

Observation 7.6: Inadequate Oversight and Reporting of Fuel Usage
- 7.6.1 Produce monthly fuel usage reports per vehicle/department
- 7.6.2 Supervisors must review and document outliers
- 7.6.3 Use historical data to define baseline metrics
- 7.6.4 Provide quarterly fleet-performance summaries
- 7.6.5 Use fuel analytics for planning and budgeting

Observation 7.7: Lack of Employee Awareness or Training
- 7.7.1 Develop mandatory fuel card training
- 7.7.2 Require annual acknowledgment of responsibilities
- 7.7.3 Integrate training into onboarding & supervisor orientation
- 7.7.4 Maintain training and acknowledgment records

Observation 7.8: Governance Roles Are Fragmented
- 7.8.1 Assign centralized oversight to one department
- 7.8.2 Establish written roles and responsibilities

7.8.3 Create workflow for vehicle/fuel card changes
7.8.4 Require periodic coordination meetings
7.8.5 Maintain centralized repository of records

Observation 7.9: Large Number of Unassigned but Active Fuel Cards in CFN

7.9.1 Conduct a one-time cleanup to reconcile all 39 unassigned active cards; deactivate those no longer needed and formally assign any cards legitimately used for equipment fueling, documenting department, custodian, and intended use

7.9.2 Implement a centralized fuel-card inventory and require quarterly reviews to verify card status, assignment, and continued need, including tracking card number, status, assigned vehicle/equipment, custodian, and activation/deactivation dates

MINUTES OF A REGULAR
CITY COUNCIL MEETING
November 12, 2025, at 6:00 PM

Present	**Absent**
Mayor Julie Fullmer	
Councilmember Sara Cameron	
Councilmember Brett Clawson	
Councilmember Jacob Holdaway	
Councilmember Mardi Sifuentes	

Staff Present: City Manager Eric Ellis, Chief Deputy Holden Rockwell with the Utah County Sheriff's Office, Finance Director Kristie Bayles, Community Development Director Morgan Brim, Parks and Rec Director Brian Vawdrey, Senior Planner Cache Hancey, Neighborhood Services Coordinator Maria Arteaga, Public Works Director Naseem Ghandour, Assistant City Engineer Patrick James, Streets and Storm Water Manager Chris Thomas, Deputy City Recorder Tony Lara

Others Speaking: Chris Thompson with Hansen Allen and Luce, Cody Deeter with EFG Consulting, Matt Carter with UDOT, Vineyard Residents Daria Evans, Tim Blackburn and Krystal Price

1. CALL TO ORDER/INVOCATION/INSPIRATIONAL THOUGHT/PLEDGE OF ALLEGIANCE

Mayor Fullmer began the meeting at 6:00pm. Councilmember Clawson gave the invocation and led the pledge of allegiance.

2. PRESENTATIONS/RECOGNITIONS/AWARDS/PROCLAMATIONS

2.1. Interlocal Agreement with UDOT for the FrontRunner 2X Project

Matt Carter, FrontRunner Deputy Project Manager for UTA, will present on behalf of the FrontRunner 2X project.

Matt Carter with UDOT presented on the FrontRunner Double Track project. They provided a general overview of the project, the benefits of the proposed changes as well as a series of next steps.

Councilmember Holdaway wanted to know if there were any residential or density requirements associated with the grant funding for the project. Mr. Carter let him know that

no such conditions existed for the city.

3. WORK SESSION

3.1. Rental License

Neighborhood Services Coordinator Maria Arteaga and Senior Planner Cache Hancey gave an overview of the proposed Rental License Program. The presentation covered the relevant code provisions, enforcement, the planned rollout process, and the communication strategy developed to inform and engage the public.

Mayor Fullmer asked for clarification on how ADUs would factor into the program. She also asked about HOA versus on site management. She asked about the participation rate of other cities.

Councilmember Holdaway asked how the city was ensuring equal application of the law. A discussion ensued.

Mayor Fullmer had questions regarding enforcement. Ms. Arteaga explained how the proposed program would differ from the current enforcement.

Councilmember Sifuentes asked about the parking requirement portion of the program and how it would work. A discussion ensued.

Councilmember Clawson asked about the 50% that chose not to participate. There was a discussion about what tools the city would still have to encourage compliance.

Councilmember Holdaway wanted clarification on how it would impact short term rentals. A discussion ensued regarding enforcement on short-term rentals.

3.2. Fuel Card Policy and Agreement

City Manager Eric Ellis presented on the proposed amendments to the fuel card policy. He explained that these changes were a direct result of work being done with the third-party auditor that the city was working with.

Councilmember Clawson asked for clarification on the relationship between the vehicle, the staff, and the cards themselves. Mr. Ellis gave further details on the process staff would use when using the cards. Finance Director Kristie Bayless also specified that each staff member would have a different PIN.

3.3. Transportation Utility Fee

Cody Deeter with EFG Consulting presented the findings of the Transportation Utility Fee (TUF) analysis prepared in coordination with Hales Engineering. There was also a brief discussion regarding recent Supreme Court rulings concerning the creation of Transportation Utility Fees.

Councilmember Holdaway asked to clarify where this increase would show. A discussion ensued.

Councilmember Holdway asked when it would be brought before the council to a vote. It was determined that it was scheduled for the next scheduled meeting on December 10, 2025.

Councilmember Clawson asked if it would be possible to see other models that focused less on the residential portion.

Councilmember Holdaway commented that he felt this plan was concerning and that it showed what he felt was a lack of available tax base for road funding. A discussion ensued.

3.4. Vineyard Municipal Code Amendment — Title 2 Administration

City Attorney Jayme Blakesley presented on the proposed amendment to the Vineyard Municipal Code. He explained the changes were meant to reflect the City's transition from a five-member to a six-member council form of government.

Councilmember Holdaway wanted to clarify that some things could be changed later by a future council. Mr. Blakesley confirmed that was correct.

3.5. First Amendment to the Holdaway Fields Development Agreement (Ordinance 2025-)

This item was continued to the next meeting.

3.6. Mountain Bike Park Location Adjustment

Parks and Recreation Director Brian Vawdrey updated the council on the Mountain Bike Park Project. He also wanted to make City Council aware of the Planning Commission's unanimous support to adjust the location of the Mountain Bike Dirt Park. Mr. Vawdrey explained the reasons staff felt it would be better suited near city hall. Staff proposed moving forward with finding a contractor to design and construct a Mountain Bike Dirt Park near the Vineyard City Hall.

Mayor Fullmer recommended reaching out to residents in the area that would be affected by the additional parking.

Councilmember Clawson wanted to know how the size compared to the previous site and if it was larger if that would result in an increased price tag. Mr. Vawdrey provided clarification regarding size, pricing and funding.

Councilmember Holdaway asked about environmental studies on the proposed site and if they were considered wetlands. Public Works Director Naseem Ghandour offered clarification on studies that had been done and determination from the Army Corps of Engineers showing that the planned area had not been deemed a Wetland. A discussion ensued.

Councilmember Holdaway asked that the record show that he believed that the entire area south of Gammon Park, after having a meeting between the city and the Army Corps of Engineers, was no longer considered wetlands. Mr. Ghandour clarified that the determination had not been made as the application from the city was still outstanding.

4. PUBLIC COMMENTS

Daria Evans, living in The Villas subdivision, thanked the city for its dedication of the water tank to Don Overson. She wanted to know when the crosswalks on Main Street and Vineyard Loop Road would be completed. She wanted to know if there are any winter parking restrictions. She also wanted to express concerns over item 3.6 and that she felt the council should not move forward with any plan until the Army Corp of Engineers returns a decision on the possible wetlands.

Tim Blackburn, living in the Sleepy Ridge Subdivision, expressed concern regarding the Holdaway Fields development and remind the council that there was a plan to have a heritage park and he wanted to ensure that was still a plan that was being considered.

Krystal Price, Vineyard Resident, wanted to express concern regarding consent items 7.7 and 7.8. She felt it was unethical for the council to decide on those items in light of the recent election.

Streets and Storm Water Manager Chris Thomas answered some of the questions raised by Ms. Evans during public comment.

Councilmember Sifuentes was excused and left at 7:50pm

Mayor Fullmer gave additional answers to questions raised during public comment.

Councilmember Holdaway commented on the history of the development area mentioned by Mr. Blackburn.

Councilmember Cameron commented on item 7.7 and concerns raised by Ms. Price as well as online. A discussion ensued.

5. MAYOR AND COUNCILMEMBERS' REPORTS/DISCLOSURES/RECUSALS

6. STAFF, COMMISSION, AND COMMITTEE REPORTS

Mr. Ellis gave a brief report to the council about staff work and community activities for October.

7. CONSENT ITEMS

7.1. Approval of the October 22, 2025, City Council Meeting Minutes

7.2. Approval of the 2026 City Council Meeting Schedule (Resolution 2025-56)

7.3. Municipal Code Amendment — Section 13.12.120 Reservations and Rental of

City Parks and Facilities (Ordinance 2025-16)

7.4. Municipal Code Amendment — Section 13.12.130 Concessions (Ordinance 2025-17)

7.5. Concessions Policy Amendment (Resolution 2025-57)

7.6. Personnel Policy Amendment to Title XVI REIMBURSABLE EXPENSES (Resolution 2025-54)
City Manager Eric Ellis will present recommended amendments to the travel policy found in the Vineyard Personnel Policy Title XVI Reimbursable Expenses.

7.7. Vac Truck Purchase (Resolution 2025-58)

7.8. Street Sweeper Purchase (Resolution 2025-59)

7.9. Municipal Code Amendment — Section 2.30.040 Arts, Parks and Recreation, Culture, and Heritage (ARCH) (Ordinance 2025-18)

7.10. ARCH Grant Policy and Procedure Manual Update (Resolution 2025-60)

7.11. Municipal Code Amendment to Title 2.14 Elections (Ordinance 2025-19)

Parks and Rec Director Brian Vawdrey discussed item 7.10 and the proposed changes. Councilmember Holdaway wanted to know how long-term the changes were. He indicated that the incoming council may want to make changes at a later date.

Mr. Vawdrey highlighted the proposed changes to Pavillion rentals present in item 7.3, most of which pertained to updates in the language to add clarification.

Mr. Blakesley gave clarification on item 7.4. He explained that the changes were a result of candidates in the last election handing out food for free that was of a similar nature to those being sold by concessionaires that had paid fees to operated their business.

Motion: COUNCILMEMBER SIFUENTES MOVED TO APPROVE CONSENT ITEMS 7.3, 7.4 AND 7.10 AS PRESENTED. COUNCILMEMBER CAMERON SECONDED. THE ROLL CALL WAS AS FOLLOWS: MAYOR FULLMER AND COUNCILMEMBERS CAMERON, SIFUENTES, AND CLAWSON VOTED YES. COUNCILMEMBER HOLDAWAY VOTED NO. THE MOTION CARRIED WITH A VOTE OF FOUR (4) TO ONE (1).

Mayor Fullmer asked to continue items 7.7 and 7.8.

Councilmember Clawson asked to pull item 7.6 for discussion. He asked staff for clarification. Mr. Ellis gave additional information on the proposed policy changes, specifically on international travel and travel outside Utah County. A discussion ensued.

Motion: COUNCILMEMBER HOLDAWAY MOVED TO APPROVE THE REMAINING CONSENT ITEMS AS PRESENTED. COUNCILMEMBER CLAWSON SECONDED. THE ROLL CALL WAS AS FOLLOWS: MAYOR FULLMER AND COUNCILMEMBERS CAMERON, CLAWSON, AND HOLDAWAY VOTED YES. COUNCILMEMBER

SIFUENTES WAS EXCUSED. THE MOTION PASSED FOUR (4) TO ZERO (0).

8. APPOINTMENTS/REMOVALS

8.1. The mayor, with the advice and consent of the council, will appoint members to various boards and commissions.

Mr. Vawdrey proposed second terms for ARCH Commission members Jarom Sidwell and Elizabeth Shelley.

Motion: COUNCILMEMBER SIFUENTES MOVED TO APPROVE JAROM SIDWELL AND ELIZABETH SHELLEY TO SERVE A SECOND TERM ON THE ARCH COMMISSION. COUNCILMEMBER CLAWSON SECONDED. MAYOR FULLMER AND COUNCILMEMBERS CAMERON, SIFUENTES, CLAWSON AND HOLDAWAY VOTED YES. THE MOTION PASSED UNANIMOUSLY.

9. BUSINESS ITEMS

Motion: COUNCILMEMBER CLAWSON MOVED TO GO INTO A PUBLIC HEARING AT 8:09PM. COUNCILMEMBER CAMERON SECONDED.

9.1. PUBLIC HEARING — Update to Vineyard City Development Standards and Design Specifications (Ordinance 2025-15)

Vineyard City updated its Development Standards and Design Specifications, last revised in 2017, to align with new Utah APWA standards and address City-specific infrastructure needs.

Chris Thompson with Hansen Allen and Luce presented the proposed changes to the city's Development Standards and Design Specifications. He explained that the purpose of the updates was to align city standards with new Utah APWA standards and address City-specific infrastructure needs.

Mayor Fullmer asked for clarification on the section concerning intersections and railroad crossings. Specifically, regarding the definition of street intersections and planning as it pertained to roads adjacent to the rail lines. A discussion ensued.

Motion: COUNCILMEMBER CAMERON MOVED TO CLOSE THE PUBLIC HEARING AT 8:34PM. COUNCILMEMBER CLAWSON SECONDED. MAYOR FULLMER AND COUNCILMEMBERS CAMERON, CLAWSON AND HOLDAWAY VOTED YES. COUNCILMEMBER SIFUENTES WAS EXCUSED. THE MOTION PASSED UNANIMOUSLY.

Councilmember Clawson commended staff on the detail of the reports.

Councilmember Holdaway expressed his appreciation and said that he did not recommend altering the proposed changes.

Councilmember Cameron expressed concerns over developing unusable land. The was a brief discussion. Mayor Fullmer wanted to take extra time to do additional research before making a decision.

Motion: COUNCILMEMBER CLAWSON MOVED TO CONTINUE THE ITEM TO THE NEXT MEETING. COUNCILMEMBER CAMERON SECONDED. MAYOR FULLMER AND COUNCILMEMBERS CAMERON, CLAWSON AND HOLDAWAY VOTED YES. COUNCILMEMBER SIFUENTES WAS EXCUSED. THE MOTION PASSED UNANIMOUSLY.

10. CLOSED SESSION

There was no closed session held

11. ADJOURNMENT

The meeting adjourned at 8:52

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MINUTES OF A SPECIAL SESSION
OF THE CITY COUNCIL
November 18, 2025, at 6:06 PM

Council Present	**Absent**
Mayor Julie Fullmer	Councilmember Jacob Holdaway
Councilmember Sara Cameron	
Councilmember Brett Clawson	
Councilmember Mardi Sifuentes	

Staff Present: City Manager Eric Ellis, Chief Deputy Holden Rockwell with the Utah County Sheriff's Office, Public Works Director Naseem Ghandour, Devan Peterson, Brian Vawdrey City Recorder Pamela Spencer, Deputy City Recorder Tony Lara

Others Speaking:

1. CALL TO ORDER/INVOCATION/INSPIRATIONAL THOUGHT/PLEDGE OF ALLEGIANCE

Mayor Fullmer began the meeting at 6:06pm.

2. BUSINESS ITEMS

2.1. CANVASS – 2025 Municipal General Election Canvass and Certification

City Recorder Pamela Spencer presented the results of the 2025 Municipal General Election.

Motion: COUNCILMEMBER CAMERON MOVED TO CERTIFY THE RESULTS OF THE NOVEMBER 4, 2025, MUNICIPAL GENERAL ELECTION, AND TO CERTIFY THE ELECTION OF ZACK STRATTON FOR MAYOR FOR A FOUR-YEAR TERM, AND PARKER MCCUMBER, DAVID LAURET, AND JACOB WOOD AS COUNCILMEMBERS FOR A FOUR-YEAR TERM, WITH THE EXCEPTION THAT ONE COUNCILMEMBER WILL SERVE AN INITIAL TWO-YEAR TERM IN ACCORDANCE WITH STATE CODE. COUNCILMEMBER SIFUENTES SECONDED. THE ROLL CALL WAS AS FOLLOWS: MAYOR FULLMER AND COUNCILMEMBERS CAMERON, SIFUENTES, AND CLAWSON VOTED YES. THE MOTION CARRIED FOUR (4) TO ZERO (O). COUNCILMEMBER HOLDAWAY WAS EXCUSED.

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2.2. CASTING OF LOTS

Ms. Spencer reviewed the rules for the determination of who would serve the two-year term.

Ms. Spencer and Deputy City Recorder Tony Lara conducted the drawing. The end result was that David Lauret and Jacob would retain their four (4) year terms, and Parker McCumber would serve a two (2) year term.

3. CLOSED SESSION

There was no closed session held during this meeting

4. ADJOURNMENT

The meeting was adjourned at 6:26

MINUTES APPROVED ON: _____

SEAL

CERTIFIED CORRECT BY: _____

TONY LARA, DEPUTY CITY RECORDER

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Vineyard City Fuel Card Policy

1. Purpose

The Vineyard City Fuel Card Policy establishes procedures for the issuance and authorized use of City-issued fuel cards and fuel Personal Identification Numbers (PINs) for Vineyard City employees. This policy outlines the requirements and procedures for the application, use, safeguarding, and termination of fuel cards and associated PINs. Cardholders and their immediate supervisors are responsible for ensuring compliance with this policy and taking appropriate measures to minimize the risk of fraud, waste, or abuse.

2. Scope

This policy applies to all Vineyard City employees and departments authorized to use City-issued fuel cards and PINs for the purchase of fuel for City vehicles and equipment. All employees shall use fuel cards and PINs in accordance with this policy.

3. Issuance

Fuel cards are provided as a cost-effective method for purchasing fuel for City vehicles and equipment. Fuel cards are to be used solely for official City business and shall not be used for personal or non-City business.

Fuel cards are issued to specific vehicles.

PINs are issued to authorized individuals and City vehicles for use in conjunction with a Fuel card.

Requests for new or replacement cards must be submitted through the established application process.

4. Authorized Use

Fuel cards and PINs may be used only for purchasing fuel for City vehicles and equipment.

Purchases shall comply with any applicable limits or restrictions set to each card.

Employees shall enter accurate odometer readings and vehicle identification information when prompted at the time of purchase.

The appropriate type of fuel shall be purchased for vehicles or equipment.

5. Prohibited Use

The following actions are strictly prohibited and may result in disciplinary action:

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- Purchase of fuel or items for personal vehicles or non-City purposes.
- Sharing assigned fuel cards or sharing individual PINs.
- Splitting transactions to bypass purchase limits.
- Misrepresentation of mileage, vehicle number, or other required information.

6. Cardholder Responsibilities

Cardholders and supervisors shall:

Safeguard fuel cards and individual PINs.

Report lost, stolen, or compromised cards immediately.

Review transactions for accuracy and report discrepancies promptly.

Return cards to the Finance Department upon transfer, termination, or reassignment.

7. Monitoring and Compliance

Fuel card activity shall be regularly reviewed to ensure compliance with this policy.

Noncompliance may result in suspension or revocation of car privileges, disciplinary action, and/or reimbursement for unauthorized charges.

Supervisors are responsible for monitoring card usage and ensuring that employees under their supervision comply with this policy.

8. Termination and Card Recovery

Upon an employee's separation from the City or reassignment to a role that no longer requires a fuel card, the card must be returned immediately to the Finance Department.

9. Enforcement

Any misuse, fraud, or abuse of a City-issued fuel card may result in disciplinary action up to and including termination, restitution of funds, and potential legal action.

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Vineyard City Fuel Card Agreement

I, the undersigned employee, acknowledge receipt of a Vineyard City Fuel Card or PIN and agree with the following:

A. The Vineyard Fuel Card is to be used only for the assigned City vehicle and personal use is strictly prohibited.

B. I agree to follow all policies and procedures outlined in the Vineyard City Fuel Card Policy.

C. I understand that I am responsible for ensuring all purchases made with the Fuel Card comply with City policies and for maintaining accurate records of all transactions.

D. I acknowledge that failure to comply with the Fuel Card Policy or misuse of the card may result in disciplinary action, including revocation of card privileges, potential termination of employment, and/or legal action.

E. I will immediately report any lost, stolen, or compromised Fuel Cards or PINs to the Finance Department.

By signing below, I acknowledge that I have read, understood, and agree to the terms of this agreement and the City's Fuel Card Policy.

Employee Name: _____

Employee Signature: _____

Date: _____

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RESOLUTION NO. 2025-62

A RESOLUTION AMENDING THE PREVIOUSLY ADOPTED PERSONNEL POLICIES AND PROCEDURES MANUAL FOR VINEYARD, UTAH

WHEREAS, the Vineyard City Council desires to have consistent policies for its employees and to promote a workplace that is safe and professional; and

WHEREAS, the Vineyard City Council desires to amend the disciplinary appeal policy in the Personnel Policies and Procedures Manual;

NOW THEREFORE BE IT RESOLVED BY THE GOVERNING BODY OF VINEYARD AS FOLLOWS:

1. The Vineyard Policies and Procedure Manual will be amended as shown in Exhibit A.

2. This Resolution shall take effect upon passing.

Passed and dated this 10th day of December 2025.

_____
Julie Fullmer, Mayor

Attest:

_____
Tony Lara, Deputy Recorder

VINEYARD CITY COUNCIL STAFF REPORT

Meeting Date: December 10, 2025
Agenda Item: Interlocal Agreement with UDOT for the FrontRunner 2X Project (Resolution 2025-27)
Department: Public Works
Presenter: Naseem Ghandour

Background/Discussion:

City Council consideration and approval of a Master Agreement with the Utah Department of Transportation (UDOT) establishing the framework for Vineyard City's coordination, utility adjustments, reimbursements, and permitting related to the FrontRunner Point Improvements (FPI) Project.

UDOT is advancing a capital improvement project—FrontRunner Point Improvements (FPI)—that will enhance commuter rail and multimodal infrastructure throughout northern Utah County. The project will be delivered through a Progressive Design-Build contract, led by UDOT with HDR Engineering providing coordination support.

Within Vineyard City limits, the FPI Project may impact municipal facilities such as utilities, trails, and roadway connections. The attached Master Agreement enables Vineyard City and UDOT to clearly define responsibilities, schedule coordination, utility relocations, cost reimbursement, and interagency protocols through future Supplemental Agreements for each project element within the city.

Fiscal Impact:
None

Recommendation:
Staff recommends City Council approve the Master Agreement with UDOT for the FrontRunner Point Improvements Project and authorize the City Manager or designee to execute the agreement and future Supplemental Agreements as necessary.

Sample Motion:
"I move to adopt Resolution 2025-27, approving the Master Agreement between Vineyard City and the Utah Department of Transportation for the FrontRunner Point Improvements Project and authorizing the City Manager to execute the agreement and any necessary future Supplemental Agreements."

Attachments:
1. Resolution 2025-27 ILA with UDOT for FrontRunner 2X
2. 21213 UT Agree Vineyard City Master Agreement

RESOLUTION NO. 2025-27

A RESOLUTION AUTHORIZING THE MAYOR TO SIGN AN INTERLOCAL AGREEMENT

WHEREAS, pursuant to the Utah Interlocal Cooperation Act, Utah Code Annotated, Section 11-13-1, et seq., 1953 as amended, governmental entities are allowed to enter into agreements for the joint provision of services; and

WHEREAS, Vineyard, Utah having determined that it is in the public interest and welfare of its residents has negotiated a Master Agreement with Utah Department of Transportation (UDOT) establishing the framework for Vineyard City's coordination, utility adjustments, reimbursements, and permitting related to the FrontRunner Point Improvements (FPI) Project.

NOW THEREFORE BE IT RESOLVED BY THE GOVERNING BODY OF VINEYARD AS FOLLOWS:

1. The Vineyard City Council authorizes the mayor to sign the agreement titled Vineyard City Master Agreement, in the form attached hereto as Exhibit A.

2. This resolution shall take effect upon passing.

Passed and dated this 10th day of December 2025.

_____
Mayor Julie Fullmer

Attest:

_____
City Recorder

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Project No.: S-R299(483)
Project Name: FrontRunner Point Improvements
Vineyard City
Charge ID No. 74629 PIN 21213

VINEYARD CITY
MASTER AGREEMENT

THIS MASTER AGREEMENT (the "Agreement"), is made to be effective as of _____, 2025, by and between the **Utah Department of Transportation**, an agency of the State of Utah ("UDOT"), and **Vineyard City**, a political subdivision of the State of Utah, ("Third-Party"). Each may also be referred to as a party ("Party") and together as parties ("Parties").

RECITALS

WHEREAS, UDOT is preparing to award a Progressive Design-Build contract for the fixed guideway capital development project identified as Project Number: S-R299(483) Project Name: FrontRunner Point Improvements ("Project"); and

WHEREAS, a progressive design-build contractor ("Design-Builder") will complete the Project design and administer construction for UDOT; and

WHEREAS, UDOT has identified one or more Third-Party facilities within the limits of the Project (the "Facility" or "Facilities"), and when conflicts with the Project are present, the Project may necessitate the relocation, protection, or adjustment, including design thereof, of any or all of the Facilities in a manner that is functionally equivalent to the Facilities prior to their relocation (the "Third-Party Work"); and

WHEREAS, when the Third-Party or UDOT perform the Third-Party Work, it will be performed under the terms stated in this Agreement; and

WHEREAS, for the purpose of expediting any required Third-Party Work and reimbursements in connection therewith (if any), the Parties are entering into this Agreement to set out the general terms and conditions for the Third-Party Work, with the understanding that future Supplemental Agreements to this Agreement will be entered into covering specific requirements for the Third-Party Work at specific Project locations, and a sample form of a Supplemental Agreement is attached hereto at Exhibit A and incorporated herein.

AGREEMENT

NOW THEREFORE, in consideration of the foregoing recitals, which by this reference are incorporated into this Agreement, and for the terms set forth below, which the Parties acknowledge to be good and sufficient consideration, the Parties agree as follows:

1. **APPLICATION OF AGREEMENT**

This Agreement applies to Third Party Work, including Third-Party Work (and any betterment work that UDOT agrees to pursuant to Section 9 below) that: (i) UDOT performs on behalf of the Third-Party; and that (ii) the Third-Party performs. The Parties

must implement this Agreement for any such work by executing a Supplemental Agreement, and this Agreement is applicable to all of the Third-Party Work (and betterment work) described in any Supplemental Agreement. All Supplemental Agreements executed by the Parties are hereby made a part of this Agreement by this reference. For all Supplemental Agreements, this Agreement shall continue to apply to each Supplemental Agreement unless a Party terminates the Supplemental Agreement, in which case only provisions that by their nature are intended to survive shall apply to the terminated Supplemental Agreement (including, but not limited to, the indemnification and audit provisions). If the Parties do not enter any Supplemental Agreements to this Agreement, then this Agreement shall have no effect.

2. CONTACT INFORMATION

UDOT's Project Representative is Garret Jenson, Third-Party Lead, telephone number 385-318-9236, e-mail Garret.Jenson@hdrinc.com.

UDOT's Project Director is Brian Allen, telephone number 385-414-1092, e-mail brianja@utah.gov, or their designated representative, as assigned.

UDOT's Field Representative contact person will be identified in subsequent Project agreements.

Third-Party's contact person is Naseem Ghandour, telephone number 801-960-3883, and e-mail naseemg@vineyardutah.gov.

3. AUTHORIZATION FOR DESIGN WORK

In order to facilitate coordination and obtain technical information about the Facilities and requirements for inclusion in this Agreement, and the Request for Proposals for the Design-Builder, UDOT provided a Design Authorization Letter to the Third-Party on February 27, 2025, which authorizes certain work as stated in the letter.

4. SUBSURFACE UTILITY ENGINEERING

UDOT has performed preliminary Subsurface Utility Engineering ("SUE") within the limits of the Project. Regardless of which Party will perform the Third-Party Work, UDOT will perform additional SUE work to determine the precise location of underground facilities at specific, critical locations on the Project, which be reviewed with the Third-Party.

5. PROJECT COORDINATION

During the development of the Project design, the Third-Party and UDOT, along with its Design-Builder, shall consult as necessary in an effort to determine if conflicts with the Facilities can be avoided. At all times, the Third-Party will cooperate and coordinate with UDOT and its Design-Builder. Cooperation and coordination include, but are not limited to, performing necessary design reviews and inspections of the Third-Party Work as set forth in Section 12. The Third-Party will also work through UDOT's Project Representative

to cooperate and coordinate with others (such as UTA and Project consultants) if they have interests that relate to the Facilities.

The Parties acknowledge the importance of completing the Third-Party Work in a manner consistent with the overall schedule for the Project. Accordingly, in connection with each Supplemental Agreement, the Parties shall coordinate, cooperate, and agree upon a schedule for the design, construction, and final completion of the Third-Party Work, as well as any betterment work to be performed by UDOT or the Third Party in conjunction with the Third-Party Work. The schedule shall be determined by UDOT with input from the Third Party.

6. THIRD-PARTY GENERAL REQUIREMENTS

UDOT and the Third-Party will comply with the following general requirements in connection with all Third-Party Work. These requirements may be altered in a Supplemental Agreement, and in case of any conflict with the following general requirements, the information stated in a Supplemental Agreement will govern. The Third-Party will require the following from UDOT:

a. UDOT will provide the following required times for each activity after a UDOT-approved Project design has been provided to the Third-Party unless specified otherwise in a Supplemental Agreement:
   i. Third-Party design review of UDOT designs: The Third-Party will review and provide comments on the design plans (and betterment cost estimates, if applicable), within **2 weeks** from the time UDOT delivers the design plans to the Third-Party.
   ii. Supplemental Agreement review and signature routing by the Third-Party: **4-6 weeks**. The same time will be provided for each revision to a Supplemental Agreement.

b. The Third-Party cannot have facilities out of service unless bypass pumping is provided or given written approval by the Third-Party.

c. When UDOT performs Third-Party Work, UDOT will supply as-built plans, in PDF format to the Third-Party, at a reasonable time after UDOT's completion of the Project.

Commented [SJ1]: Naseem does Vineyard have a preferred format?

7. GENERAL REQUIREMENTS

The following is required for design and construction:

a. Third-Party Work will be functionally equivalent to the Facilities prior to their relocation.
b. UDOT will schedule and meet with the Third-Party to review the design and scheduling of the Third-Party Work at specific locations on the Project to ensure maximum lead time for advance order of materials and workforce scheduling.
c. Unless otherwise agreed in a Supplemental Agreement, UDOT will secure permits required for said Work.
d. UDOT is performing Third-Party Work. UDOT will notify the Third-Party at least **2 business days** in advance of UDOT beginning work on any Third-Party Work covered

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by a Supplemental Agreement hereto, to allow the Third-Party time to schedule an inspector to be present during the Third-Party Work. For each Supplemental Agreement, after this initial notification, subsequent notification of when and where Third-Party Work will be performed will be given on a day-to-day basis. The Third-Party Work will be designed in accordance with Third-Party's current standards, which are dated (FILL IN DATE), which are the standards that are regularly followed by the Third-Party in its own work and not considered a betterment. The Third-Party agrees that UDOT will rely on such standards for the duration of the Project, whether any Third-Party Work is designed by UDOT or by the Third-Party. In the event of a conflict between UDOT and Third-Party standards, the higher standard will be applied when it is consistent with applicable federal requirements.

Commented [SJ2]: Naseem please provide date of most recent standards.

8. **RIGHT-OF-WAY**

The Third-Party Work will include any replacement easements or other rights to use land that are required to be obtained for the Third-Party Work. UDOT will perform all such work to obtain easements or other rights that must be obtained in compliance with applicable law.

If UDOT must access the Third-Party's property, rights, or interests to perform Third-Party Work (or any related betterment work that UDOT agrees to), the Third-Party hereby consents to all such access. If the Third-Party must access the property, rights, or interests of UDOT, Union Pacific Railroad, or the Utah Transit Authority to perform any Third-Party Work (or any related betterment work that UDOT agrees to), the Third-Party will apply for a permit from the relevant entity.

9. **BETTERMENT WORK**

Betterment work is work in connection with Third-Party Work that exceeds what is necessary in order for UDOT to relocate, protect in place, or adjust any Facilities in a manner that is functionally equivalent to what existed prior to UDOT's Project. If the Third-Party desires to include betterment work in the Project at any specific location, UDOT, in its sole discretion, may agree to the betterment work if: (i) the difference in costs between the functionally equivalent required Third-Party Work and the Third-Party's desired betterment work that is not required by the Project is the sole cost of the Third-Party; (ii) the betterment work can be accommodated without delaying UDOT's Project; and (iii) the Parties provide for the betterment work in a Supplemental Agreement or in a separate Betterment Agreement (which, among other things, will state who is to perform the betterment work). If the Parties enter a separate Betterment Agreement, the Parties agree that the terms of this Agreement shall also apply when not in direct conflict with the Betterment Agreement. UDOT may terminate betterment work that is included in a Supplemental Agreement, and may terminate a separate Betterment Agreement, if the Third-Party does not make payment as required, and at UDOT's convenience, such as if Project needs change. UDOT shall have no interest in, responsibility for, or liability of any kind in connection with any betterment work.

10. **SUPPLEMENTAL AGREEMENTS**

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If Third-Party Work is required by the Project, the Parties will implement this Agreement for each location by entering a Supplemental Agreement to identify each Party's responsibilities. Third-Party Work does not include betterments, but if UDOT agrees to perform any betterment work, or if UDOT agrees that the Third-Party can perform betterment work as part of a Third-Party performance, then a Supplemental Agreement (or a separate Betterment Agreement) will also provide for the betterment work and identify each Party's responsibilities. Each Supplemental Agreement will also include a description and location of the Third-Party Work to be performed, design drawings showing the original and proposed locations of the Facilities, Third-Party Work schedules, cost estimates from all Parties that are participating in a share of the costs, participation shares for UDOT and the Third-Party if there are any (as further provided in Section 15), and any other terms specific to the Third-Party Work. Cost estimates included in Supplemental Agreements do not account for increases due to unknown and unforeseen hardships or other contingencies in accomplishing the Third-Party Work and are subject to change.

All Supplemental Agreements are subject to the terms of this Agreement. A Supplemental Agreement may only change a provision of this Agreement if it expressly cites such provision and states the change. Such changes to this Agreement, when expressly stated in a Supplemental Agreement, apply to that Supplemental Agreement only.

In the event there are changes in the scope of the Third-Party Work covered by a Supplemental Agreement, a modification to the Supplemental Agreement approved in writing by the Parties is required prior to the start of Third-Party Work on the scope changes. UDOT may terminate Supplemental Agreements at UDOT's convenience, such as if Project needs change, upon giving reasonable notice to the Third-Party.

11. **THIRD-PARTY TO NOTIFY UDOT**

The Third-Party's personnel shall notify UDOT's Field Representative upon arriving and leaving the Project site in order to verify that the Third-Party has inspected the Third-Party Work. Third-Party's personnel will comply with all applicable OSHA and Project safety requirements while within the Project limits.

12. **THIRD-PARTY INSPECTION**

If UDOT performs the Third-Party Work pursuant to a duly executed Supplemental Agreement, the Third-Party shall provide on-call engineering support by the Third-Party engineer or appropriate representative to support the Third-Party's obligations under this Agreement (including, but not limited to design review, schedule coordination, and to perform the necessary inspection on the Facilities installed by UDOT), in order to correct or clarify issues while the Third-Party Work is being performed.

a. The Third-Party engineer and/or inspector shall work with and through UDOT's Field Representative and shall give no orders directly to UDOT's Design-Builder

unless authorized in writing to do so by UDOT's Field Representative. UDOT will accomplish the Third-Party Work covered by a Supplemental Agreement in accordance with the plans and specifications provided and approved by UDOT and the Third-Party in the Supplemental Agreement.

b. The Third-Party shall immediately notify UDOT's Field Representative of any deficiencies in the Third-Party Work. The Third-Party shall follow up with written detail to UDOT's Project Representative and UDOT's Field Representative of its findings within 24-hours of making its initial notification.

c. UDOT will respond to Third-Party's concerns within 24-hours of written notification.

d. The Third-Party, through its inspection of the Third-Party Work, will provide UDOT's Field Representative with information addressing any problems or concerns the Third-Party may have with acceptance of the Third-Party Work.

13. **UDOT INSPECTION**

If the Third-Party performs the Third-Party Work pursuant to a duly executed Supplemental Agreement, UDOT shall perform the necessary inspection on the Facilities installed by the Third-Party within UDOT's or UTA's right-of-way, in order to correct or clarify issues while the Third-Party Work is being performed.

a. UDOT shall work with and through the Third-Party's contact person identified in Section 2. The Third Party shall work with and through UDOT's Project and Field Representative and will not work directly with UDOT's Design-Builder unless authorized in writing to do so. The Third-Party will accomplish the Third-Party Work covered by a Supplemental Agreement in accordance with the plans and specifications provided and approved by UDOT and the Third-Party in the Supplemental Agreement, including changes or additions to the plans which are subsequently made a part of a Supplemental Agreement.

b. UDOT shall immediately notify the Third-Party's contact person identified in Section 2 of any deficiencies in the Third-Party Work within UDOT's or UTA's right-of-way. UDOT shall follow up with written detail to the Third-Party's contact person of its findings within 24-hours of making its initial notification.

c. The Third-Party will respond to UDOT's concerns within 24-hours of written notification.

d. UDOT, through its inspection of the Third-Party Work within UDOT's or UTA's right-of-way, will provide the Third-Party's contact person identified in Section 2 with information covering any problems or concerns UDOT may have with acceptance of the Third-Party Work.

14. **DAILY RECORDKEEPING**

UDOT and the Third-Party will each keep daily records of onsite activities. The Third-Party's daily records will be completed on a form that has been preapproved by UDOT's Contracts, Compliance and Certification Manager. The daily records shall be signed by UDOT's Field Representative or an authorized designee and by the Third-Party or its authorized designee. Copies of the daily records shall be retained by the Parties to this Agreement.

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15. **REIMBURSEMENT**

Per Utah Code § 72-6-116(3)(a)(i)(A), UDOT will reimburse the Third-Party 100% of the cost of Third-Party Work.

Should it become necessary for the Third-Party to use outside consultants or contractors to perform design, design review, observation, construction, or inspection to accommodate the Third-Party Work and Project schedule, the Third-Party shall notify UDOT. Upon concurrence by UDOT, the Parties then must execute a Supplemental Agreement to agree to the cost of the services; after execution, and after receiving a notice to proceed from UDOT, the Third-Party may procure outside services through applicable procurement requirements.

16. **SUBMITTAL OF ITEMIZED BILLS**

The Third-Party shall submit itemized bills covering the actual costs incurred, whether with Third-Party resources or for outside services, to perform design, design review, construction, oversight, or inspection work that is covered by the terms of a Supplemental Agreement, and shall submit bills to:

UDOT Contracts and Compliance Specialist
constructionpayments@utah.gov
or hard copy mailed to
4501 South 2700 West
Construction Office, Box 148220
Salt Lake City, Utah 84114-8220

Itemized bills shall bear the Project and Supplemental Agreement numbers, supporting sheets, and a complete billing statement of all actual costs incurred, following the order of the items in the detailed estimates contained in the Supplemental Agreement, and shall be submitted to UDOT within **60 days** following completion of services by the Third-Party on the Project. Otherwise, previous payments to the Third-Party will be considered final, except as agreed to between the Parties in writing in advance, and the submitted cost will be disallowed.

UDOT will reimburse the Third-Party within **60 days** after receipt of the billings, but only for those actual, allowable, and reasonable costs fully complying with this Agreement and applicable law.

17. **FEDERAL REQUIREMENTS**

The Third-Party agrees to include the clauses in this in Section 17 in each subcontract financed in whole or in part with federal assistance provided by FTA. It is further agreed that the clauses shall not be modified, except to identify the subcontractor that will be subject to the provisions.

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a. 2 C.F.R. § 200.216 Prohibition on Certain Telecommunications and Video Surveillance Services or Equipment

This Section 17(a) applies when the Project makes use of federal funds and to the extent that the Third-Party Work relates to any agreement with UDOT that is subject to Public Law 115-232, Sec. 889 and 2 CFR § 200.216 (the "Telecommunications Laws"). Among other things, the Telecommunications Laws prohibit the use of any sort of "covered telecommunications" equipment or services, which are those provided by a company listed in such laws. The Third-Party shall at all times comply with the Telecommunications Laws. The Third-Party hereby certifies that it has read the Telecommunications Laws and consulted with legal counsel as needed. For all matters which are the subject of any agreement between the Third-Party and UDOT, the Third-Party hereby certifies that it currently conforms with, and will continue to conform with, the Telecommunications Laws in all respects. The Third-Party shall also place this certification in all UDOT-related contracts with subcontractors, consultants, and suppliers for UDOT's benefit. If any government entity having jurisdiction determines that the Third-Party or its associates is not in compliance with the Telecommunications Laws, the Third-Party agrees that it shall promptly notify UDOT of the same and remedy any deficiency.

b. Buy America and Build America/Buy America Requirements

Flow down Requirements: The Buy America requirements flow down to first tier subcontractors, which are responsible for ensuring that lower tier subcontractors are in compliance.

Buy America - The Third-Party agrees to comply with 49 U.S.C. § 5323(j) and 49 C.F.R. Part 661 and the Build America, Buy America Act (Public Law 117-58) and its implementing regulations at 2 C.F.R. Part 184, which provide that federal funds may not be obligated unless all steel, iron, manufactured products, and construction materials used in FTA funded projects are produced in the United States, unless a waiver has been granted by FTA or the product is subject to a temporary or general waiver. General waivers are listed in 49 C.F.R. § 661.7. Temporary waivers have been issued under 87 FR 64534 and 88 FR 55817.

The Third-Party must submit to UDOT the appropriate Buy America certifications, as included in Exhibit B.

c. Program Fraud and False or Fraudulent Statements or Related Acts

Flow Down - This Program Fraud and False or Fraudulent Statements or Related Acts clause extends to Third-Party and its contracts and subcontracts at every tier. These requirements flow down to contractors and subcontractors that make, present, or submit covered claims and statements.

Program Fraud and False or Fraudulent Statements or Related Acts - The Third-

Party acknowledges that the provisions of the Program Fraud Civil Remedies Act of 1986, as amended, 31 U.S.C. § 3801 *et seq*., and U.S. DOT regulations, "Program Fraud Civil Remedies," 49 C.F.R. Part 31, apply to its actions pertaining to this Project. Upon execution of the underlying contract, the Third-Party certifies or affirms the truthfulness and accuracy of any statement it has made, it makes, it may make, or causes to be made, pertaining to the underlying contract or the FTA assisted project for which this Third-Party Work is being performed. In addition to other penalties that may be applicable, the Third-Party further acknowledges that if it makes, or causes to be made, a false, fictitious, or fraudulent claim, statement, submission, or certification, the federal government reserves the right to impose the penalties of the Program Fraud Civil Remedies Act of 1986 on the Third-Party to the extent the federal government deems appropriate.

The Third-Party also acknowledges that if it makes, or causes to be made, a false, fictitious, or fraudulent claim, statement, submission, or certification to the federal government under a contract connected with a project that is financed in whole or in part with federal assistance originally awarded by FTA under the authority of 49 U.S.C. Chapter 53, the federal government reserves the right to impose the penalties of 18 U.S.C. § 1001 and 49 U.S.C. § 5323(l) on the Third-Party, to the extent the federal government deems appropriate.

18. **SALVAGED MATERIALS**

All materials from Third-Party's existing Facilities which are recovered by UDOT while performing the Third-Party Work and which are not reused on this Project shall become the property of the Design-Builder unless otherwise agreed to in advance by the Parties hereto.

19. **AUDIT**

The Third-Party shall keep detailed and complete records verifying all costs for which the Third-Party seeks reimbursement pursuant to this Agreement and supporting the Third-Party's billings. Upon completion of the Third-Party Work, UDOT and the Third-Party shall reconcile the payments made to the Third-Party under this Agreement. For a period of three (3) years following completion of the Third-Party Work, each Party agrees to make any payment adjustment required as the result of the reconciliation performed.

UDOT, the Federal Transit Administration, the State of Utah, and any other government entity or agency with jurisdiction shall have the right, upon reasonable notice, to audit all cost records and accounts of the Third-Party pertaining to the Third-Party Work for the purpose of verifying the costs for which the Third-Party seeks reimbursement. The Third Party shall cooperate with UDOT or FTA to provide access to the records and accounts. Should this audit disclose that the Third-Party has been underpaid, the Third-Party will be reimbursed by UDOT after submission of an additional billing to cover the underpayment. Should this audit disclose that the Third-Party has been overpaid, the Third-Party will reimburse UDOT in the amount of the overpayment. The Third-Party is required to maintain cost records regarding the Third-Party Work for which the Third-Party seeks

reimbursement under this Agreement for a minimum of three (3) years after final payment is received from UDOT.

20. **ACCEPTANCE AND MAINTENANCE**

UDOT will provide notification to the Third-Party to obtain final acceptance for any Third-Party Work upon completion of the final inspection for such work, and the notice will identify the portions of the Facilities that are subject to final acceptance. Upon receipt of any notice, the Third-Party will have **60 days** to respond in writing to UDOT's Resident Engineer with any additional comments regarding the identified Third-Party Work. After 60 days, the Third-Party is deemed to have accepted the identified Third-Party Work unless the Parties agree otherwise in writing. Upon UDOT's completion of any Third-Party Work identified in a notice, the Third-Party will solely own and maintain such Facilities unless otherwise agreed to by the Parties in writing.

Acceptance means that except as otherwise agreed in a writing signed by authorized representatives of both Parties, the Third-Party accepts the Third-Party Work "as-is," without conditions or reservations, and the Third-Party waives and releases all claims against UDOT and its commissioners, employees, agents, contractors, and consultants for any and all losses of every kind (including, but not limited to, claims, liabilities, liens, and damages), whether known or unknown, and whether or not involving negligence. This includes, but is not limited to, releasing UDOT from any responsibility or liability that may result from the Third-Party's new Facilities or the operation thereof. However, the foregoing release shall not apply to matters that are covered by a warranty provided by a contractor or the Design-Builder to the extent necessary to enforce such warranty (the intent of this sentence is to provide for all contractor warranties applying as written to obligate the contractor or the Design-Builder to remedy the warranted work).

21. **ACCESS FOR MAINTENANCE**

Access for maintenance and servicing of the Facilities located on UDOT's or UTA's right-of-way will be allowed only by permit issued by UDOT and/or UTA to the Third-Party, and the Third-Party will obtain the permit and abide by the conditions thereof (for policing and other controls) in conformance with Utah Administrative Code R930-7, as applicable, and other applicable law.

22. **INDEMNIFICATION**

Each Party agrees to indemnify, defend, and save harmless the other from and against all claims, suits, and costs, but not attorneys' fees, for injury or damage of any kind, arising out of its own negligent acts, errors, or omissions and those of its officers, authorized agents, and employees in the performance of this Agreement (which includes any Supplemental Agreements), but subject to the following limitations. UDOT is a governmental entity that is subject to the Utah Governmental Immunity Act, and if the Third Party is also a governmental entity within the coverage of that Act, the Third Party is also subject to that Act. Nothing in this paragraph is intended to create additional rights to third parties, or to waive any of the provisions of the Governmental Immunity Act, or to prevent

a Party from tendering a claim to its authorized agents, contractors, or others. The obligation to indemnify is limited to the dollar amounts set forth in the Governmental Immunity Act, provided a Party is a governmental entity that is within the coverage of that Act and the Act applies to the action, error, or omission giving rise to the protections described in this paragraph. UDOT shall have no interest in, responsibility for, or liability of any kind in connection with any betterment work. The indemnification in this paragraph shall survive the expiration or termination of this Agreement.

23. **MISCELLANEOUS**

The following terms apply to this Agreement:

a. Any Party may give a written notice under this Agreement by delivering it to the following physical addresses (an email may be used in addition as a courtesy), and notice is effective upon delivery when delivered by hand or by overnight delivery service with confirmation of delivery (or, if placed in the U.S. mail, notice is effective three days after such notice receives a postmark):

To UDOT:	To Third-Party:
UDOT 4501 South 2700 West Box 143600 Salt Lake City, UT 84114	Vineyard City 125 S Main Street Vineyard, UT 84059

b. The Parties agree to undertake and perform all further acts that are reasonably necessary (except when expressly prohibited by law) to carry out the intent and purpose of the Agreement and to assist UDOT with maintaining compliance with the legal requirements applicable to UDOT after receiving a written notice that explains the need for such action.

c. UDOT's consent, review, acceptance, approval, or other action or inaction relating to any conditions, inspections, plans, specifications, or other work arising out of this Agreement is for purposes of administering this Agreement only, and it does not constitute an assumption by UDOT of any responsibility or liability for the same; it does not relieve the other Party of any duties (including but not limited to duties to ensure compliance with applicable standards); and it does not constitute a waiver by UDOT of the other Party's obligation to comply with applicable standards. Any consent, review, acceptance, approval or other action or inaction must be provided by UDOT's authorized employee or representative.

d. No part of this Agreement may be waived, whether by a Party's failure to insist on strict performance of this Agreement or otherwise, except in a writing signed by an authorized representative of the Party waiving.

e. Neither Party may assign or delegate this Agreement and actions required by it without the other Party's prior written authorization, and any purported assignment or delegation to the contrary is void.

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f. This Agreement does not create any agency, joint venture, partnership, or other relationship among the Parties, and it is intended only for the Parties hereto and does not create any third-party beneficiaries.

g. This Agreement is governed by Utah law without reference to choice or conflict of law provisions. Jurisdiction for any judicial action brought in connection with this Agreement shall be in a court in Salt Lake County, Utah, and ALL PARTIES KNOWINGLY AND VOLUNTARILY WAIVE THEIR RIGHTS TO A JURY TRIAL.

h. Time is of the essence. This Agreement shall be construed to enforce its provisions to the fullest extent allowed under applicable law to give effect to the intent of the Parties, whether or not any provision of this Agreement is invalidated. All Parties negotiated this Agreement and are collectively considered its drafter.

i. Before taking any legal action in connection with this Agreement, each Party agrees to first advise the other of a dispute and to meet in good faith in an effort to resolve it.

j. All rights and remedies in this Agreement are cumulative and nonexclusive and do not limit any other rights and remedies of the Parties. The indemnity provision herein and other terms that by their nature are intended to survive this Agreement's termination shall survive. Nothing in this Agreement shall be construed to limit UDOT's governmental powers and authority.

k. This Agreement may only be amended in a written document that is signed by an authorized representative of each Party. This Agreement (which includes any Supplemental Agreements and amendments executed by the Parties) is the entire agreement of the Parties with respect to the subject matter hereof and it shall supersede all prior negotiations, understandings, and agreements with respect to such subject matter.

k. Each Party warrants that its authorized representative has signed this Agreement with authority to bind such Party, which also binds its successors and assigns. Each Party further warrants that all signatures necessary to make this Agreement binding against the Party have been included below, and that this Agreement's terms do not violate other contracts and commitments of the Party.

L. This Agreement may be signed in counterparts and signed electronically.

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IN WITNESS WHEREOF, the Parties hereto have caused this Agreement to be executed by their duly authorized representatives as of the day and year first above written.

ATTEST:

Vineyard City

_____ _____

Title: _____ **Title:** _____

Date: _____ **Date:** _____

(IMPRESS SEAL)

. . . . . .

Recommended For Approval:

_____

Title:

Date: _____

Utah Department of Transportation

_____

Title: Project Director

Date: _____

Form Approval Date by UDOT Assistant Attorney General: November, 2023

Comptroller Office

_____

Title: Contract Administrator

Date: _____

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EXHIBIT A
TO MASTER AGREEMENT

SUPPLEMENTAL AGREEMENT FORMAT

VINEYARD CITY
SUPPLEMENTAL AGREEMENT NO. ___

Supplement to UDOT Finance No. _____

THIS SUPPLEMENTAL AGREEMENT ("Supplemental Agreement") is made by and between the **Utah Department of Transportation**, ("UDOT"), and **Vineyard City**, a political subdivision of the State of Utah, ("Third-Party"). Each may be referred to herein as party ("Party") and together as parties ("Parties").

AGREEMENT

The Parties acknowledge that they have received good and sufficient consideration for this Supplemental Agreement, and they agree as follows:

1. Implementation of MA. The Parties hereto entered into a Master Agreement dated _____, UDOT Finance No. _____ (the "MA"). This Supplemental Agreement is hereby made a part of the MA and it implements the MA for the Third-Party Work described herein. The MA's terms remain in full force and effect and govern this Supplemental Agreement. If there is a conflict between the MA and this Supplemental Agreement, the MA will control except as provided in Section 6, and except when, in accordance with Section 10 of the MA, this Supplemental Agreement expressly cites a provision of the MA and states a change to it in Section 4 below. Among other things, the capitalized defined terms in the MA apply to this Supplemental Agreement as well. This Supplemental Agreement applies only to the Third-Party work described herein, which can be generally described as:

   _____.

2. Performance of Third-Party Work for this Supplemental Agreement. [The Third-Party] [UDOT's contractor] will perform the following described Third-Party Work in accordance with the terms and conditions of the MA and this Supplemental Agreement:

   a. Plans. The plan sheets depicting the Third-Party Work are shown in Exhibit "A" and incorporated herein by this reference.

b. Specifications. The special provisions for this Third-Party Work are as follows:

c. Schedule. This Third-Party Work will be completed between x and x. A schedule for this Third-Party work is shown in Exhibit "B" and incorporated herein by this reference.

d. Betterments. [No betterments are part of this Third-Party Work.] [The Third Party desires to include a betterment as part of this Third-Party Work at the Third Party's sole expense, and the betterment is described as follows: _____. The scope, schedule and budget relevant to the betterment is included as a part of Exhibit A attached hereto and incorporated herein. That exhibit specifies which Party will perform the betterment work, and the terms of the MA and this Supplemental Agreement apply to the betterment work if it is performed by UDOT's contractor.]

e. As-Built Survey Responsibility. If the Third Party is performing any work (whether this Third-Party Work or betterment work), and if the Design-Builder is responsible to collect data to complete an as-built survey for this Third-Party Work on behalf of the Third Party, it is the Third-Party's responsibility to notify the Design-Builder at least 48 hours in advance of the time when the Third Party begins the Third-Party Work in order for the Design-Builder's surveyor to be present. Should the proper notification and coordination not occur, and if the Third-Party Work is performed without the Design-Builder's surveyor present to collect the as-built data, UDOT may hire a Subsurface Utility Engineer (SUE) consultant to locate the facilities at the Third-Party's expense.

f. UDOT will notify the Third-Party's contact person, Name, telephone number (801) xxx-xxxx, and e-mail xxx@ at least **2 business days** in advance of beginning and completing its portion of the Third-Party Work covered herein.

g. Third-Party will notify UDOT's Resident Engineer, XXXXXX, telephone number (xxx) xxx-xxxx, and e-mail xxxxxx@utah.gov, or their designated representative, as assigned at least **2 business days** in advance of beginning and completing its portion of the Third-Party Work covered herein.

3. Estimated Cost. Total estimated cost of this Third-Party Work is shown in Exhibit "C" and incorporated herein by this reference, and is summarized as follows:

TOTAL ESTIMATED COST OF THIS SUPPLEMENTAL AGREEMENT THIRD PARTY WORK	**$0.00**

BREAKDOWN:

TOTAL ESTIMATED COST OF THIRD-PARTY-PERFORMED THIRD-PARTY WORK	$0.00
TOTAL ESTIMATED COST OF UDOT-PERFORMED THIRD-PARTY WORK	$0.00
COMBINED TOTAL ESTIMATED COST OF THIRD-PARTY WORK	**$0.00**

TOTAL ESTIMATED AMOUNT OF THIRD-PARTY PARTICIPATION @ [TBD]%	$0.00
TOTAL ESTIMATED AMOUNT OF UDOT PARTICIPATION @ [TBD]%	$0.00
TOTAL ESTIMATED COST OF THIRD-PARTY BETTERMENT WORK	$0.00

4. Changes to MA. There are no changes to the MA except when, in accordance with Section 10 of the MA, this Section 4 lists below an expressly cited provision of the MA (in other words, it lists the section number in the MA and types in the affected text below), and this Section 4 then also states a change to that specific text from the MA.

IN WITNESS WHEREOF, the Parties hereto have caused this Supplemental Agreement to the MA to be executed by their duly authorized representatives as of the day and year of the last Party signing below.

Third-Party

_____

Title: _____

Date: _____

Recommended For Approval:

_____
Title: Statewide Utility Leader

Date: _____

Utah Department of Transportation

_____
Title: Project Director

Date: _____

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Comptroller's Office

Title: Contract Administrator

Date:

ATTACH EXHIBITS A, B AND C TO THIS SUPPLEMENTAL AGREEMENT

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EXHIBIT B

TO MASTER AGREEMENT
BUY AMERICA CERTIFICATIONS

In accordance with 49 U.S.C. § 5323(j) and 49 C.F.R. § 661.6, and the Build America, Buy America Act (Pub. L. 117-58) and its implementing regulations at 2 C.F.R. Part 184, for the procurement of steel, iron, manufactured products or construction materials, use the certifications below.

Certificate of Compliance with Buy America Requirements

The Third-Party, or any of its lower-tier bidders or offerors, hereby certifies that it will comply with the requirements of 49 U.S.C. § 5323(j)(1); the applicable regulations in 49 C.F.R. Part 661; and the Build America, Buy America Act (Pub. L. No. 117-58, §§ 70901-17) and its implementing regulations at 2 C.F.R. Part 184.

Date: _____

1. Signature:

2. Company:

3. Name:

4. Title:

Certificate of Non-Compliance with Buy America Requirements

The Third-Party, or any of its lower-tier bidders or offerors, hereby certifies that it cannot comply with the requirements of 49 U.S.C. § 5323(j), but it may qualify for an exception to the requirement pursuant to 49 U.S.C. § 5323(j)(2), as amended; the applicable regulations in 49 C.F.R. § 661.7; and the Build America, Buy America Act (Pub. L. No. 117-58, §§ 70901-17) and its implementing regulations at 2 C.F.R. Part 184.

Date: _____

5. Signature:

6. Company:

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7. Name:

8. Title:

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VINEYARD CITY COUNCIL STAFF REPORT

Meeting Date: December 10, 2025
Agenda Item: Vineyard Municipal Code Amendment — Title 2 Administration (Ordinance 2025-21)
Department: Administration
Presenter: Jayme Blakesley

Background/Discussion:

Vineyard City has historically operated under a five-member council form of government, consisting of the Mayor and four Councilmembers. Following Council action and voter approval in 2024, and in accordance with Utah Code Annotated §10-3b-301 and related statutory provisions, the City has approved a transition to a **six-member council form of government**.

This change increases the number of councilmembers from four (plus the Mayor) to five (plus the Mayor), thereby requiring updates to the relevant sections of the Vineyard Municipal Code that currently reference the former five-member structure.

Fiscal Impact:

Recommendation:
Staff recommends approving the amendments to Vineyard Municipal Code Title 2 Administration to reflect the change in the form of government, which becomes effective January 1, 2026.

Sample Motion:
"I move to adopt Ordinance 2025-21, as presented, with an effective date of January 1, 2026."

Attachments:
1. 2025-10-30 Council-Mayor-Manager -- Title 2 Changes (draft)

I. Background & Legal Framework

Vineyard City is changing from a five- to a six-member council form of government.

Under the Six-Member Council form (Utah Code § 10-3b-303):

- The Council is the municipality's legislative body and retains all powers not otherwise assigned.

- The Mayor exercises the powers listed in § 10-3b-104 (chief executive, budget message, appointments with consent, signing contracts, ceremonial head, etc.), unless the Council by ordinance:
    - Removes one or more powers, duties, or functions from the Mayor;
    - Delegates to the Mayor a power otherwise held by the Council; or
    - Reinstates previously removed powers.

The Council may, by ordinance, appoint a Manager and delegate to that Manager "one or more executive or administrative duties."

That means: Vineyard's new Title 2 must both (a) state the default statutory mayoral powers, and (b) specify which of those duties are delegated to the City Manager.

II. Policy Goals & Rationale

Vineyard is now a midsize, fast-growing city with increasing administrative complexity (infrastructure, downtown civic center, PIDs, etc.). A professional manager model provides continuity and efficiency, while keeping accountability with the elected Council and Mayor.

Therefore, the ordinance should:

a. Retain the Mayor's ceremonial, intergovernmental, and leadership roles;
b. Delegate routine day-to-day administration to a City Manager appointed by and accountable to the Council; and
c. Require the Manager to implement Council policy under the direction of the Council as a body, not individual members.

III. Proposed structure for Title 2, Chapter 4

§ 2.04.010 Mayor – Powers and Duties

(A) The Mayor is the chief executive officer of the City and shall perform the duties specified in Utah Code § 10-3b-104, except as otherwise provided in this Chapter.

(B) The Mayor:

(1) Presides at Council meetings and acts as chair of the legislative body;

(2) Signs ordinances, resolutions, contracts, and instruments on behalf of the City;

(3) Represents the City in ceremonial and intergovernmental affairs;

(4) Delivers an annual budget message to the Council;

(5) Appoints, with advice and consent of the Council, members of boards, commissions, and officers as provided by law; and

(6) Performs other duties assigned by statute or by ordinance not delegated to the City Manager.

§ 2.04.020 Delegation of Executive and Administrative Authority

(A) Pursuant to Utah Code § 10-3b-303(1)(b)(iii), the Council hereby delegates to the City Manager the executive and administrative duties listed in § 2.04.030 and 2.08.010.

(B) The Council retains the authority to modify, add to, or withdraw any delegated duty by ordinance or resolution adopted in accordance with Utah Code § 10-3b-303(2).

(C) The delegation of duties does not diminish the Mayor's authority to represent the City publicly or to provide policy leadership as chair of the Council.

§ 2.04.030 City Manager – Powers and Duties

(A) **Appointment**. The Council shall appoint a City Manager to serve at the pleasure of the Council. The Council may remove the Manager by majority vote at any time.

(B) **General Authority**. The City Manager shall be the chief administrative officer of the City under the policy direction of the Council and shall:

(1) Supervise and coordinate the administration of all departments, offices, and agencies of the City, except as otherwise provided by law;

(2) Implement ordinances, resolutions, and policies adopted by the Council;

(3) Prepare and submit to the Mayor and Council the annual budget and capital improvement plan; administer the adopted budget;

(4) Oversee personnel administration, including appointment, discipline, and removal of subordinate employees in accordance with the City's personnel policies;

(5) Manage procurement, contracts, and purchasing consistent with City ordinances;

(6) Prepare administrative regulations, subject to Council approval where required;

(7) Provide the Council and Mayor with timely reports and recommendations on City operations;

(8) Attend all Council meetings with voice but no vote; and

(9) Perform other duties delegated by ordinance, resolution, or Council direction.

(C) **Acting Manager**. In the Manager's temporary absence or incapacity, the Council may designate an Acting City Manager.

(D) **Additional Administrative Functions.** The City Manager shall perform all additional administrative functions and duties set forth in Section 2.08.010 of this Code, including general supervision of City departments, personnel management, fiscal administration, and enforcement of City ordinances and regulations, subject to the policy direction of the City Council.

§ 2.04.040 Administrative Relations and Non-Interference

(A) The Council shall act collectively through ordinance, resolution, or motion. No individual Councilmember or the Mayor may direct the City Manager or staff concerning the day-to-day operation of departments.

(B) Individual Councilmembers may make inquiries through the City Manager but shall not give orders to the City Manager or to subordinates of the City Manager.

(C) The City Manager shall keep the Mayor and Council fully informed of significant administrative matters and shall facilitate information flow between the administration and legislative body

* * *

2.08.010 Office Created; Administration Provisions

(A) **Office Created**: The office of the city manager, which shall be known as "city manager", is created and established pursuant to Utah code section 10-3b-303~~10-3b-403~~. The city manager shall be referred to as the city manager or the chief administrative officer.

(B) **Control**: The powers, duties and functions of the office of city manager shall be subject to the control and policies of the governing body which is defined in state law as being the mayor and council as a group.

(C) **Appointment**: The mayor, with the advice and consent of the city council, shall appoint the city manager, who shall be appointed on the basis of experience, and administrative and executive abilities and qualifications.

(D) **Bond**: Before taking office, the city manager shall furnish a fidelity bond, at the expense of the city, in the amount of sixty thousand dollars ($60,000.00), conditioned upon the faithful performance of his or her duties, with a corporation licensed to do business in this state as a surety. Such bond shall be filed with the city recorder after being approved by the governing body.

(E) **Term of Office**: The city manager shall serve at the pleasure of the mayor and the city council and may be removed at any time, with or without cause, by the affirmative vote of the mayor and a majority of the city council, or all council members except the mayor.

(F) **Discretion of Governing Body**: In removing the city manager, the governing body may use its discretion and its action shall be final and shall not depend upon any particular showing or degree of proof.

(G) **Employment Agreement**: Nothing in this chapter shall be construed as a limitation on the power or authority of the governing body to enter into any supplemental agreement with the city manager with additional terms and conditions of employment not inconsistent with any provisions of this chapter.

(H) **Salary**: The salary and other compensation of the city manager shall be established by the governing body in accordance with Utah law.

(I) **Office and Time Spent**: The city manager shall maintain an office in the city hall and shall spend such time in the performance of the duties of city manager as is necessary or may be required from time to time by the governing body. The City manager shall be an exempt employee for purposes of the fair labor standards act and shall not be entitled to overtime pay unless specifically agreed to by the governing body. The city manager shall not accept any outside employment in addition to employment by the city without prior approval of the governing body.

(J) **Residence**: The city manager need not be a resident of the city at the time of the city manager's appointment or thereafter.

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~~(J)~~(K) The powers and duties of the city manager are further described in Section 2.04.030 of this Code. In the event of conflict between this Section and Section 2.04.030, the provisions of Section 2.04.030 shall control.

RESOLUTION 2025-68
THE VINEYARD CITY PROPERTY PRIVACY POLICY

WHEREAS, the City of Vineyard, as a political subdivision organized under the laws of the State of Utah, possesses the authority to establish policies necessary to protect the public health, safety, and welfare; and

WHEREAS, the City recognizes the increasing importance of safeguarding property-related data and personally identifiable information in light of evolving technologies, data-sharing practices, and public expectations; and

WHEREAS, the adoption of a formal Property Privacy Policy is necessary to ensure consistency, accountability, and transparency in how the City collects, uses, protects, and shares such data; and

NOW THEREFORE BE IT RESOLVED BY THE GOVERNING BODY OF VINEYARD, UTAH AS FOLLOWS:

Section 1. **Approval** The Vineyard City Property Privacy Policy will be adopted as shown in Exhibit A.

Section 2. **Effective Date** This Resolution shall take effect upon passing.

Passed and dated this 10th day of December 2025.

_____
Julie Fullmer, Mayor

Attest:

_____
Tony Lara, Deputy City Recorder

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VINEYARD CITY PROPERTY PRIVACY POLICY

Section 1. Purpose

The purpose of this resolution is to safeguard the privacy, security, and proper use of property-related and personally identifiable data collected or maintained by Vineyard City.

Section 2. Definitions

(Definitions exactly as in the full policy: Property Data, PII, Sensitive Data, etc.)

Section 3. Data Collection and Use

(a) The City shall collect only data necessary for lawful municipal operations.
(b) Personal information shall be used solely for the purposes disclosed at the time of collection.
(c) Property and land-use data shall be used for planning, permitting, service delivery, and public transparency consistent with state law.
(d) Sensitive data shall not be disclosed except as required under GRAMA or court order.

Section 4. Data Protection

The City shall implement:

- Secure communication systems
- Role-based access controls
- Encryption standards
- Contractor compliance requirements
- Security training for employees

Section 5. Public Transparency

The City may release anonymized datasets for research, planning, or public use. Personal identifying information shall be removed unless legally required to remain public.

Section 6. Contractor Requirements

Contractors must comply with data protection standards adopted by the City and secure all data in their possession.

Section 7. Violations

Unauthorized use or disclosure of City data is grounds for disciplinary action, termination, contract cancellation, and referral for criminal investigation when applicable.

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VINEYARD
STAY CONNECTED

VINEYARD CITY COUNCIL STAFF REPORT

Meeting Date: December 10, 2025
Agenda Item: Contract Award for Construct Traffic Signals at Vineyard Loop Rd (600 North)/Main Street ($173,000) and 400 North/Mill Road ($248,000) projects using State Contract (Resolution 2025-65)
Department: Public Works
Presenter: Naseem Ghandour

Background/Discussion:
Staff is seeking to award Task Orders to Oak Hollow Electric Company under Utah State Contract No. 239598 for the construction of two new traffic signals.
Vineyard Loop Road (600 North) at Main Street for $173,000 (to include 15% contingency)
400 North at Mill Road for $248,000 (to include 15% contingency)

As Vineyard's transportation network continues to mature, traffic volumes at the Loop Road/Main Street and 400 North/Mill Road intersections have reached thresholds requiring signalization. Both locations are included in the City's Transportation Master Plan and are critical for:
1. Improving safety for vehicles, pedestrians, and bicyclists
2. Managing peak-hour congestion around schools, neighborhoods, and commercial corridors
3. Supporting continued population growth
4. Providing better connectivity to Main Street, 400 North, and the north-south corridor

Plans, specifications, and quantity takeoffs were prepared and reviewed for compatibility with UDOT, APWA, and City standards.

Procurement Approach
Under Vineyard Purchasing Policy and Utah Code 63G-6a-2105 and 63G-6a-906.5, Vineyard City is authorized to use UDOT's Statewide Traffic Signal Contract to procure signal construction services. This allows the City to:
1. Use standardized and competitive statewide pricing
2. Select from prequalified contractors with UDOT signal experience
3. Reduce administrative time and accelerate delivery
4. Ensure material and installation consistency with UDOT specifications

All work will be performed under State Contract No. 239598, and all major signal components (poles, mast arms, cabinets, heads, APS units, etc.) will be obtained through UDOT's State-Furnished Materials Program.

State-Furnished Materials Costs
UDOT will supply all major traffic signal equipment to Vineyard City at statewide contract pricing.
Project State-Furnished Materials Cost
1. Vineyard Loop Road/Main Street: $147,292.14
2. 400 North/Mill Road: $158,157.06
These components include the signal poles, mast arms, signal heads, pedestrian APS assemblies,

radar detection, controllers, and cabinets.

Statewide Traffic Signal Contract Vendor
The City completed a cost comparison of qualified vendors under the UDOT State Contract and determined Oak Hollow offered the lowest construction cost for both signals. In addition, Vineyard City will purchase traffic signal equipment through UDOT's State-Furnished Materials Program, resulting in consistent statewide equipment specification, lower pricing, and faster procurement.

Oak Hollow Electric provided the lowest total cost for both intersections based on the applied State Contract pricing. Their pricing was also consistent across underground work, foundations, electrical installation, boring, and assembly, making them the most cost-effective vendor.

Both signals are planned for Spring 2026 construction, with substantial completion required before May 30, 2026, to coordinate with adjacent roadway improvements and school-year traffic patterns.

Fiscal Impact:
Funds are in approved FY2025-2026 Captial Projects budget
1. Vineyard Loop Road (600 North) at Main Street upto: $173,000
2. 400 North at Mill Road upto: $248,000

Recommendation:
Staff recommends that City Council award the construction of both traffic signals to Oak Hollow Electric Company under Utah State Contract 239598, authorizing the City Manager to execute the Work Orders, and authorize issuance of the Notices to Proceed upon receipt of all required documentation.

Sample Motion:
"I move to adopt resolution 2025-65, awarding the construction contracts to Oak Hollow Electric Company for the construction of Traffic Signals at Vineyard Loop Road at Main Street and 400 North at Mill Road under the Utah State Contract."

Attachments:
1. RES 2025-65 Bid Award of Contract for Traffic Signals
2. Oak Hollow State Contract
3. DRAFT Tak Order - 400 North and Mill Rd Traffic Signal - State Contract 239598
4. 25-140 400 North & Mill Road - Final Signal Plans
5. 25-256_Vineyard Loop Rd & Main Street Plans
6. DRAFT Task Order - 600N-Main St Traffic Signal - State Contract 239598

RESOLUTION 2025-65

A RESOLUTION OF THE VINEYARD CITY COUNCIL AWARDING THE BID TO CONSTRUCT TRAFFIC SIGNALS TO OAK HOLLOW ELECTRIC COMPANY

WHEREAS, Vineyard City previously issued a Request for Proposals for a traffic signals at Vineyard Loop Road and Main Street, as well at 400 North and Mill Road;

WHEREAS, following a competitive procurement process, notice to bidders has been duly given as required by law; and

WHEREAS, after consideration of all bids filed it was determined that Oak Hollow Electric Company is the best qualified bidder to provide for the construction of said traffic lights.

NOW THEREFORE BE IT RESOLVED BY THE GOVERNING BODY OF VINEYARD AS FOLLOWS:

Section 1. The bid be awarded to Oak Hollow Electric Company for construction of both traffic signals under Utah State Contract 239598.

Section 2. The contract amount will be funded through the City's approved Capital Projects budget for 2025-2026.

1. Vineyard Loop Road (600 North) at Main Street up to: $173,000

2. 400 North at Mill Road up to: $248,000

Section 3. That city staff are hereby authorized and directed to execute the contract as is herein referred, and allow the City Manager to sign said contract.

Section 4. This resolution shall take effect upon passing.

Passed and dated this 10th day of December 2025.

Attest: _____ Mayor Julie Fullmer

_____
Deputy Recorder Tony Lara

VINEYARD SEAL UTAH

STATE OF UTAH CONTRACT

Contract # 239598

43283

1. This agreement is between the following agency of the State of Utah: UDOT

DEPARTMENT OF TRANSPORTATION 810 **Procurement /Central Maintenance**

to be referred to as STATE, and the following supplier to be referred to as CONTRACTOR:

Company:	**Oak Hollow Electric Company**	Contact Person:	Travis Lee
Address:	PO Box 71099	Phone Number:	801-520-9995
City, State, Zip:	Salt Lake City UT 84171	E-mail address:	travis@oakhollowelectric.com
		Vendor Code:	VC215470
		Commodity Code(s):	968

LEGAL STATUS OF CONTRACTOR:
☐ Sole Proprietor ☐ Non-Profit Corporation ☒ For Profit Corporation ☐ Partnership ☐ LLC

2. CONTRACT TYPE & PURPOSE:
☒ Requirements ☐ Multiple Award ☐ Firm Fixed Price ☐ Other:

To provide: Install upgrade Repair Traffic Control Systems.

3. PROCUREMENT: This contract is entered into as a result of the Procurement process on Bid # UDOT230294CN
PSO Requisition #: 2023-0295 FY: 2023

4. CONTRACT PERIOD: Effective date: 6/1/2023 Termination date: 5/31/2028
Contract will expire on this date unless terminated early.

5. CONTRACT COSTS: .

6. ATTACHMENT A: Terms and Conditions for Goods
ATTACHMENT B: Scope of Work
ATTACHMENT C: Cost Sheet
ATTACHMENT D:

Any conflicts between Attachment A and other attachments will be resolved in favor of Attachment A.

7. DOCUMENTS INCORPORATED INTO THIS CONTRACT BY REFERENCE BUT NOT ATTACHED:
A. All other governmental laws, regulations or actions applicable to the goods and/or services authorized by this contract.
B. Utah State Procurement Code, Procurement Rules and Contractor's responses to Bid#UDOT230294CN, dated 05/12/2023.

IN WITNESS WHEREOF, the parties sign and cause this contract to be executed.

CONTRACTOR

Travis Lee

Contractor's Signature

Oak Hollow Electric Company

Contractor's Business Name

PM

Title

STATE OF UTAH

UDOT Procurement Services

, UDOT Director of Operations

Kristi Barney

Contract Administrator
Comptrollers Office

Cody Nelson	801-965-4063	codybnelson@utah.gov	Adam Lough	801 718 4326	alough@utah.gov
Agency Contact Person	Phone Number	E-mail address	Division Contact Person	Phone Number	E-mail address

REQUEST FOR PROPOSAL
Installation, Repair or Upgrade of Traffic Control Systems
Solicitation # UDOT230294CN

PURPOSE OF REQUEST FOR PROPOSAL (RFP)

The purpose of this request for proposal is to enter into a contract with a qualified firm to Install, Upgrade, or Repair Traffic Control Systems. It is anticipated that this RFP may result in a contract award to multiple contractors.

This RFP, having been determined to be the appropriate procurement method to provide the best value to the State, is designed to provide interested offerors with sufficient basic information to submit proposals meeting minimum requirements. It is not intended to limit a proposal's content or exclude any relevant or essential data. Offerors are at liberty and are encouraged to expand upon the specifications to evidence service capability under any agreement.

BACKGROUND

UDOT Traffic and Safety has been using the procurement contract method to provide Traffic Control Systems in an efficient and cost-effective manner for many years. This contract will continue to provide this service.

ISSUING OFFICE AND RFP REFERENCE NUMBER

The State of Utah Division of Purchasing is the issuing office for this document and all subsequent addenda relating to it, on behalf of UDOT Traffic and Safety. The reference number for the transaction is Solicitation #UDOT230294CN This number must be referred to on all proposals, correspondence, and documentation relating to the RFP.

NOTICE: Wherever the term bid, bidder, bidding or quote appears in this solicitation or reference is made to a bid, bidder, bidding, or quote, it shall be interpreted to mean offeror, as defined in 63G-6a-103, RFP, or Request for Proposals, as defined in 63G-6a-103 and the procurement shall be conducted subject to the provisions of 63G-6a-701.

SUBMITTING YOUR PROPOSAL

NOTICE: By submitting a proposal in response to this RFP, offeror is acknowledging that the requirements, scope of work, and the evaluation process, outlined in the RFP are fair, equitable, not unduly restrictive, understood and agreed to. Any exceptions to the content of the RFP must be protested to the purchasing agent prior to the closing date and time for submission of the proposal.

Proposals must be uploaded in Sciquest by the posted due date and time. Proposals received after the deadline will be late and ineligible for consideration.

When submitting a proposal electronically through Sciquest, please allow sufficient time to complete the online forms and upload documents. The solicitation will end at the closing time listed in the RFP. If you are in the middle of uploading your proposal at the closing time, the system will stop the process and your proposal will not be received by the system.

Electronic proposals may require uploading of electronic attachments. Sciquest site will accept a wide variety of document types as attachments. However, the State of Utah is unable to view certain documents. Therefore, you **MAY NOT submit** documents that are **embedded (zip files), movies, wmp, and mp3 files**. All documents must be attached as separate files.

Cost will be evaluated independent from the technical proposal, and as such, is to be submitted separate from the technical proposal. An offeror must obtain 42 out of 70 possible (60%) of the technical proposal points and pass all the pass/fail criteria in order to submit a cost proposal that will be worth the final 30 points of the total score (100). The cost proposal is by invitation only after evaluation and scoring of the technical proposal phase.

LENGTH OF CONTRACT

The Contract resulting from this RFP will be for a period of five (5) years.

The State of Utah reserves the right to review contract(s) on a regular basis regarding performance and cost analysis and may negotiate price and service elements during the term of the contract.

PRICE GUARANTEE PERIOD

All pricing must be guaranteed for one (1) year. Following the guarantee period, any request for price adjustment must be for an equal guarantee period and must be made at least 30 days prior to the effective date. Requests for price adjustment must include sufficient documentation supporting the request. Any adjustment or amendment to the contract will not be effective unless approved by the State Director of Purchasing. The State will be given the immediate benefit of any decrease in the market, or allowable discount. Any adjustment must provide all other contract holders the same opportunity to adjust pricing on the same item(s).

STANDARD CONTRACT TERMS AND CONDITIONS

Any contract resulting from this RFP will include but not be limited to the State's Standard Terms and Conditions (see Attachment A). Exceptions and or additions to the State Standard Terms and Conditions are strongly discouraged.

Exceptions and additions to the Standard Terms and Conditions must be submitted with the proposal response. Exceptions, additions, service level agreements, etc. submitted after the date and time for receipt of proposals will not be considered. Website URLs, or information on website URLs must not be requested in the RFP document and must not be submitted with a proposal. **URLs provided with a proposal may result in that**

proposal being rejected as non-responsive. URLs are also prohibited from any language included in the final contract document.

The State retains the right to refuse to negotiate on exceptions should the exceptions be excessive, not in the best interest of the State, could result in excessive costs to the state, or could adversely impact existing time constraints.

In a multiple award, the State reserves the right to negotiate exceptions to terms and conditions based on the offeror with the least to the most exceptions taken. Contracts may become effective as negotiations are completed.

If negotiations are required, contractor must provide all documents in WORD format for redline editing. Contractor must provide the name, contact information, and access to the person(s) that will be directly involved in legal negotiations.

QUESTIONS

All questions must be submitted through Sciquest. Answers will be given via the Sciquest site.

ADDENDA

Offerors are encouraged to periodically check SciQuest for posted questions, answers and addendums.

Any modification to this procurement will be made by addendum issued by the State Division of Purchasing. Addendums to this solicitation may be made for the purpose of making changes to the scope of work, the schedule, the qualification requirements, the criteria, the weighting, or other requirements of this solicitation.

After the due date and time for submitting a proposal to this solicitation, at the discretion of the chief procurement officer or head of a procurement unit with independent procurement authority, addenda to this solicitation may be limited to the Offerors that have submitted proposals, provided the addenda does not make a substantial change to this solicitation that likely would have impacted the number of Offerors responding to the original publication of this solicitation, in the opinion of the chief procurement officer or head of a procurement unit with independent procurement authority.

Authorized and properly issued addenda shall constitute the official and binding position of the State.

The State accepts no responsibility for a prospective Offeror not receiving solicitation documents and/or revisions to the solicitation. It is the responsibility of the prospective Offeror to monitor the SciQuest system to obtain addenda or other information relating to the solicitation.

Any response to this solicitation which has as its basis any communications or information received from sources other than this RFP or related addenda may be considered non-responsive and be rejected at the sole discretion of the State.

DISCUSSIONS WITH OFFERORS (ORAL PRESENTATION)

An oral presentation by an offeror to clarify a proposal may be required at the sole discretion of the State. However, the State may award a contract based on the initial proposals received without discussion with the Offeror. If oral presentations are required, they will be scheduled after the submission of proposals. Oral presentations will be made at the offerors expense.

PROTECTED INFORMATION

The Government Records Access and Management Act (GRAMA), Utah Code Ann., Subsection 63G-2-305, provides in part that:

The following records are protected if properly classified by a governmental entity:

(1) trade secrets as defined in Section 13-24-2 if the person submitting the trade secret has provided the governmental entity with the information specified in Section 63G-2-309;

(2) commercial information or nonindividual financial information obtained from a person if:

(a) disclosure of the information could reasonably be expected to result in unfair competitive injury to the person submitting the information or would impair the ability of the governmental entity to obtain necessary information in the future;

(b) the person submitting the information has a greater interest in prohibiting access than the public in obtaining access; and

(c) the person submitting the information has provided the governmental entity with the information specified in Section 63G-2-309;

* * * * *

(6) records, the disclosure of which would impair governmental procurement proceedings or give an unfair advantage to any person proposing to enter into a contract or agreement with a governmental entity, except, subject to Subsections (1) and (2), that this Subsection (6) does not restrict the right of a person to have access to, after the contract or grant has been awarded and signed by all parties, a bid, proposal, application, or other information submitted to or by a governmental entity in response to:

(a) an invitation for bids;

(b) a request for proposals;

(c) a request for quotes;

(d) a grant; or

(e) other similar document;

Pricing may not be classified as confidential or protected and will be considered public information.

Process for Requesting Non-Disclosure: Any Bidder requesting that a record be protected shall include with the bid a Claim of Business Confidentiality. To protect information under a Claim of Business Confidentiality, the Bidder must complete the Claim of Business Confidentiality form with the following information:

1. Provide a written Claim of Business Confidentiality *at the time the information (proposal) is provided to the state*, and

2. Include a concise statement of reasons supporting the claim of business confidentiality (Subsection 63G-2-309(1)).

3. Submit an electronic "redacted" (excluding protected information) copy of the proposal. Copy must clearly be marked "Redacted Version."

The Claim of Business Confidentiality form is located at: http://purchasing.utah.gov/for-vendors/

An entire bid cannot be identified as "PROTECTED", "CONFIDENTIAL" or "PROPRIETARY" and shall be considered non-responsive unless the Bidder removes the designation.
Redacted Copy: If an Bidder submits a bid that contains information claimed to be business confidential or protected information, the Bidder must submit two separate proposals: one redacted version for public release, with all protected business confidential information either blacked-out or removed, clearly marked as "Redacted Version"; and one non-redacted version for evaluation purposes clearly marked as "Protected Business Confidential."

All materials submitted become the property of the State of Utah. Materials may be evaluated by anyone designated by the State as part of the bid evaluation committee. Materials submitted may be returned only at the State's option.

Attachment B - DETAILED SCOPE OF WORK

All **Scope of Work Requirements *MUST*** be met by Offeror in order for their response to be considered. Any breach of requirements once the Contract has been awarded constitutes breach of Contract by the vendor and the Contract may be terminated immediately.

This contract is for installation, upgrade, or repair of traffic control systems. Work will be

performed in any area of the State. Contractor may bid on ALL or PART of the state to perform work. Please indicate this in your technical proposal by identifying which mobilization areas you intend to bid on. This contract is a very broad, encompassing contract. In general terms, the Contractor will have full responsibility for the installation of a traffic control system (full or partial intersection), and any necessary upgrading repair of intersection components and pedestrian facilities. Each project will be assigned on an as needed basis by a UDOT Representative and the department makes no guarantee on usage.

Projects resulting from this contract are considered small construction projects. Contractors are expected to complete any assigned project safely, quickly, and with minimum delays.

Contractor should provide all properly qualified, licensed, and or certified personnel. Conduct all work in a safe and efficient manner using approved safety apparel. They must have sufficient staff, knowledge, and skills to complete a variety of UDOT's traffic control system projects on time. Work will be performed in accordance with the most current version of UDOT Standard Drawings and Specifications, Project Special Provisions, and Department Supplemental Specifications.

Unless otherwise directed by the UDOT representative, the contractor is to perform all work to meet or exceed the requirements noted in the project drawings and specifications. If the work does not meet or exceed the project requirements, the contractor will correct the deficient work at their expense.

For each individual project, the contractor must submit a list of personnel assigned to the project for UDOT Representative approval.

Coordination of Work- General: All work shall be coordinated through and directed by the UDOT representative. Each project may have a different representative.

The contractor shall not sub-contract any electrical/signal work, without the written approval of the UDOT representative. Striping, asphalt, concrete flatwork, fiber optics, and boring can be sub-contracted out if needed. It is expected that the Contractor have the necessary equipment to perform the work in a safe and efficient manner.

Project Distribution: Project plans will be emailed to the Contractor at which point they will be given 5-working days to evaluate the project and prepare the necessary items to receive notice to proceed for an individual project:

- Submit to the UDOT representative a cost proposal based on their individual contract item pricing,
- Provide a list of personnel on the project having required credentials,
- Submit a schedule with traffic control phasing, and
- Provide a start date for the project.

If the contractor determines they are unable to perform the work, they must notify the UDOT representative within 3 days. At that time the project will be assigned to another available contractor.

Project Proposal Evaluation: After the contractor has submitted the necessary project items, the UDOT representative will evaluate the submittal and address any missing or extra items of work. If the proposed project schedule is excessive, the UDOT representative reserves the right to revoke the project and give it the next available contractor on the contract.

Individual projects will be awarded if the Contractor's schedule, estimate, traffic control, and personnel are accepted by the UDOT representative. The contractor will be given Notice to Proceed (NTP) and from this date the contractor will have 10-calendar days to start work unless otherwise specified in the project plans. If work is not started within 10-calendar days the project may be awarded to another contractor.

Additional or modified pay items may require additional department approval. The contractor has the right to refuse an entire project, but not an individual work item within a project unless the item is presented after the project award.

The approved project schedule must be reviewed and discussed on a weekly basis with the UDOT representative to ensure timely work flow. If there are early indications the project delivery will be late, it is the contractor's responsibility to promptly inform the UDOT representative in writing detailing the issues resulting in the delay. Also, a specific corrective solution how the contractor will return to schedule i.e, adding personnel, changing work flow etc. If schedule milestone completion continues to be in jeopardy, the UDOT representative may take action as noted below. If additional work is to be added to the project by the UDOT representative, a schedule modification should be submitted for representative approval.

Contractor Performance: If a Contractor at any time is not meeting project schedule, standards or specifications as outlined in the contract, the UDOT representative may do any of the following:

- Issue a written warning.
- Stop award of any future projects until current work is complete or rectified.
- Withdraw work and award to another contractor.
- Issue a written notice to the Contractor and the Surety Company that the contractor is failing. The Surety Company and the contractor shall provide a written plan to the UDOT representative to restore the projects' delivery.
- Suspend the Contractor's parent contract.

Emergency Work: There will be times when emergency work is needed due to a crash, natural disaster, or equipment failure. Due to the nature of these projects they will be given to any contractor on the list that has available personnel and equipment to respond within given time constraints. Typically, emergencies require staff to be on site of the emergency within one (1) hour.

Traffic Control: Traffic control will be needed on most projects. The contractor will comply with UDOT's policies, procedures and safety standards for traffic control plans and the application of traffic control systems as set forth in the Utah Manual on Uniform Traffic Control Devices or as amended by the Region Traffic Engineer. All traffic control phases must be pre-approved by the UDOT representative. Traffic control is paid as outlined in the contract bid documents measurement and pavement and have maximum

percentages base on the project value. All intersection shut downs must have law enforcement provide flagging and be **4 hours or less** unless prior approval for additional hours is granted by the UDOT representative.

Surveyor: There may be projects that require a licensed surveyor to lay out the traffic signal design. This work can also be subcontracted. It will be determined at the preconstruction meeting or in the notice of potential project if survey will be needed. Survey could also be requested to establish existing right of way.

Project Completion and Walk Through: When the contractor announces a project is complete, a completed signal turn on checklist must be provided to the UDOT representative or Resident Engineer that is assigned to the project. A final walk through will only be completed after the completed checklist has been given to the UDOT representative or Resident Engineer. From the walk through, a punch list of final work items will be generated. The contractor will have 15 working days to complete the punch list. In most cases on smaller projects, an inspection and punch list will be generated by the signal crew inspecting the final work. No formal walk through will required in this case.

Payment Approval: The UDOT representative will verify completion of the punch list before paying the Contractor's single, one-time invoice. No progress payments will be allowed on this contract. The intention is to encourage work in a timely manner, encourage proactive response to issues, and to discourage projects left open. Invoices must include notice to proceed, start date, and end date of the project.

Coordination of Work – Additional Provisions and Requirements: No additional compensation will be given to the contractor for material pickup. These costs are part of the mobilization payment. The Contractor will be required to receive State Furnished Materials at:

UDOT Central Warehouse
4501 South 2700 West
Salt Lake City, Utah,
** Unless otherwise coordinated with the State Representative.*
*** Appointment mandatory to pick up product by calling (801) 965-4071*

**** Occasionally, additional State Furnished Items need to be picked up from the Region offices. Coordinate with the UDOT Representative for time and location.*

Travel: All travel involving overnight stay must be approved by the UDOT Representative. Hotel and meals are paid at the current State Per Diem.

TECHNICAL PROPOSAL REQUIREMENTS AND COMPANY QUALIFICATIONS

The following requirements and qualifications are minimums and will be evaluated as a pass/fail criterion. The offeror is responsible for providing evidence that they meet the minimum requirements.

1. Demonstrate recent traffic signal construction experience, at a minimum list 3

traffic signals completed within the state of Utah over the last 5 years. (Complete attached spreadsheet.)

2. Contractor must have a journeyman or master electrician with a minimum five (5) years of experience installing complete traffic control systems and a minimum, five (5) traffic control system installations in the last 5 years. (Experience does not have to be with current employer. Complete attached spreadsheet.)

3. Surety bond, UDOT must receive a letter from a surety company stating the contractor can acquire a $1,000,000 bond for the life of the contract (5-years).

4. To be eligible to construct any traffic signal project for UDOT, including this contract, the contractor must follow standard specification 02892 or any supplemental to this specification that requires certification documents for IMSA Traffic Signal field level II certified technicians or Department approved equivalent. Please provide a minimum of 2 certified technicians for this contract. (Complete attached spreadsheet.)

5. Offeror must provide a minimum of one (1) certified traffic control maintainer and one (1) certified flagger to be assigned to this contract. (Complete attached spreadsheet.)

The following proposal items will be evaluated and weighted as outlined below. An offeror must obtain 42 (60%) of the 70 available technical proposal points and pass all the pass/fail criteria in order to submit a cost proposal that will be worth the remaining 30 points of the total score (100). The cost proposal is by invitation only after evaluation and scoring of the technical proposal phase. All proposers that meet the proposal minimums could be awarded work, however, work distribution to all awarded contractors is not guaranteed or required.

(50 points) Staff and Project Team: At a minimum demonstrate the following:

- **Staffing Plan –** Complete the attached spreadsheet (or use the same format) demonstrating a journeyman or master electrician (up to eight (8) electricians) with a minimum of three (3) traffic control systems installed in the last five (5) years, can include locations other than state routes. Also, provide names and certification levels (for up to 20 field staff) of personnel that will install traffic signal control systems. Certifications can be for IMSA II and above or certification for the UDOT Signal Construction training. Demonstrate if staff has partnering and traffic control maintainer and flagger certifications of team members proposed for this project.
- **Project Experience –** Complete the attached spreadsheet (or use the same format) to provide a list of projects and corresponding licensed electricians and IMSA staff (or department equivalent) that worked on the projects. At a minimum, list traffic control systems installed each year during the past five (5) years.

(20 points) Capability and Approach: (1 page limit) Demonstrate any unique

qualifications that allow you to perform the type of work described in the scope of work. Discuss staffing levels, and how you propose to address these projects to complete them in a timely manner. Discuss your company's internal quality and procedures to ensure quality signal construction projects. Illustrate the logistics of how your construction team will provide the services requested, and identify company resources (trucks, cranes, bore equipment, etc.) that will be used to compete the projects. Describe your team's proposed course of action to meet the contract goal and scope of work, while considering safety measures you implement to ensure the safety of the traveling public and your construction staff. Identify any lessons learned, or partnering examples, and your responsiveness to any emergencies encountered on your previous projects. Be realistic, clear, and concise.

PROPOSAL RESPONSE FORMAT

All proposals must include:

1. **RFP Form**. The State of Utah Department of Transportation Supplier Information Form completed and signed.
2. **Executive Summary.** The one or two paragraph executive summary is to briefly describe the offeror's proposal. This summary should highlight the major features of the proposal including areas of the state the offeror is willing to work. It must indicate any requirements that cannot be met by the offeror. The reader should be able to determine the essence of the proposal by reading the executive summary.
3. **Detailed Response.** This section should constitute the major portion of the proposal and must contain at least the following information:
    A. **Key Personnel and Project Experience:** Identify key staff and project experience on the attached spreadsheets meeting minimum requirement identified above.
    B. **Capability and Approach:** Discuss staffing levels, and how you propose to address the projects to complete them in a timely manner and any other important items that make you uniquely qualified for this contract.
4. **Protected Information.** All protected information must be listed using the claim of Business Confidentiality form in this section of proposal response. If claiming business confidentiality, you are required to submit an electronic "redacted" (excluding protected information) copy of the proposal. Copy must clearly be marked "Redacted Version." This must be uploaded with your original proposal. ***Please indicate if you do not have any protected information.***
5. **Cost Proposal.** Cost will be evaluated (at a later date) independently from the technical proposal only from offerors meeting the technical proposal minimums and invited to proceed to the cost proposal. Cost is to be submitted as a separate document. Inclusion of any cost or pricing data within the technical proposal may result in your proposal being judged as non-responsive.

PROPOSAL EVALUATION CRITERIA

A committee will evaluate proposals against the following weighted criteria. Each area of the evaluation criteria must be addressed in detail in proposal.

WEIGHT	EVALUATION CRITERIA
50 %	Qualification and expertise of staff proposed for this project.
20 %	Demonstrated technical capability (proven track record) and approach to the project.
30 %	Cost proposal will only be evaluated by request of the state after passing the technical proposal portion of the RFP.

All proposals in response to this RFP will be evaluated in a manner consistent with the Utah Procurement Code, rules, policies and the evaluation criteria established in the RFP.

AWARD OF CONTRACTS

Contractors meeting the pass/fail criteria and achieving 60% of the possible points for the technical proposal will be asked to complete the cost proposal. Each contractor will competitively price approximately 250-line items related to signal control system work (see attached Bid Item List). These bid items will represent specific construction tasks relative to the work anticipated in a typical project under this contract. If awarded, these prices will become the fixed prices for the contract.

To determine the low bid, predetermined quantities of select bid items will be used to populate sample projects. Total price from each sampling will be used to determine the low bid. Contractors that achieve a combined 70 points of the total 100 available will be awarded the contract. This is the combination of technical and cost proposals that were scored as part of this RFP.

The State reserves the right to award the contract(s) to a technically qualified lower cost offeror(s) in the event the high scoring offer is determined to not be the best value offered to the State, based on a cost benefit analysis.

PERFORMANCE EVALUATION (optional)

All contracts resulting from this solicitation are subject to performance evaluations. Continuous negative performance evaluations and documented feedback from end users may impact a vendor’s ability to participate in future solicitations. Performance evaluations may include end user surveys, performance audits, reports, interviews, or other reasonable method of performance evaluation. Vendors will be notified of any negative performance evaluations or end user feedback collected.

Attachment C

Heat Tape Installation Procedure

Background

This document describes how to install, commission, and use a heat-tape system that can prevent or clear buildup of snow and ice on traffic signal indications. **No more than 7 visors per approach can receive heat-tape**, as the 15-amp breaker cannot handle any more than that. **No more than 2 approaches per signal are to be equipped**.

Heat Tape Installation

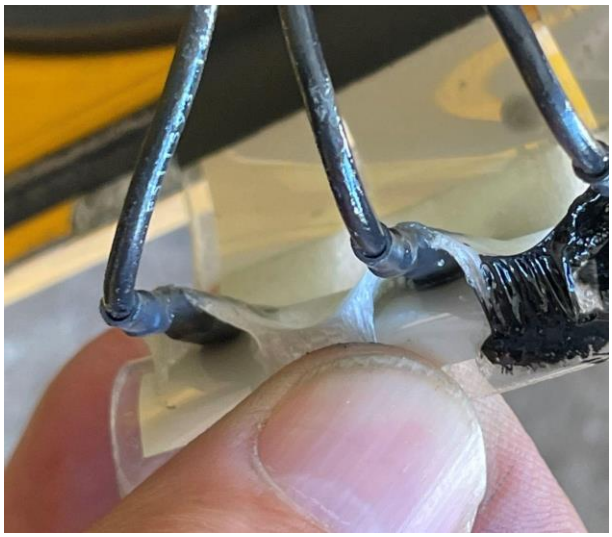
1. Please install heat tape on the following visors:
    a. **Type 1 through-movement signal head (red, yellow, green)**. If multiple through signal heads exist, pick the one that you want to install heat-tape, taking into account the head most visible for the traveling public and accessibility to safely perform the work. Only one of the multiple type 1 through signal heads should receive the heat tape. Install heat tape for the red, yellow and green indication. (Do not install heaters on signal heads that are not mounted on the mast arms.)
    b. **Left Turns. Only if the head is protected only or Flashing Yellow Arrow.** If multiple left turn heads are present (e.g. type 3 heads), pick the one that you want to install heat tape on, that is most visible to the traveling public and is most accessible for installation. Please do not install heat tape to any type 5 (doghouse) heads, as these may be replaced soon in the future and the intersection will operate ok even if the doghouse signal is covered with snow.

2. Use the following spare wires from the 7 conductor cable.
    THRU: Black - HOT, White/Black - COMMON.
    LEFT TURN: Red - HOT, Green - COMMON

3. **Place Signal in FLASH before starting installation of Heated Visors to the signal head.** FOR YOUR SAFETY! This will slow down traffic so you can work more safely as well as make it more safe to the traveling public when removing LEDs from the housing just in case a vehicle sees the wrong LED.

4. **Heater Install.** In your shop, install the heaters on a new visor, or a good spare visor removed during the heater install.. Take visors to the field to install. Take a couple complete Signal heads, with heaters installed. You will need these to replace the metal heads that you may encounter. (Visor screws will not come out.)

5. Before starting to install the heater, it is suggested that you "Paint" some liquid tape on the leads where they go into the flat ribbon. This will keep moisture from wicking into the heater. See image below.



6. **Clean visor** using alcohol (it doesn't damage the visor and evaporates off). Using a spray bottle, thoroughly soak the inside of the visor. Use a clean microfiber towel and wipe the surface to clean. If it looks like there's still some dirt, clean again. Always keep a clean towel, to wipe with. Make sure the visor is completely dry before applying the heat-tape, as condensation or leftovers from the cleaning solution may create a barrier to adhesion.

7. **Cut a slit** in the back middle of the release liner with a pair of good scissors. Fold back a small corner of the backing paper, just enough to expose some of the adhesive. Place the heater in the visor and move around until you are satisfied that it will fit.

8. **Line the heat-tape up very carefully** while the visor is in its approximate operating shape (the visor bends easily). Keep the edge of the heater ¼ inch from the back side of the visor. This will prevent the heater getting damaged between the signal head and the visor. The adhesive is no joke, and if it is applied incorrectly, the heat-tape will likely be destroyed in removal.Tape the opposite side (Wing) of the heater down to prevent it from moving around while removing the backing of the other wing. then proceed to apply it like a band-aid. Peel back the backing paper a little at a time, sticking the heater to the visor. Use your hand lightly to apply enough pressure to get the heater on. Work slowly to avoid trapping air bubbles under the heater.

9. Using a two-inch rubber roller, **roll over the entire surface of the heat-tape**, Use one hand on the outside of the visor to apply a firm area of pressure to support the roller.since these bond using a pressure-sensitive adhesive. Please note that they will install better with warmer temperatures because the adhesive is more malleable. That being said, the quality of the adhesion is based primarily on total surface-area contact. At colder temperatures, it will just require a higher application pressure to ensure full engagement of the adhesive.

10. Remove the visors from the signal head. Keep for future use if in good condition. Install The new visors with the heating element applied.

11. You need to remove the signal module, or loosen enough to pull the top out, to get the flat ribbon under the module into the housing.

12. The picture below shows a flat ribbon from visor to signal head, before the LED module is re-installed.

13. Route the flat ribbon cable under the signal module and then re-install the module installed with ribbon under seal. Suggest using some tape to hold the heater leads to the module. It helps control the wires.

14. Install a second terminal block under one of the other LEDs (red or green). To connect all the heater wires. This keeps them isolated from the other signal wiring. Crimp an appropriate type terminal on the Spare wires coming from the cabinet. Connect this wire for the hot to the terminal block. This is the HOT for the heaters.(Black or Red) Connect the other wire (White/ black or Green) you are using for the Common to another of the terminals of the terminal block. Using directional colored tape, mark the wires you are using and mark the other end in the cabinet the same color. Connect one of the .250 insulated female spade lugs of the heater wires to the terminal strip where you landed the HOT from the cabinet. Connect the other wire from the heater to the Common terminal where you landed the common wire.

15. When putting heaters on a FYA, you may need to put piggyback connectors on one of the heater wires. This will expand where you connect the wires to.

16. Install a 15-amp breaker in the power pedestal for each approach heat-tape is being used (two approaches maximum). Run a 4-conductor 14-gage wire. Use Black for the eastbound/westbound approach and red for the southbound/northbound approach. Leave enough slack in the power cable to reach any point in the cabinet

Cabinet Relay Panel Assembly

17. Starting with a new DIN Rail (1 ft.), attach the relay socket.
    Insert the Swamping Diode module into the relay socket across A1 and A2 This only goes in one way.
    Insert a relay into the socket. Note: this holds the Diode in place.
    Attach 1 plastic mounting bracket (Green) to the DIN Rail, right of the relay socket.
    Attach the indicator light panel to this bracket. (Keep close to Bus Bar)
    Attach a bus bar to 2 of the plastic Gray brackets and attach to the DIN Rail. This is for the commons.

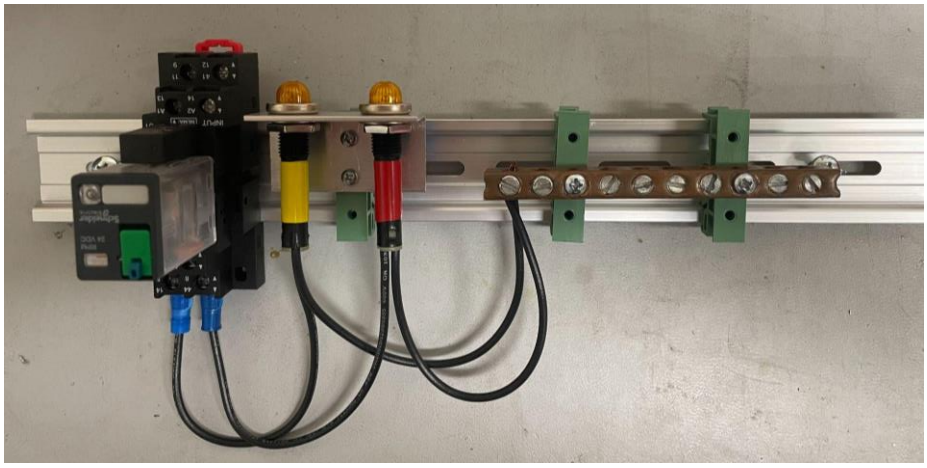
18. Using 2 NEON bulbs, twist one wire from each bulb together. Connect these 2 wires together into the common bus bar. Crimp a blue fork terminal on the other end of the NEON bulb wire. Connect one of the wires to each of the outputs of the relay (14 and 44) (Where the spare wire to the signal head connects). Using color tape, mark the approach on the barrel of the neon light.

19. Connect all common wires coming from the signal head for the heater circuit to the bus bar mounted on the DIN Rail. Connect the Common wires from the Power pedestal to the Common bus bar.

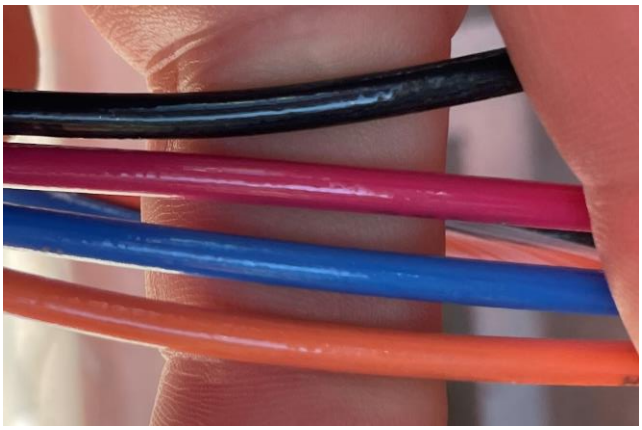
20. Parts List for Relay panel: (State Furnished)
    DIN Rail Graingers #18Z759
    Relay Socket # RPZF2
    Relay RPM22BD
    Protection Module RXM040W
    DIN rail mounts DK-35A
    NEON bulb 75R-2213
    Common Bus Bar (Salvage from old cabinets at this time)
    Neon Bulb bracket. 1" Aluminum angle, cut to 1 ⅞" long
    Bus Bar mounting screw #6 X ¾ Sheet metal screw
    NEON Bulb mounting screw #4 X ⅜"

Cabinet Equipment Installation

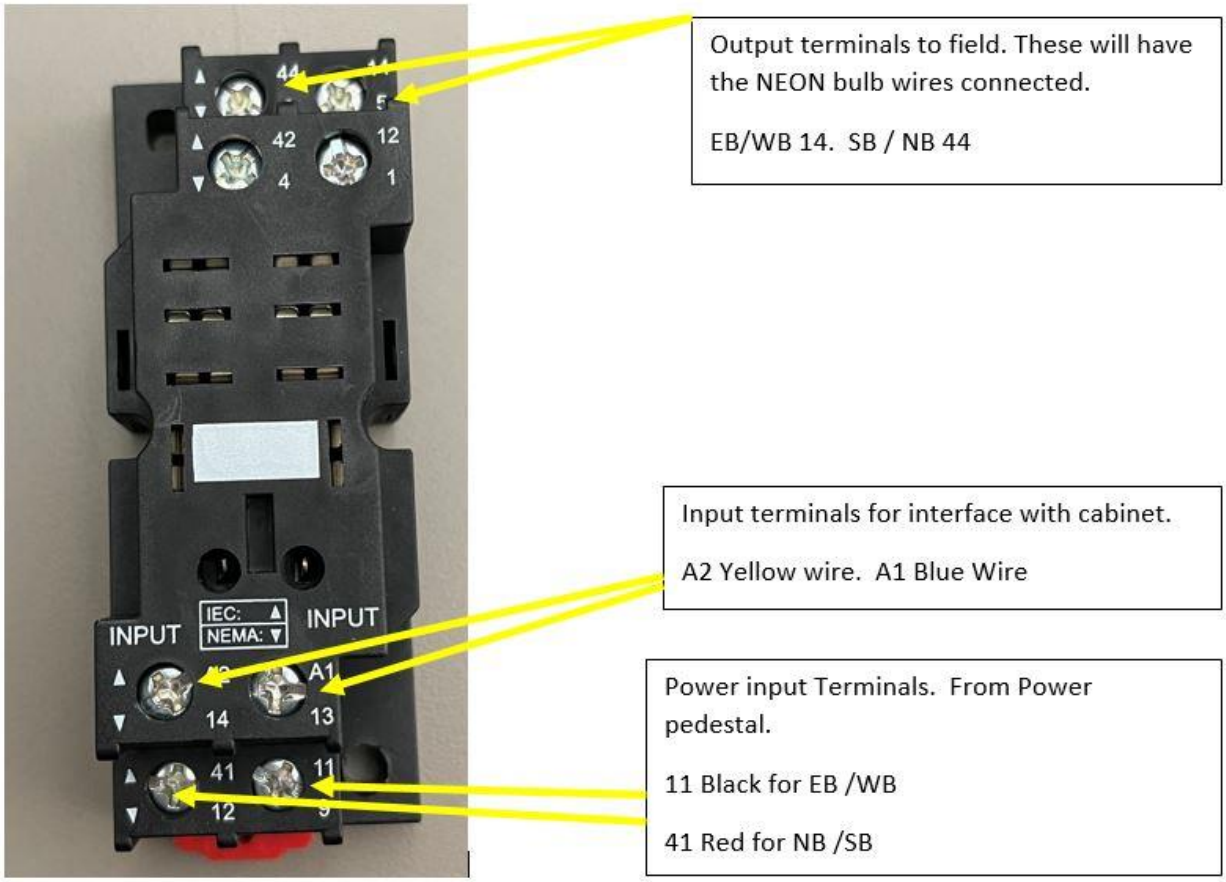
21. **Power Pedestal wires**. Connect the black wire for eastbound/westbound to the right side of the relay (terminal 11) and the red wire for southbound/northbound to the left side of the relay (terminal 41).



Connect the Blue and Orange wires to the common bus bar on the DIN rail.



22. **Signal Head Wires.** Connect the spare wires going to the EB/WB signal head heaters to Terminal 14 of the relay. Use a Yellow fork terminal to connect 2 leads together, and a blue fork terminal for a single lead.

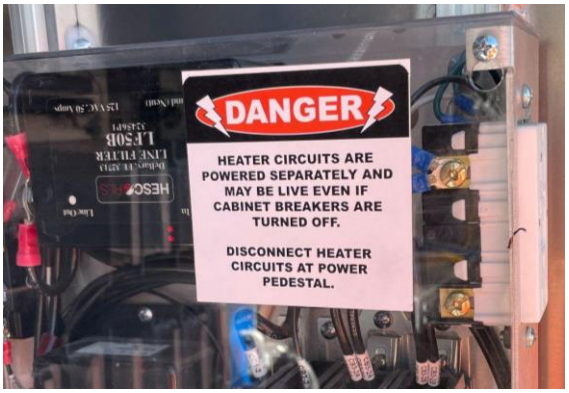


23. Connect the spare wire going to the NB/SB signal head heaters to terminal 44 of the relay. Use a Yellow fork terminal, to connect the 2 leads together, and a blue fork terminal for a single lead.

24. **Control Wires**. Connect an 18 ga Blue wire from +24VDC in the cabinet to terminal A1 of the relay block. Connect a Yellow 18 ga wire from "TBC Out 3" (TBC AUX 3.) in the cabinet to terminal A2 of the relay block.

25. The Relay block, Neon lights, and DIN rail will be assembled by the Signal Operations Team. This assembly will then be installed in the cabinet for wiring. Find a suitable location in the cabinet for the relay panel to be mounted.

26. Place a warning label on the cover over the power panel, along the top, and another one by the heater circuit.



Test:

Once all wires are connected, you need to verify that all field connections are good. Use a clamp type meter to measure the current draw. Clamp around the main feed wire from the power pedestal. Turn on the relay by lifting the green tab. You should see approx 2 amps for a 3 section head with heaters. This will vary a little due to outside temperature If you think there is a bad connection, you can measure each circuit going out to the signals

a. Econolite Controller
    i. Program any Action Plan(s) (MM-5-2) with Special Function 3 checked, and make that Action Plan active through the day plan (MM-5-3) or a manual command (MM-5-1).
b. MaxTime Controller
    i. Program any Schedule Action (Controller - Scheduler Configuration - Actions) with SP 3 checked, and make that Action active in the day plan (Controller - Scheduler Configuration - Day Plans).

	Definitions and Clarifications
A	Provide pricing for the locations you are willing to work in the mobilization bid items 1-10.
B	The following work will comply with the Project Specific Plan Set and the most recent Utah Department of Transportation Standard and Supplemental Specifications and Drawings. If Standard and Supplemental Specifications and Drawings conflict with attached drawings and specifications, attached drawings and specifications take precedence.
C	The Itemized Price List is for unit prices on the completed, in-place items listed.
D	Set Up Traffic Control: Transport all traffic control materials to project site, set up, and maintain a specified lane or shoulder closure. If the set up is reconfigured, it will become a Maintain Traffic Control item.
E	Maintain Traffic Control: Set up and maintain a specified lane or shoulder closure using onsite traffic control devices. Each change in configuration will count as one Maintain Traffic Control item. Taking down traffic control is not a chargeable item and will not count as a Maintain Traffic Control item. The total charge for Maintain Traffic Control items will be held to a maximum of $300 per day unless otherwise approved by the State Representative.
F	Utah Highway Patrol or local police will only be billed per UHP or police invoice. No mark-ups are allowed. Item listed for estimating purposes only.
G	Troubleshooting/Consulting: Hourly rate including transportation for one individual to troubleshoot or consult on a potential project site. Must be requested and pre-approved by UDOT.

Procurement Estimate for PIN [XXXXX] - [Project Location] - [Project Number]

	Itemized Price List					
	DESCRIPTION	Unit	M&P	Unit Price	QTY	Subtotal
	Mobilization			2023		
1	Mobilization for Installation, Upgrade, or Repair - Box Elder, Cache, Rich Counties	Lump	Paid as defined in Attachment B, "Preparatory work and operations necessary for moving personnel, equipment, supplies, and incidentals to the project site prior to beginning work." Mobilization specification. Includes time and travel for pre-construction meetings.	$1,200.00		$0.00
2	Mobilization for Installation, Upgrade, or Repair - Weber, Morgan Counties	Lump		$900.00		$0.00
3	Mobilization for Installation, Upgrade, or Repair - Tooele, Summit, Wasatch, Utah Counties	Lump		$900.00		$0.00
4	Mobilization for Installation, Upgrade, or Repair - Davis, Salt Lake Counties	Lump		$825.00		$0.00
5	Mobilization for Installation, Upgrade, or Repair - Iron, Garfield, Kane, Washington Counties	Lump		$2,500.00		$0.00
6	Mobilization for Installation, Upgrade, or Repair - Beaver, Piute, Wayne, Millard, Sevier, Emery, Juab, Sanpete, Carbon, Duchesne Counties	Lump		$2,200.00		$0.00
7	Mobilization for Installation, Upgrade, or Repair - Grand, Uintah, Daggett, San Juan Counties	Lump		$2,700.00		$0.00
8	Mobilization for Small Project Upgrades or Repair - Weber and Davis Counties	Lump		$825.00		$0.00
9	Mobilization for Small Project Upgrades or Repair - Salt Lake County	Lump		$825.00		$0.00
10	Mobilization for Small Project Upgrades or Repair - Utah County	Lump		$825.00		$0.00
11	Mobilization for Emergency Work (additional to Items 1-10)	Lump	Paid in addition to items 1-10 for mobilization to an "Emergency" site as directed by Traffic & Safety	$1,500.00		$0.00
12	Deliver or pick up steel materials at Intermountain Galvanizing, 1085 West 400 North, Lindon, Utah	Lump		$1,128.00		$0.00
13	Public Involvement	Lump	As Requested by UDOT. Included in cost: flyers, talking to property owners, etc. If an ad is required, the department will pay the cost (if required and approved.) Includes talking to municipalities when local roads are affected.	$700.00		$0.00
	Traffic Control (TC)		10% max of project value for <$50k, 8% max for $50k to $100k, 6% max for > $100K. Excludes UHP price value			
14	Set Up TC Beyond Shoulder	Each	Excludes short-duration closures (less than 60 min.) Includes transport of all traffic control devices to/from project site, set up, maintain, and remove a specified lane or shoulder closure. If the set up is reconfigured, it will become a Maintain Traffic Control item.	$180.00		$0.00
15	Set Up TC Shoulder Closure	Each		$180.00		$0.00
16	Set Up TC Single Lane Closure	Each		$204.00		$0.00
17	Set Up TC Two Lane Closure	Each		$315.00		$0.00
18	Maintain TC Beyond Shoulder	Each	Excludes short-duration closures (less than 60 min.) Each change in location of on-site Traffic Control setup will count as one "Maintain" item.	$180.00		$0.00
19	Maintain TC Shoulder Closure	Each		$180.00		$0.00
20	Maintain TC Single Lane Closure	Each		$180.00		$0.00
21	Maintain TC Two Lane Closure	Each		$220.00		$0.00
22	Flagging	Hour	Use of non-certified flaggers will result in non-payment of this item. (Operator or laborer without a flagging card is not permitted.)	$88.00		$0.00
23	Utah Highway Patrol or Local Police	Pass Through Only	Requires UHP/Police Invoice for payment. No mark-ups allowed on this item.			$0.00
24	Additional Advance Warning Arrow Panel	Dev/day	This item is intended as additional warning within a full TC closure or as requested by UDOT. Not to be used under Short-Duration closures.	$68.00		$0.00
25	Variable Message Sign (VMS)	Dev/day		$220.00		$0.00
	Removal					
26	Remove Manhole	Each	These items include all cutting, jacking, equipment, labor, and transport/disposal and fees.	$1,910.00		$0.00
27	Remove Concrete Sidewalk	Sq Ft		$5.50		$0.00
28	Remove Concrete Curb & Gutter	Foot		$17.25		$0.00
29	Remove Concrete	Foot	This item includes all cutting, jacking, equipment, labor, and transport/disposal and fees. (For example, raised median B3, B4, B5, M2, etc.)	$24.00		$0.00
30	Remove Concrete Driveway	Sq Ft	These items include all cutting, jacking, equipment, labor, and transport/disposal and fees.	$7.00		$0.00
31	Remove Concrete Pavement	Sq Yd		$50.23		$0.00
32	Remove Asphalt Pavement	Sq Yd		$31.00		$0.00
33	Remove Mast Arm Signal Pole - Salvage/Remove	Each	This item includes removing nearside signal heads, ped heads and push buttons, if present.	$384.00		$0.00
34	Remove Mast Arm & Signal Heads - Salvage/Remove	Each	This item includes removing signal heads and mast arm mounted signs, if present.	$671.00		$0.00
35	Remove Signal Pole Foundation - Top 24"	Each	These items include all cutting, jacking, equipment, labor, and transport/disposal and fees.	$240.00		$0.00
36	Remove Luminaire Extension, Arm - Salvage/Remove	Each		$188.00		$0.00
37	Remove Highway Luminaire, Arm - Salvage/Remove	Each		$188.00		$0.00
38	Remove Highway Luminaire Pole Foundation - Top 24"	Each		$363.00		$0.00
39	Remove Ped Pole (15', 11' and 5.5' poles) - Salvage/Remove	Each		$188.00		$0.00
40	Remove Traffic Signal Pole Foundation - Top 24"	Each		$752.00		$0.00
41	Remove Signal Cabinet & Foundation	Each	This item is for removal of both elements & includes restoration of the area to surrounding conditions. Removal of the cabinet only is considered part of the "Size 6 Signal Cabinet" item if a Size 6 Signal Cabinet is being placed.	$626.00		$0.00
42	Remove Power Pedestal & Foundation	Each	This item is for permanent removal and restoration of the area. Removal as part of replacement is incidental to the "Underground Service Pedestal" items, below.	$188.00		$0.00
43	Remove Power Meter Base	Each	Includes removal of pipe, cable, meter base, switch, (all above ground elements) and coordination with local serving power company.	$282.00		$0.00
44	Remove Type I Junction Box	Each	These items are intended for remove-only operations. They are not intended for use in combination with new box installations or replacements; those items include removal of existing boxes. Includes all backfill and restoration of area to surrounding conditions.	$196.00		$0.00
45	Remove Type II Junction Box	Each		$196.00		$0.00
46	Remove Type III Junction Box	Each		$223.00		$0.00
47	Remove Wire from Conduit	Foot	Item applies to any and all wire types.	$0.77		$0.00
48	Remove Tree - less than or equal to 15' tall	Each	Includes disposal	$376.00		$0.00
49	Remove Tree - greater than 15' tall	Each	Includes disposal	$940.00		$0.00

50	Remove Overhead Device - Salvage/Remove	Each	Such as mast arm mounted sign, signal head, preemption sensor, radar detection sensor, video camera, wire radio, etc. Includes cost of disposal or salvaging (transport.)	$173.00		$0.00
51	Remove Pedestrian Clamshell Assembly - Salvage/Remove	Each	This item is not applicable with pedestrian clamshell assembly replacements. Includes labor and equipment to remove and transport/disposal and fees.	$107.00		$0.00
52	Remove Pedestrian Push Button Assembly & Sign - Salvage/Remove	Each	This item is not applicable with pedestrian push button assembly and sign replacements. Includes labor and equipment to remove and transport/disposal and fees.	$88.00		$0.00
	Roadway					
53	Site Clearing and Grubbing	Sq Yd		$5.04		$0.00
54	Roadway Excavation	Cu Yd	This item is not applicable when used in conjunction with UDOT specifications regarding concrete items.	$21.14		$0.00
55	Granular Backfill Borrow	Ton	Includes installation (spreading, compaction, etc.) and transport. These items are not applicable when used in conjunction with UDOT specifications regarding concrete items.	$54.75		$0.00
56	Untreated Base Course	Ton		$54.75		$0.00
57	Flowable Fill	Cu Yd	Measured by batch tickets. This item is not applicable when used in conjunction with UDOT specifications regarding conduit and boxes for ATMS; those items are to include the cost of Flowable Fill installation. Includes transport.	$250.00		$0.00
58	HMA - 1/2 inch	Ton	Includes aggregates, asphalt binder, hydrated lime, tack coat, and other additives, etc. Includes transport.	$230.00		$0.00
59	HMA - 3/4 inch	Ton		$230.00		$0.00
60	Portland Cement Concrete Pavement 7 inch Thick	Sq Ft	Calculated from measured length multiplied by measured width not to exceed plan width. Includes transport.	$32.40		$0.00
61	Concrete Curb & Gutter (any type)	Foot		$39.75		$0.00
62	Concrete Curb (any type)	Foot	Types B3, B4, B5, and M2. Measured along the roadway face. Includes excavation, dowel bars, untreated base course, and backfill borrow.	$45.20		$0.00
63	Plowable End Section	Each		$2,500.00		$0.00
64	Concrete Driveway, 7 inch thick	Sq Ft	Include Radius and Flares. Includes excavation, untreated base course, and backfill borrow. Includes all labor, equipment, and materials necessary for a complete driveway. The curb cut will remain part of the curb and gutter installation.	$25.20		$0.00
65	Concrete Sidewalk	Sq Ft	Includes untreated base course.	$18.30		$0.00
66	Pedestrian Access Ramp	Sq Ft	Includes ALL work and materials to excavate and construct an ADA compliant ramp. Excludes Detectable Warning Surface, pavement removal, curb & gutter, and new sidewalk panels outside of ramp section. Area to be measured from top of the flares.	$38.25		$0.00
67	Detectable Warning Surface	Sq Ft	Includes all labor and materials necessary for installing a new detectable warning panel.	$48.00		$0.00
68	Concrete Junction Box Collar	Sq Ft	This item is not applicable with new junction boxes. It only applies to existing junction boxes. Calculated excluding the area of junction box.	$24.11		$0.00
69	Reconstruct Manhole	Each		$1,614.00		$0.00
70	Reconstruct Valve Box	Each		$460.00		$0.00
71	Reconstruct Catch Basin or Cleanout Box	Each		$1,578.00		$0.00
72	Solid cover or bicycle-safe grate and frame	Each		$1,058.00		$0.00
73	Open-Curb frame w/ bicycle safe grate	Each		$1,058.00		$0.00
74	New Catch Basin - Precast	Each		$2,031.00		$0.00
75	Landscape Grading	Sq Yd		$4.00		$0.00
76	Topsoil	Ton		$19.20		$0.00
77	Turf Sod	Sq Ft		$6.00		$0.00
78	Irrigation - Sch 40 1-1/2" PVC Pipe w/ Fittings	Foot		$4.55		$0.00
79	Irrigation - Sch 40 3/4" PVC Pipe w/ Fittings	Foot		$4.55		$0.00
80	Irrigation - Sprinkler Head w/ Riser	Each		$49.00		$0.00
	Underground					
81	Pothole for Utilities	Each	This item may not be billed in conjunction with foundation excavation. Potholing for such is to be included in the foundation price.	$270.00		$0.00
82	Mast Arm Signal Pole Foundation - 3' x 12' - by Digger Derrick	Each	Includes installation of concrete foundation, anchor bolts, hardware to mount foundation to base of pole, and associated potholing. 14' deep foundations require a brass cap showing depth.	$4,504.00		$0.00
83	Mast Arm Signal Pole Foundation - 3' x 12' - by Vacuum Truck	Each		$5,254.00		$0.00
84	Mast Arm Signal Pole Foundation - 3' x 14' - Digger Derrick	Each		$5,104.00		$0.00
85	Mast Arm Signal Pole Foundation - 3' x 14' - Vacuum Truck	Each		$5,854.00		$0.00
86	Mast Arm Signal Pole Foundation - 4' x 14'	Each		$7,320.00		$0.00
87	Mast Arm Signal Pole Foundation in Ground Water or Sloughing Conditions	Each	In addition to Mast Arm Signal Pole Foundation items, for each foundation installed with these soil conditions.	$910.00		$0.00
88	Mast Arm Signal Pole Foundation in Rocky Soil Conditions	Each		$1,142.00		$0.00
89	Highway Luminaire Pole Foundation - 2.5' x 8' - by Digger Derrick	Each	Includes installation of concrete foundation, anchor bolts, and hardware to mount foundation to base of pole.	$1,910.00		$0.00
90	Highway Luminaire Pole Foundation - 2.5' x 8' - by Vacuum Truck	Each		$1,910.00		$0.00
91	Highway Luminaire Pole Foundation in Groundwater or Sloughing Conditions	Each	In addition to Highway Luminaire Pole Foundation items, for each foundation installed with these soil conditions.	$810.00		$0.00
92	Highway Luminaire Pole Foundation in Rocky Soil Conditions	Each		$942.00		$0.00
93	Traffic Signal/Ped Pole Foundation - 2' x 3'	Each		$450.00		$0.00
94	Size 6 Cabinet Foundation - Cast in Place	Each		$1,552.00		$0.00
95	Size 6 Cabinet Foundation - Precast	Each		$1,552.00		$0.00
96	4 - 1D (1.25") Conduit - SDR11 HDPE	Foot	Not for signal conduit use.	$11.95		$0.00
97	2" Conduit - PVC	Foot		$4.27		$0.00
98	2" Conduit - SDR11 HDPE	Foot		$2.42		$0.00
99	3" Conduit - PVC	Foot		$7.10		$0.00
100	3" 90-degree sweep - PVC	Each		$37.00		$0.00
101	3" Conduit - SDR11 HDPE	Foot		$5.65		$0.00
102	Pole Standoff Bracket	Each		$65.00		$0.00
103	Conduit trenched in Native Soil, 18" cover (Excluding conduit cost)	Foot		$7.10		$0.00
104	Conduit trenched in Native Soil, 24" cover (Excluding conduit cost)	Foot		$8.04		$0.00
105	Conduit trenched in Native Soil, 36" cover (Excluding conduit cost)	Foot		$8.95		$0.00
106	Conduit trenched in Native Soil, 60" cover (Excluding conduit cost)	Foot		$12.30		$0.00
107	Additional Cost for Rocky Soil Conditions for Trenching in Native Soil	Foot		$3.00		$0.00
108	1 - 2 conduits bored (Excluding conduit cost)	Foot		$25.90		$0.00
109	3 - 4 conduits bored (Excluding conduit cost)	Foot		$27.90		$0.00
110	5 - 6 conduits bored (Excluding conduit cost)	Foot		$30.12		$0.00
111	7 - 8 conduits bored (Excluding conduit cost)	Foot		$41.60		$0.00
112	Additional Cost for Rocky Soil Conditions for Conduits Bored	Foot	In addition to Conduits Bored items, for every foot of conduit bored with rocky soil conditions	$7.00		$0.00
113	Type A Junction Box	Each	These items include removal of existing boxes or excavation of native material, removal of pavement, etc. as required. Includes all items to meet UDOT standard - backfill, flowable fill, maintenance markers, conduit plugs, grounding materials, a locate ball or disk, ground rod (if needed), grouting, 10" collar, bolts, etc.	$850.00		$0.00
114	Type B Junction Box	Each		$1,690.00		$0.00
115	Type B Junction Box - Divided	Each		$1,690.00		$0.00
116	Type C Junction Box	Each		$2,181.00		$0.00
117	Type II Junction Box - ITS	Each	These items include removal of existing boxes or excavation of native material, etc. as required. Includes all items to meet UDOT standard - backfill, flowable fill, maintenance	$1,820.00		$0.00
118	Type III Junction Box - ITS	Each		$1,820.00		$0.00
	Wire/Electrical					
119	IMSA 50-2, 2 wire, AWG 14 gage	Foot		$1.51		$0.00
120	IMSA 20-1, 4 wire, AWG 14 gage	Foot		$1.72		$0.00
121	IMSA 20-1, 7 wire, AWG 14 gage	Foot		$2.21		$0.00
122	Cable - State Furnished	Foot	Applies to any State Furnished cable. **This item does not apply to Radar Pigtail installation, which is part of the "Radar Sensor" item.	$1.00		$0.00
123	Radar Detection Cable - Contractor Furnished	Foot	Contractor cable must meet the same specs as Wavetronix cable; gauge, insulation, strain rating, coloration, etc. **This item does not apply to Radar Pigtail installation, which is part of the "Radar Sensor" item.	$2.74		$0.00
124	Preemption System Cable - Contractor Furnished	Foot	Contractor cable must meet the same specs as Wavetronix cable; gauge, insulation, strain rating, coloration, etc.	$2.74		$0.00

125	RHH-USE2-RHW2, 2 gage	Foot		$3.51		$0.00
126	RHH-USE2-RHW2, 4 gage	Foot		$2.39		$0.00
127	RHH-USE2-RHW2, 6 gage	Foot		$2.23		$0.00
128	RHH-USE2-RHW2, 8 gage	Foot		$2.23		$0.00
129	RHH-USE2-RHW2, 10 gage	Foot		$1.66		$0.00
130	RHH-USE2-RHW2, 12 gage	Foot		$1.46		$0.00
131	Bare Copper Ground Wire, No. 6	Foot		$1.63		$0.00
132	Stranded Insulated Ground Wire, AWG 12 gage	Foot		$1.46		$0.00
133	Power Source, Underground Service Pedestal - State Furnished	Each	Includes installation of foundation, concrete pad and coordination with Region signal crew and Utility Coordinator for inspection and cut over with local serving power company.	$564.00		$0.00
134	Power Source, Underground Service Pedestal - Contractor Furnished	Each		$4,118.00		$0.00
135	Power Source, Dual-Metered Underground Service Pedestal - Contractor Furnished	Each		$5,990.00		$0.00
136	Power Source, Dual-Metered Underground Service Pedestal - State Furnished	Each	Includes installation of foundation, concrete pad and coordination with Region signal crew and Utility Coordinator for inspection and cut over with local serving power company.	$564.00		$0.00
137	Battery-Backup Pedestal -- State Furnished	Each	Includes installation of foundation and concrete pad.	$752.00		$0.00
	ITS					
138	Cat 5 Outdoor-rated Cable - Contractor Furnished	Foot		$1.91		$0.00
139	CAT 6 Outdoor-rated Cable - Contractor Furnished	Foot		$1.91		
140	Gamechanger Cable or equivalent - Contractor Furnished	Foot		$2.91		
141	6 Strand Pre-terminated Drop Cable - Contractor Furnished (300 ft or less)	Each		$1,020.00		$0.00
142	6 Strand Pre-terminated Drop Cable - Contractor Furnished (per 100 ft added cable length)	Each	Item used in addition to the 6 strand pre-terminated drop cable, up to 300'. Billed in 100' increments	$1.92		$0.00
143	Type A Splice Case	Each		$1,740.00		$0.00
144	Type B Splice Case	Each		$1,740.00		$0.00
145	Fusion Splice	Each	Provide testing documentation per UDOT spec	$250.00		$0.00
146	CCTV Camera Cable - Contractor Furnished	Foot		$1.91		$0.00
147	CCTV Camera & Mount - State Furnished	Each	These items include cabinet wiring and RDPE setup for a fully functional CCTV.	$490.00		$0.00
148	CCTV Camera & Mount - Relocate	Each		$490.00		$0.00
149	Wireless Radio - State Furnished	Each		$490.00		$0.00
	Signal					
150	Mast Arm Signal Pole (for all arm lengths) - State Furnished	Each		$440.00		$0.00
151	Mast Arm Signal Pole Base Adapter - State Furnished	Each		$147.00		$0.00
152	30 - 55 ft Mast Arm - State Furnished	Each		$681.00		$0.00
153	60 - 75 ft Mast Arm - State Furnished	Each		$797.00		$0.00
154	80 - 85 ft Mast Arm - State Furnished	Each		$984.00		$0.00
155	Mast Arm Field Cut	Each		$188.00		$0.00
156	5.5', 11' or 15' Traffic Signal/Ped Pole - State Furnished	Each		$180.00		$0.00
157	Size 6 Cabinet - State Furnished	Each	Includes removal of the old cabinet, transport and salvage to UDOT. Includes all wiring and labor to bring the signal back online.	$717.00		$0.00
158	Pole-mounted Cabinet/Controller - Contractor Furnished	Each	Includes all materials and labor to install. Used for pedestrian-activated signal systems. (Flashing Beacons)	$2,718.00		$0.00
159	Type 0 Signal Head w/ LED Module & Flasher relay	Each	This item is intended for signal head installations, replacement, and upgrades. Includes backplate, mounting bracket, assembly of head, and one relay flasher per direction (2-4 signal heads.) Replacements include removal and disposal or salvaging of old head, if present.	$923.00		$0.00
160	Type I, II, III Signal Head w/ LED Modules	Each	These items are intended for signal head installations, replacements, and upgrades. Includes backplate and retroreflective tape except for type V. Includes mounting bracket and assembly of the head. Replacements include removal and disposal or salvaging of old head, if present.	$1,262.00		$0.00
161	Type IV, VI Signal Head w/ LED Modules	Each		$1,371.00		$0.00
162	Type VII Signal Head w/ LED Modules	Each		$1,715.00		$0.00
163	Type V Signal Head w/ LED Modules	Each		$1,912.00		$0.00
164	Signal Head - State Furnished	Each	This item includes assembly of bracket and signal head (attaching visors and back plate to housing and installing LED modules) and installation.	$386.00		$0.00
165	Relocate Signal Head	Each	This item is not applicable to new installation or upgrades, above. Includes backplate, retroreflective tape, labor, and equipment to install.	$341.88		$0.00
166	LED Ball or Arrow Signal Module - State Furnished	Each		$29.00		$0.00
167	Backplate with retroreflective tape	Each		$232.00		$0.00
168	Retroreflective tape installed in field	Each	Per backplate. This item is not applicable to new installation or upgrades, above. Covers all backplate sizes per manufacturers requirements. May not be installed when temperatures are below 50 deg. Includes retroreflective tape, labor, and equipment required to install.	$138.00		$0.00
169	Heat Tape Installation on mast arm signal head- State Furnished	Each	Includes installation of heat tape and termination of spare wires from the 7 conductor cable. See attached Heat-Tape Installation Procedure.	$314.00		$0.00
170	Mounting Bracket for Existing Signal Head	Each		$261.00		$0.00
171	Blank-Out Sign 24" x 24" - State Furnished	Each	Mast Arm Mounted	$476.00		$0.00
172	Blank-Out Sign 30"*30" - State Furnished	Each	Mast Arm Mounted	$476.00		$0.00
173	Blank-Out Sign 36"*36" - State Furnished	Each	Mast Arm Mounted	$512.00		$0.00
174	Blank-Out Sign 4' x 8' - State Furnished	Each	Mast Arm Mounted	$2,154.00		$0.00
175	Pedestrian Signal Clamshell Assembly	Each	Fully operational assembly - includes LED countdown module. Includes removal of existing assembly if present.	$530.00		$0.00
176	Relocate Pedestrian Signal Clamshell Assembly	Each	Item is not billable in conjunction with any other pedestrian signal items.	$188.00		$0.00
177	LED Pedestrian Signal Module, Countdown - Contractor Furnished	Each	Intended for module-replacements in existing clamshells.	$272.00		$0.00
178	LED Pedestrian Signal Module, Countdown - State Furnished	Each		$94.00		$0.00
179	Pedestrian Push Button Assembly & Sign	Each	Includes removal of existing assembly if present.	$345.00		$0.00
180	Audible Pedestrian Signal/Push Button/Sign Assembly - State Furnished	Each	This item includes removal/salvaging (if required) of existing assembly if present. Includes transport/disposal.	$198.00		$0.00
181	Relocate Pedestrian Push Button Assembly & Sign	Each	Item not billable in conjunction with any of the above ped-button items.	$188.00		$0.00
182	Pedestrian Push Button Frame Stand-off Bracket	Each	Required when more than one push button is installed on a ped pole. Includes both brackets.	$94.00		$0.00
183	Mast Arm Mounted Sign (Medium Channel)	Sq Ft	Includes mounting hardware.	$45.35		$0.00
184	Mast Arm Mounted Sign (Sign Only)	Sq Ft	This item is intended for use with Mast Arm Mounted Sign Bracket.	$45.35		$0.00
185	Mast Arm Mounted Sign Bracket - Contractor Furnished	Each	Mounting bracket as shown on Option B of standard drawing SL 3D. Includes z-bar.	$261.00		$0.00
186	Mast Arm Mounted Sign Bracket - State Furnished	Each	Mounting bracket as shown on Option B of standard drawing SL 3D. Includes 1 state furnished clamp kit, 2 state furnished sign clamps, and field-cutting state furnished tube. Includes z-bar.	$94.00		$0.00
187	Relocate Mast Arm Mounted Sign	Each	Includes reusing existing hardware with new bands.	$188.00		$0.00
188	Preemption System Sensor - City Furnished	Each		$612.00		$0.00
189	Radar Detection Sensor - State Furnished	Each	Includes installation of the mount, sensor, connectorized pigtail cable, splice box, pole-mount box (if applicable), installation of radar panel or Click 650, and aiming.	$347.00		$0.00
190	GridSmart Detection Camera - State Furnished	Each	Includes installation of the mount, connection to the processor, splice box, pole-mount box (if applicable), installation of processor, and aiming.	$490.00		$0.00
191	Vibration Mitigator - State Furnished	Each	This item includes installation of device and mounting bracket on the end of the mast arm. No wiring or assembly is necessary.	$147.00		$0.00
192	Relocate Overhead Device	Each	Such as preemption sensor, radar detection sensor, video camera, wireless radio, etc.	$347.00		$0.00
193	RRFB LED Beacon - State Furnished	Each	Includes mounting state furnished beacon to pole using bands and state furnished brackets. Wiring measured and paid for separately. Qty: 1 per beacon (back-to-back LED Beacons are counted as Qty: 2).	$190.00		$0.00
194	RRFB AC Controller - State Furnished	Each	Includes mounting state furnished AC controller cabinet to pole using bands and state furnished brackets. Wiring measured and paid for separately.	$784.00		$0.00
195	RRFB Solar Controller - State Furnished with Contractor Furnished Battery	Each	Includes mounting state furnished solar controller cabinet to pole using bands and state furnished brackets. Includes connecting state furnished wiring from solar controller to contractor furnished 12V 35Ah Lead Acid battery inside solar controller cabinet.	$624.00		$0.00

196	RRFB Side-of-Pole Solar Panel Assembly - State Furnished	Each	Includes mounting state furnished solar panel assembly to side of pole using bands and state furnished brackets and connecting state furnished wiring from solar panel to solar controller.	$476.00		$0.00
197	RRFB Top-of-Pole Solar Panel Assembly - State Furnished	Each	Includes mounting state furnished solar panel assembly to top of 4.5" OD pole using state furnished mounting bracket and connecting state furnished wiring from solar panel to solar controller.	$476.00		$0.00
198	RRFB LED Beacon - Contractor Furnished	Each	Includes mounting brackets, bands, LED Beacon, and wiring connecting LED Beacon to controller. Qty: 1 per beacon (back-to-back LED Beacons are counted as Qty: 2).	$896.00		$0.00
199	RRFB AC Controller - Contractor Furnished	Each	Includes controller inside pole-mounted cabinet, associated hardware and mounting. Wiring to power source measured and paid for separately.	$2,427.00		$0.00
200	RRFB Solar Controller - Contractor Furnished	Each	Includes solar panel, solar controller and battery inside pole-mounted cabinet, and wiring connecting solar controller to solar panel and battery, associated hardware and mounting.	$2,902.00		$0.00
201	Mast Arm Extension Kit - State Furnished	Each		$376.00		$0.00
202	Rigid Steel Conduit (10') - Contractor Furnished	Each	Req'd with every Mast Arm Extension	$19.00		$0.00
203	LED Perimeter Sign - State Furnished	Each	Includes installation of solar engine and sign on state furnished pole	$564.00		$0.00
204	Install Solar Panel Assembly - State Furnished	Each	Includes all labor , materials and equipment to transport, assemble, install and wire the equipment at the site. Includes landing cables at the control cabinet and the device.	$1,078.00		$0.00
205	Install Solar Batteries - State Furnished	Each		$282.00		$0.00
206	Install Solar Control Cabinet & Equipment	Each		$282.00		$0.00
	Lighting					
207	20', 30', or 40' Signal Pole Luminaire Extension - State Furnished	Each		$351.00		$0.00
208	Single or Dual 10' Arm or 15' Arm, or Vertical Extension for Luminaire - State Furnished	Each		$351.00		$0.00
209	Rotate Luminaire Extension	Each		$351.00		$0.00
210	Relocate Luminaire Extension	Each		$351.00		$0.00
211	Highway Luminaire Pole - State Furnished	Each		$327.00		$0.00
212	Relocate Luminaire Pole, Arm and Fixture	Each		$503.00		$0.00
213	LED Luminaire - State Furnished	Each	Includes Contractor-furnished wire in pole and fuse kits, removal of existing luminaire if present, and transport.	$204.00		$0.00
214	Under Mast Arm Lighting Mounting Bracket Kit - State Furnished	Each		$204.00		$0.00
215	Under Mast Arm Lighting LED Luminaire - State Furnished	Each		$204.00		$0.00
	Pavement Marking/Signing					
216	Pavement marking Removal and Placement	Actual Cost +15%	Includes pavement marking removal (paint and thermoplastic) as outlined in project plans. Includes pavement marking (paint and thermoplastic) as outlined the project plans. Submit invoice from sub-contractor for payment.	$0.00		$0.00
217	Slipbase Ground Mounted Tubular Steel Sign Post	Each	Includes installation of top casting, base plate, and hardware for mounting as required by SN Series Standard Drawings.	$601.00		$0.00
218	Steel Post Sign Mount, Less than 3' wide	Each		$256.00		$0.00
219	Steel Post Sign Mount, 3' or wider	Each		$602.00		$0.00
220	Wood Post Sign Mount	Each		$261.00		$0.00
221	Auxiliary Sign Type A	Sq Ft	Type A-1 and A-2	$48.35		$0.00
222	Auxiliary Sign Type PW	Sq Ft	Type P-1 and P-2	$64.22		$0.00
223	Relocate Wood Post-Mounted Sign or Mailbox	Each		$376.00		$0.00
224	Relocate Slipbase Steel Post-Mounted Sign	Each	Includes new foundation and anchor and removal of existing foundation.	$594.00		$0.00
225	Remove Sign Less than 20 sq ft	Each	Includes removal of post, base, and foundation.	$280.00		$0.00
226	Remove Sign Panel	Each	This item includes removal and disposal of existing sign panel.	$49.00		$0.00
227	Relocate Sign Panel	Each	Includes removing existing sign panel from an existing post and installing on another post. Does not include post, base, or foundation.	$188.00		$0.00
	Miscellaneous					
228	Troubleshooting/onsite consulting	Hour	Pre-approval is required.	$88.00		$0.00
229	Hourly Labor	Hour	Intended to cover per-hour contractor staff work time for tasks not explicitly defined above	$88.00		$0.00
230	Hourly Labor and Truck	Hour	For work not explicitly defined above - includes (1) staff + (1) piece of equipment (vac truck, bucket, mini-ex, digger derrick, etc)	$158.00		$0.00
231	Hourley Labor + Heavy Crane	Hour	For work not explicitly defined above - includes (1) Operator + (1) Crane + (1) Crane Oiler/Laborer	$512.00		$0.00
232	Per Diem Hotel	Pass Through	Per hotel room per night. Standard UDOT rates apply.	$0.00		$0.00
233	Per Diem Meal		Per individual per day. Standard UDOT rates apply.	$0.00		$0.00

Subtotal: $ -

CONTRACT DOCUMENTS AND SPECIFICATIONS FOR

VINEYARD CITY
400 NORTH TRAFFIC SIGNAL
AT MILL ROAD

December 2025

Prepared by:

Kevin Croshaw, P.E.
Avenue Consultants

Signed by
Naseem Ghandour, P.E.
Public Works Director/City Engineer

VINEYARD
STAY CONNECTED

125 South Main Street,

Vineyard City, Utah 84059

VINEYARD TRAFFIC SIGNALS TABLE

OF CONTENTS

Except where superseded by Vineyard City Standard Specifications, the current APWA STANDARD PLANS AND SPECIFICATIONS apply. Below is a partial list of some of the frequently referenced specifications. Where specifically noted, 2026 UDOT Standard Specifications apply (listed below)

DIVISIONS
DIVISION 1- GENERAL REQUIREMENTS

DIVISION 2 – EXISTING CONDITIONS
- 24 41 13 SELECTIVE SITE DEMOLITION..... APWA STANDARD SPECIFICATIONS
- 0241 14 PAVEMENT REMOVAL ..... APWA STANDARD SPECIFICATIONS

DIVISION 03 – CONCRETE
- 0311 00 CONCRETE FORMING ..... APWA STANDARD SPECIFICATIONS
- 03 20 00 CONCRETE REINFORCEING..... APWA STANDARD SPECIFICATIONS
- 03 30 04 CONCRETE ..... APWA STANDARD SPECIFICATIONS
- 03 30 05 CONCRETE TESTING..... APWA STANDARD SPECIFICATIONS
- 03 30 10 CONCRETE PLACEMENT ..... APWA STANDARD SPECIFICATIONS
- 03 35 00 CONCRETE FINISHING ..... APWA STANDARD SPECIFICATIONS
- 03 39 00 CONCRETE CURING..... APWA STANDARD SPECIFICATIONS

DIVISION 31 – EARTHWORK
- 31 23 16 EXCAVATION ..... APWA STANDARD SPECIFICATIONS
- 31 23 23 BACKFILLING FOR STRUCTURES..... APWA STANDARD SPECIFICATIONS
- 3123 16 COMPACTION..... APWA STANDARD SPECIFICATIONS

DIVISION 32 – EXTERIOR IMPROVEMENTS
- 32 11 23 AGGREGATE BASE COURSES..... APWA STANDARD SPECIFICATIONS
- 32 11 24 PULVERIZED PAVEMENT BASE COURSE ..... APWA STANDARD SPECIFICATIONS
- 32 12 03 ASPHALT BINDER..... APWA STANDARD SPECIFICATIONS
- 32 12 05 BITUMINOUS CONCRETE ..... APWA STANDARD SPECIFICATIONS
- 32 12 06 RUBBERIZED ASPHALT CONCRETE ..... APWA STANDARD SPECIFICATIONS
- 32 12 13.13 TACK COAT..... APWA STANDARD SPECIFICATIONS
- 32 12 13.19 PRIME COAT ..... APWA STANDARD SPECIFICATIONS
- 32 12 16.13 PLANT MIX BITUMINOUS PAVING..... APWA STANDARD SPECIFICATIONS
- 32 16 13 DRIVEWAY, SIDEWALK, CURB, GUTTER ..... APWA STANDARD SPECIFICATIONS
- 32 16 14 CURB CUT ASSEMBLY ..... APWA STANDARD SPECIFICATIONS
- 3217 23 PAVEMENT MARKINGS ..... APWA STANDARD SPECIFICATIONS

DIVISION 33 – UTILITIES
- 3341 00 DRAINAGE SYSTEMS..... APWA STANDARD SPECIFICATIONS

DIVISION 34 – TRANSPORTATION
- 3441 13 TRAFFIC SIGNALS ..... APWA STANDARD SPECIFICATIONS

APPLICABLE 2026 UDOT STANDARD SPECIFICATIONS
SECTION 02721 UNTREATED BASE COURSE
SECTION 02741 HOT MIX ASPHALT
SECTION 02743 HOT MIX ASPHALT BIKE AND PEDESTRIAN PATHS
SECTION 02745 ASPHALT MATERIALS
SECTION 02892 TRAFFIC SIGNAL

NOTICE OF TO USE UTAH STATE CONTRACT

Vineyard City intends to procure construction services for the **400 North Traffic Signal at Mill Road** project by issuing a work order under an existing **Utah Statewide Contract** for traffic signal and roadway improvements, in accordance with Utah Code and the Utah Procurement Code.

The City will select and authorize a contractor **from the current pool of contractors awarded under the applicable Utah State Contract** to perform the work described below, consistent with the terms and pricing of that State Contract.

Project Description

The work generally consists of installing a new traffic signal at the intersection of **400 North and Mill Road**, including:

- Signal poles, mast arms, foundations, and cabinet
- Conduit, junction boxes, wiring, and detection
- Signal heads, APS push buttons, and pedestrian indications
- Associated roadway, striping, lighting, and minor restoration as shown in the Contract Documents

Electronic copies of the plans and specifications will be made available to the State Contract contractors upon request directly to Vineyard City. Documents are provided for coordination, pricing confirmation under the State Contract, and construction.

Questions from State Contract contractors regarding the scope of work shall be submitted directly to the City's Project Manager as directed in the City's notice.

VINEYARD CITY

By Naseem Ghandour, P.E.

City Engineer

INFORMATION FOR TASK ORDERS USING STATE CONTRACT

1. BASIS OF WORK

All work will be performed under the terms and pricing of the Utah Statewide Contract, supplemented by the project-specific plans, specifications, and conditions issued by Vineyard City.
Where conflicts occur, the Utah State Contract governs unless the City's Work Order or specifications require a higher standard of construction.

The Contractor shall review all documents, visit the site, and fully inform themselves of all conditions prior to submitting pricing confirmation or beginning work.

2. INTERPRETATION OF PLANS AND DOCUMENTS

Any Contractor requiring clarification regarding:

- Plans
- Specifications
- Conflicts, discrepancies, or omissions
- Special conditions or requirements

shall submit written questions to the City Engineer.
Only written addenda or written clarification issued by Vineyard City or its Engineer shall be considered binding. The City is not responsible for oral instructions or interpretations.

3. EXECUTION OF CONTRACT / WORK ORDER

Following selection under the Utah State Contract, Vineyard City will issue:

1. A Notice of Award, followed by
2. A Work Order / Task Order under the State Contract terms.

The Contractor shall execute and return the Work Order within 10 calendar days of receipt.
Failure to execute the Work Order may result in the City selecting another State Contract contractor.

4. ASSIGNMENT OF CONTRACT

The Contractor shall not assign, transfer, or subcontract the Work Order, or any portion thereof, without prior written approval from:

- Vineyard City, and
- The Contractor's Surety (if applicable under the State Contract).

Unauthorized assignment or subcontracting is cause for termination of the Work Order.

5. SPECIAL NOTICE

The Contractor must inform themselves fully regarding:

- Construction conditions
- Site access and constraints
- Traffic operations
- Utility conflicts and coordination
- Seasonal/operational limitations

The Contractor shall schedule and execute the work so as not to interfere unnecessarily with any adjacent construction activities, City operations, or utility work.

6. PERMITS AND LICENSES (FULL LANGUAGE REQUESTED)

The Contractor shall procure all permits and licenses, pay all charges, fees, and taxes, and give all notices necessary and incidental to the due and lawful prosecution of the work.
This includes, but is not limited to:

- Traffic control permits
- Encroachment permits (if applicable to UDOT ROW)

- Utility crossing/locate coordination
- Environmental, air quality, dust control, and stormwater compliance
- Any temporary power or temporary water needed for the Work

All fees for permits issued directly by Vineyard City will be waived for this project.
However, the Contractor remains responsible for:

- Completing all City-required forms
- Scheduling and passing all City inspections
- Complying with all local ordinances and standards

The Contractor shall maintain all required State of Utah contractor licenses applicable to the work throughout the duration of the project.

7. CONSTRUCTION SCHEDULING

The City intends to complete this project during the spring of 2026.
The Contractor shall:

- Submit a construction schedule within the timeframe specified in the Work Order
- Coordinate with utilities and other stakeholders
- Maintain safe traffic control under MUTCD and City standards
- Maintain adequate workforce and equipment to meet the schedule

The City reserves the right to require schedule updates or corrective measures if progress is insufficient.

8. TIME OF COMPLETION

The Contractor shall:

- Begin work no later than the third day after receipt of the Notice to Proceed, and
- Achieve substantial completion not later than May 30, 2026, unless modified by written change order.

The Contractor shall prosecute the work diligently with adequate labor, materials, and equipment to ensure completion within the time required.

9. NONPERFORMANCE OF WORK TASKS BY THE CONTRACTOR

If the Contractor:

- Fails to perform required work,
- Neglects to correct defective work, or
- Fails to repair or restore disturbed public rights-of-way in a timely or acceptable manner,

the City may issue written notice directing corrective action.
If acceptable action is not taken within three (3) days, the City may:

- Cause the work to be performed by others, and
- Deduct the cost from payments due to the Contractor.

This remedy is in addition to any rights provided under the Utah State Contract.

10. PRE-AWARD MEETING

Before issuing a Notice to Proceed, the City may require a pre-award or pre-construction meeting with the Contractor. Topics may include:

- Review of project plans, specifications, schedule, and work sequencing
- Traffic control and public safety requirements
- Submittal schedule and material procurement
- Utility coordination
- Site access, staging, and storage areas
- Communication protocols between the Contractor and City

Attendance by the Project Superintendent is mandatory.

11. LIQUIDATED DAMAGES

Liquidated damages for failure to meet the required completion date shall be $150 per calendar day, or as otherwise specified in the City's Work Order and consistent with the State Contract.

INSTRUCTIONS FOR WORK ORDER PRICING
(UTAH STATE CONTRACT)

1. GENERAL

The Contractor shall prepare and submit Work Order pricing in accordance with the Utah Statewide Contract under which this project is being awarded. Pricing shall be based on:

- State Contract unit prices
- Project-specific quantities shown in the plans and Engineer's Estimate
- All requirements of the project Plans, Specifications, and these Documents

Submission of Work Order pricing under the State Contract constitutes confirmation that the Contractor has:

- Reviewed the Plans and Specifications
- Visited the site
- Verified existing conditions
- Understood all requirements necessary to complete the work
- Confirmed that State Contract pricing has been correctly applied

All work shall be completed in a good, neat, safe, and fully operational manner as required by the project documents.

2. PAYMENT AND SCOPE OF WORK

Payment for completed work—based on accepted quantities and the State Contract unit prices—shall be full compensation for:

- All labor, materials, and equipment
- All devices, components, and appurtenances
- All installation, testing, and commissioning
- All overhead, profit, and incidental costs
- Supervision, temporary facilities, and mobilization/demobilization
- Insurance, taxes, permits (except City fee waivers), and compliance

Each item, fixture, or piece of equipment indicated in the Plans or Specifications shall be furnished and installed complete with all required components for proper operation of the system.

Any costs not specifically identified but necessary to deliver a complete and functional system are considered incidental and included in the State Contract unit prices.

3. PATENTS, LICENSE FEES, AND PROPRIETARY REQUIREMENTS

All patent fees, licensing fees, royalties, or rights to use proprietary equipment or processes shall be included in the Contractor's pricing.

If any such fees apply, the Contractor shall provide an itemized list of:

- The type of fee
- The amount
- The supplier or licensor

This list shall be submitted to the Engineer upon request.

4. MATERIALS AND MANUFACTURERS

Where the Specifications or Plans identify specific manufacturers, products, or models, these are provided to establish a minimum standard of quality, durability, appearance, and performance.

Contractor Responsibilities

- Furnish items meeting or exceeding specified standards
- Identify proposed manufacturers where requested
- Submit additional documentation if required by the Engineer

If the Contractor wishes to propose an alternate manufacturer not listed in the Specifications, the Contractor shall submit product data to the Engineer for review.

Alternate products must:

- Meet or exceed all specification requirements

- Match design intent and operational characteristics
- Be available within the project schedule
- Be approved in writing prior to installation

If an alternate product fails to meet requirements, the Contractor shall furnish compliant materials at no additional cost to the City.

5. SUBMITTALS AND ADDITIONAL INFORMATION

The Owner may require additional information regarding materials or equipment proposed for specific bid items.

If requested, the Contractor shall submit:

- Manufacturer data sheets
- Shop drawings
- Technical certifications
- Performance data
- Installation requirements
- Warranty information

All required data must be submitted promptly so the Engineer may evaluate the suitability of materials before the Work Order is finalized or before procurement occurs.

6. DESIGNATED AND NON-DESIGNATED ITEMS

If a specific item requires manufacturer designation and the Contractor does not provide one, Vineyard City may designate a manufacturer from those listed in the Specifications.

No adjustment to State Contract pricing will be considered for such designation.

Where an item is referenced by trade name or manufacturer solely to establish standards of quality, the Contractor may submit a written request for substitution following award of the Work Order.

Submittals must include:

- Detailed comparison of proposed substitution vs. specified item
- Certified quotations for both items (designated and proposed)
- Delivery timelines
- Material availability and compatibility

All accepted substitutions will be bound by the Specifications.

7. INTERPRETATION OF DOCUMENTS

If the Contractor finds discrepancies, omissions, or is uncertain regarding any part of the Plans, Specifications, or Contract Documents, the Contractor shall submit a written request for interpretation to the Engineer.

Only written responses issued by the Engineer or Vineyard City are binding.

Oral or informal interpretations shall not be relied upon.

8. FORM OF SUBMISSION UNDER STATE CONTRACT

Because this project is awarded using the Utah Statewide Contract, no public proposal, sealed bid, or competitive bid submission is required.

Instead, the Contractor shall submit:

- A Work Order Pricing Confirmation
- Any required manufacturer designations
- Required submittals
- Schedule and sequencing plan
- Any requested supporting documentation
-

Electronic submission to the Vineyard City Project Manager is acceptable, or as directed by the City.

TASK ORDER

VINEYARD CITY
400 NORTH TRAFFIC SIGNAL AT MILL ROAD

December 10, 2025

Vineyard City
125 South Main Street
Vineyard, Utah 84059

In accordance with Vineyard City's decision to issue a Work Order under the Utah Statewide Contract 239598 for traffic signal and roadway construction, the undersigned **Oak Hollow Electric Company** (Contractor), acknowledges and accepts the award for the **400 North Traffic Signal at Mill Road** project. The Contractor agrees to perform all work required for the construction of the project in full compliance with the Utah Statewide Contract and the project Plans, Specifications, and Contract Documents prepared for Vineyard City. The Contractor shall furnish all labor, equipment, and contractor-supplied materials necessary to complete the work, and shall install, assemble, and integrate the state-furnished materials provided by Vineyard City in accordance with all applicable standards and requirements. The Contractor acknowledges that state-furnished materials include, but are not limited to, traffic signal poles, mast arms, cabinets, signal heads, APS assemblies, detection equipment, and other components identified by Vineyard City, and agrees to receive, protect, store, and incorporate those materials into the project as required.

By executing this Work Order Acceptance, the Contractor affirms that it has examined the project site, reviewed all Plans, Specifications, special provisions, and supplemental documents issued by Vineyard City, and has fully acquainted itself with existing field conditions that may affect the work. The Contractor acknowledges that Work Order pricing is based on established Utah State Contract unit prices and approved contract mechanisms, and that such pricing includes all incidentals, overhead, transportation, equipment, and other costs necessary to deliver a complete and functional installation. Submission of this acceptance constitutes confirmation that no additional compensation will be requested for conditions that could have been identified through reasonable site review or examination of project documents.

The Contractor agrees to complete the project on or before **May 30, 2026**, unless this completion date is modified by a written change order issued by Vineyard City. The Contractor further represents that the individual signing below is properly authorized to bind the company under the terms of the Utah State Contract, that the Contractor holds all required licenses and qualifications necessary to perform the work, and that no Vineyard City elected official or employee holds a prohibited interest in this Work Order.

Upon receiving the Work Order from Vineyard City, the Contractor agrees to execute and return all required documents within the timeframe specified by the City, to furnish any requested bonds permitted under the State Contract, and to commence work upon receipt of a Notice to Proceed. The Contractor also agrees to maintain sufficient labor, equipment, and resources to diligently pursue and complete the work in accordance with the approved schedule, project requirements, and State Contract obligations. Failure to return the executed Work Order or provide required documentation may result in Vineyard City issuing the Work Order to another contractor under the Utah State Contract.

TASK ORDER

VINEYARD CITY
400 NORTH TRAFFIC SIGNAL AT MILL ROAD

BID SCHEDULE

All applicable sales taxes, State, and/or Federal, and any other special taxes, patent rights, or royalties are included in the price quoted in this Bid. Bid quantities are based on design drawings. Quantities will be billed based on actual quantities.

OAK HOLLOW ELECTRIC COMPANY

				Estimate Total	$215,328.88

Procurement Estimate for 400 NORTH TRAFFIC SIGNAL AT MILL RD - VINEYARD UT - 2025-54-102

Itemized Price List

	DESCRIPTION	Unit	M&P	Unit Price	Estimate Qty	Estimate Subtotal
Mobilization						
3	Mobilization for Installation, Upgrade, or Repair - Tooele, Summit, Wasatch, Utah Counties	Lump		$900.00	1	$900.00
12	Deliver or pick up steel materials at Intermountain Galvanizing, 1085 West 400 North, Lindon, Utah	Lump		$1,128.00	1	$1,128.00
Traffic Control (TC)			10% max of project value for <$50k, 8% max for $50k to $100k, 6% max for > $100K. Excludes UHP price value			
15	Set Up TC Shoulder Closure	Each		$180.00	60	$10,800.00
Removal						
26	Remove Manhole	Each	These items include all cutting, jacking, equipment, labor, and transport/disposal and fees.	$1,910.00	0	$0.00
27	Remove Concrete Sidewalk	Sq Ft		$5.50	370	$2,035.00
28	Remove Concrete Curb & Gutter	Foot		$17.25	220	$3,795.00
29	Remove Concrete	Foot	This item includes all cutting, jacking, equipment, labor, and transport/disposal and fees. (For example, raised median B3, B4, B5, M2, etc.)	$24.00	0	$0.00
32	Remove Asphalt Pavement	Sq Yd		$31.00	53	$1,643.00
36	Remove Luminaire Extension, Arm - Salvage/Remove	Each		$188.00	1	$188.00
38	Remove Highway Luminaire Pole Foundation - Top 24"	Each		$363.00	1	$363.00
44	Remove Type I Junction Box	Each	These items are intended for remove-only operations. They are not intended for use in combination with new box installations or replacements; those items include removal of existing boxes. Includes all backfill and restoration of area to surrounding conditions.	$196.00	5	$980.00
Roadway						
56	Untreated Base Course	Ton		$54.75	20	$1,095.00
58	HMA - 1/2 inch	Ton	Includes aggregates, asphalt binder, hydrated lime, tack coat, and other additives, etc. Includes transport.	$230.00	40	$9,200.00
61	Concrete Curb & Gutter (any type)	Foot		$39.75	222	$8,824.50
65	Concrete Sidewalk	Sq Ft	Includes untreated base course.	$18.30	66	$1,207.80
66	Pedestrian Access Ramp	Sq Ft	Includes ALL work and materials to excavate and construct an ADA compliant ramp. Excludes Detectable Warning Surface, pavement removal, curb & gutter, and new sidewalk panels outside of ramp section. Area to be measured from top of the flares.	$38.25	602	$23,026.50
67	Detectable Warning Surface	Sq Ft	Includes all labor and materials necessary for installing a new detectable warning panel.	$48.00	128	$6,144.00
71	Reconstruct Catch Basin or Cleanout Box	Each		$1,578.00	1	$1,578.00
72	Solid cover or bicycle-safe grate and frame	Each		$1,058.00	0	$0.00
73	Open-Curb frame w/ bicycle safe grate	Each		$1,058.00	1	$1,058.00
74	New Catch Basin - Precast	Each		$2,031.00	0	$0.00
75	Landscape Grading	Sq Yd		$4.00	180	$720.00
76	Topsoil	Ton		$19.20	5	$96.00
77	Turf Sod	Sq Ft		$6.00	200	$1,200.00
78	Irrigation - Sch 40 1-1/2" PVC Pipe w/ Fittings	Foot		$4.55	0	$0.00
79	Irrigation - Sch 40 3/4" PVC Pipe w/ Fittings	Foot		$4.55	0	$0.00
80	Irrigation - Sprinkler Head w/ Riser	Each		$49.00	0	$0.00
Underground						
81	Pothole for Utilities	Each	This item may not be billed in conjunction with foundation excavation. Potholing for such is to be included in the foundation price.	$270.00	15	$4,050.00
83	Mast Arm Signal Pole Foundation - 3' x 12' - by Vacuum Truck	Each		$5,254.00	4	$21,016.00
87	Mast Arm Signal Pole Foundation in Ground Water or Sloughing Conditions	Each	In addition to Mast Arm Signal Pole Foundation items, for each foundation installed with these soil conditions.	$910.00	0	$0.00
88	Mast Arm Signal Pole Foundation in Rocky Soil Conditions	Each		$1,142.00	0	$0.00
93	Traffic Signal/Ped Pole Foundation - 2' x 3'	Each		$450.00	8	$3,600.00
95	Size 6 Cabinet Foundation - Precast	Each		$1,552.00	1	$1,552.00
97	2" Conduit - PVC	Foot		$4.27	200	$854.00
98	2" Conduit - SDR11 HDPE	Foot		$2.42	2400	$5,808.00
103	Conduit trenched in Native Soil, 18" cover (Excluding conduit cost)	Foot		$7.10	200	$1,420.00
110	5 - 6 conduits bored (Excluding conduit cost)	Foot		$30.12	350	$10,542.00
112	Additional Cost for Rocky Soil Conditions for Conduits Bored	Foot	In addition to Conduits Bored items, for every foot of conduit bored with rocky soil conditions	$7.00	0	$0.00
113	Type A Junction Box	Each	These items include removal of existing boxes or excavation of native material, removal of pavement, etc. as required. Includes all items to meet UDOT standard - backfill, flowable fill, maintenance markers, conduit plugs, grounding	$850.00	5	$4,250.00
114	Type B Junction Box	Each		$1,690.00	3	$5,070.00
116	Type C Junction Box	Each		$2,181.00	1	$2,181.00
Wire/Electrical						
120	IMSA 20-1, 4 wire, AWG 14 gage	Foot		$1.72	1800	$3,096.00
121	IMSA 20-1, 7 wire, AWG 14 gage	Foot		$2.21	3500	$7,735.00
123	Radar Detection Cable - Contractor Furnished	Foot	Contractor cable must meet the same specs as Wavetronix cable; gauge, insulation, strain rating, coloration, etc. **This item does not apply to Radar Pigtail installation, which is part of the "Radar Sensor" item.	$2.74	350	$959.00
129	RHH-USE2-RHW2, 10 gage	Foot		$1.66	1500	$2,490.00
131	Bare Copper Ground Wire, No. 6	Foot		$1.63	1200	$1,956.00
132	Stranded Insulated Ground Wire, AWG 12 gage	Foot		$1.46	100	$146.00
133	Power Source, Underground Service Pedestal - State Furnished - add 50amp breaker	Each	Includes installation of foundation, concrete pad and coordination with Region signal crew and Utility Coordinator for inspection and cut over with local serving power company.	$350.00	1	$350.00
ITS						
140	Gamechanger Cable or equivalent - Contractor Furnished	Foot		$2.91	350	$1,018.50
141	6 Strand Pre-terminated Drop Cable - Contractor Furnished (300 ft or less)	Each		$1,020.00	1	$1,020.00
142	6 Strand Pre-terminated Drop Cable - Contractor Furnished (per 100 ft added cable length)	Each	Item used in addition to the 6 strand pre-terminated drop cable, up to 300'. Billed in 100' increments	$1.92	0	$0.00
144	Type B Splice Case	Each		$1,740.00	1	$1,740.00
145	Fusion Splice	Each	Provide testing documentation per UDOT spec	$250.00	4	$1,000.00
146	CCTV Camera Cable - Contractor Furnished	Foot		$1.91	150	$286.50
147	CCTV Camera & Mount - State Furnished	Each	These items include cabinet wiring and RDPE setup for a fully functional CCTV.	$490.00	1	$490.00
Signal						
150	Mast Arm Signal Pole (for all arm lengths) - State Furnished	Each		$440.00	4	$1,760.00
152	30 - 55 ft Mast Arm - State Furnished	Each		$681.00	2	$1,362.00
153	60 - 75 ft Mast Arm - State Furnished	Each		$797.00	2	$1,594.00
156	5.5', 11' or 15' Traffic Signal/Ped Pole - State Furnished	Each		$180.00	8	$1,440.00
157	Size 6 Cabinet - State Furnished	Each	Includes removal of the old cabinet, transport and salvage to UDOT. Includes all wiring and labor to bring the signal back online.	$717.00	1	$717.00
164	Signal Head - State Furnished	Each	This item includes assembly of bracket and signal head (attaching visors and back plate to housing and installing LED modules) and installation.	$386.00	12	$4,632.00
175	Pedestrian Signal Clamshell Assembly	Each	Fully operational assembly - includes LED countdown module. Includes removal of existing assembly if present.	$530.00	8	$4,240.00
180	Audible Pedestrian Signal/Push Button/Sign Assembly - State Furnished	Each	This item includes removal/salvaging (if required) of existing assembly if present. Includes transport/disposal.	$198.00	8	$1,584.00
184	Mast Arm Mounted Sign (Sign Only)	Sq Ft	This item is intended for use with Mast Arm Mounted Sign Bracket.	$45.35	83	$3,764.05
186	Mast Arm Mounted Sign Bracket - State Furnished	Each	Mounting bracket as shown on Option B of standard drawing SL 3D. Includes 1 state furnished clamp kit, 2 state furnished sign clamps, and field-cutting state furnished tube. Includes z-bar.	$94.00	4	$376.00
189	Radar Detection Sensor - State Furnished	Each	Includes installation of the mount, sensor, connectorized pigtail cable, splice box, pole-mount box (if applicable), installation of radar panel or Click 650, and aiming.	$347.00	2	$694.00
190	LiDAR detector - State Furnished	Each	Includes installation of the mount, connection to the processor, splice box, pole-mount box (if applicable), installation of processor, and aiming.	$490.00	2	$980.00
191	Vibration Mitigator - State Furnished	Each	This item includes installation of device and mounting bracket on the end of the mast arm. No wiring or assembly is necessary.	$147.00	4	$588.00
Lighting						
208	Single or Dual 10' Arm or 15' Arm, or Vertical Extension for Luminaire - State Furnished	Each		$351.00	4	$1,404.00
213	LED Luminaire - State Furnished	Each	Includes Contractor-furnished wire in pole and fuse kits, removal of existing luminaire if present, and transport.	$204.00	8	$1,632.00
Pavement Marking/Signing						
216	Pavement marking Removal and Placement	Actual Cost +15%	Includes pavement marking removal (paint and thermoplastic) as outlined in project plans. Includes pavement marking (paint and thermoplastic) as outlined the project plans. Submit invoice from sub-contractor for payment.	$29,950.03	1	$29,950.03

TASK ORDER

VINEYARD CITY
400 NORTH TRAFFIC SIGNAL AT MILL ROAD

TOTAL OF ALL SCHEDULES $ 215,328.88

TOTAL OF ALL SCHEDULES (IN WORD FORM) $

Two Hundred Fifteen Nine Thousand Three Hundred Twenty-Eight Dollars 88/100 Cents

Quantities will reflect the actual amounts installed (whether less or more) and work completed. Unit pricing shall be based on the State Contract pricing. City authorization is required prior to completing work above or not included in the bid schedule.

The undersigned hereby declares that he has visited the site and has carefully examined the Contract Documents, consisting of one volume, relating to the work covered by the task order documents, and the bid schedule reflects the work outlined in those documents.

Respectfully submitted,

_____

_____
Contractor

By:_____

Title

MEASUREMENT AND PAYMENT for Bid Schedule

GENERAL

The method of measurement and payment for the various items comprising the completed work follows: Payment for the items shall be compensation in full for the furnishing of all overhead, labor, material, tools, equipment, and appurtenances necessary to complete the work in a good, neat, and satisfactory manner as indicated on the Plans or as specified, with all connections, APWA required materials testing performed by an independent third party testing laboratory (paid for by the contractor), painting, cleanup, and related work completed. Each item, fixture, piece of equipment, etc., shall be complete with all necessary connections and appurtenances for the satisfactory use and/or operation of said item. No additional payment, including work done by the contractor for his convenience, shall be made for work related to each item unless specifically noted or specified. Measurement shall be in place in the completed work with no allowance for waste.

1. Item #1 – Mobilization and Demobilization
    a. APWA Standard Specification Reference: Section 01 71 13.
    Do not exceed 10% of the total contract dollar amount.
    b. Measurement: Lump Sum.
    c. Payment Covers: Cost of mobilization, demobilization, installation of temporary facilities, modifying and maintaining project sponsorship signs, site pre-construction video (digital recording is acceptable), and all necessary permits from applicable Vineyard City and bringing all necessary construction equipment to the site, andutility coordination.
    d. Includes preparation and obtaining approval for SWPPP plans meeting City MS4 requirements, application for, and obtaining SWPPP permit (including the NOI and all fees), and all surface and subsurface temporary controls and removal thereof upon completion of the project, and SWPPP inspections. Includes clearing and grubbing, erosion control, sediment control, watering and dust control, control and cleanup of offsite tracking of dirt and other construction debris.
    e. Includes obtaining City Land Disturbance Permit, and City Right-of-Way Permit. TheCity will waive the permit fees for these permits.
    f. Payment will be made on a percentage basis as follows:

Cumulative Percent of Original* Contract Amount Earned	Percent of Amount Bid for Mobilization to be Paid
First Estimate	30
20	25
60	25
90	10
Final 10 percent held until completion of punch list items, and final site clean-up has been performed.	10

    *Original contract is defined as the dollar value of all awarded bids at the time notice to proceed is issued.
    g. First mobilization payment will not be released until a copy of the pre-construction video recording is received by the engineer.

2. Item #2 – Construction Survey Staking
    a. Vineyard City Standard Specification Reference: Chapter 2.270, Chapter 3.055, APWA Standard Specification Reference: Section 01 71 23
    b. Measurement: Lump Sum.
    c. Payment Covers: All costs for labor, materials, equipment, and appurtenances required to conduct construction surveying and staking as required within the limits of construction as shown on the project plans. Payment will be made on a prorated percentage basis for actual work completed as a percent of the original contract amount. The final 10 percent will be held until all as-built documents and plans are received.
    d. Preparation and submittal of 1 set of mylar as-built plans, 3 sets of 11 x 17 paper plans, plus electronic versions in PDF and the most recent AutoCAD formats. As-builts will include XYZ coordinates to 0.01-foot accuracy for any deviations from plan lines and grades.
3. Item #3 – Traffic Control
    a. Utah Manual on Uniform Traffic Control Devices, Part 6
    b. Measurement: Lump Sum.
    c. Payment Covers: Costs associated with all materials, labor, equipment, rental costs, barricades, flagging, signs, temporary striping, detours, and any incidental to safely control traffic in accordance with the most recent version of the Manual of Uniform Traffic Control Devices (MUTCD). This item also includes pedestrian traffic control to maintain sidewalk and residence access, and ensure pedestrian safety, and additional signing as needed to maintain business access throughout the project as required by the contract documents.
    d. Price includes all costs to have traffic control plans prepared and stamped by a professional engineer licensed in the State of Utah and approved by the owner and engineer. No additional payment will be made to revise plans to comply with the MUTCD.
    e. Payment is prorated by the total dollar amount of work completed at the time the partial estimate is processed as a percentage of the original contract amount.
4. Item #4 – Remove & Dispose ADA Ramp
    a. Measurement: Each
    b. Payment Covers: All costs for labor, equipment, expendable supplies, coordination, and services required.
    c. Includes removing and disposing concrete waste, debris, and dust within the vicinity of the work.
    d. Depth not measured
    e. Includes sawcut and grinding to correct sawcut errors
    f. All incidental work required to remove concrete pavement/flatwork/ADA ramp.
5. Item #5 – Remove & Dispose Concrete Sidewalk
    a. Measurement: Square Foot
    b. Payment Covers: All costs for labor, equipment, expendable supplies, coordination, and services required.
    c. Includes removing and disposing concrete waste, debris, and dust within the vicinity of the work.
    d. Depth not measured

e. Includes sawcut and grinding to correct sawcut errors
f. All incidental work required to remove concrete pavement/flatwork.

6. Item #6 – Remove & Dispose Asphalt Pavement
    a. Measurement: Square Foot
    b. Payment Covers: All costs for labor, equipment, expendable supplies, coordination, and services required.
    c. Includes removing and disposing concrete waste, debris, and dust within the vicinity of the work.
    d. Depth not measured
    e. Includes sawcut and grinding to correct sawcut errors
    f. All incidental work required to remove asphalt pavement.

7. Item #7 – Remove & Dispose Curb and Gutter
    a. Measurement: Linear Foot – horizontal plane from top back of curb to face of curb
    b. Payment Covers: All costs for labor, equipment, expendable supplies, coordination, and services required
    c. Includes removing and disposing concrete waste, debris, and dust within the vicinity of the work.
    d. Depth not measured
    e. Includes sawcut and grinding to correct sawcut errors
    f. All incidental work required to remove curb and gutter.

8. Item #8 – Remove Street Light and Relocation of Junction Box
    a. Measurement: Each
    b. Payment Covers: All costs for labor, equipment, expendable supplies, coordination, and services required
    c. Includes removing and disposing/salvaging street light equipment, obliterating existing foundation to a minimum 12”, concrete waste, debris, and dust within the vicinity of the work.
    d. Includes all labor, coordination required to move existing junction box and to maintain existing lighting circuit
    e. All incidental work required to remove street light and relocate junction box.

9. Item #9 – Remove Striping As Required
    a. Measurement: LS
    b. Payment Covers: All costs for labor, equipment, expendable supplies, coordination, and services required
    c. Includes removing existing roadway striping as coordinated with Vineyard City staff
    d. All incidental work required to remove roadway striping.

10. Item #10 – Relocate Existing Junction Box (+/-2FT)
    a. Measurement: Each
    b. Payment Covers: All costs for labor, equipment, expendable supplies, coordination, and services required
    c. Includes all labor, coordination required to remove, relocate and install existing junction box and to maintain existing circuit
    d. All incidental work required to relocate existing junction box.

11. Item #11 – Remove & Dispose Existing Post and Base
    a. Measurement: Each
    b. Payment Covers: All costs for labor, equipment, expendable supplies, coordination, and services required to remove and dispose existing post and base
    c. Includes all labor, coordination required to remove and dispose post and base.
    d. Includes removal of existing foundation (as required) to a minimum 12" depth
    e. All incidental work required to relocate existing junction box.

12. Item #12 – Remove Existing Street Signs on Light Pole
    a. Measurement: Each
    b. Payment Covers: All costs for labor, equipment, expendable supplies, coordination, and services required to remove and salvage existing street signs
    c. Includes removal of all signs per plans within the project limits and all associated hardware and to be salvaged to Vineyard City
    d. All incidental work required to remove existing street signs on light pole.

13. Item #13 – ADA Ramp per APWA Plan 236.1
    a. Measurement: Each
    b. Payment Covers: All costs for labor, equipment, expendable supplies, coordination, and services required to construct ADA ramp per APWA Plan 236.1.
    c. Includes all concrete flatwork, detectable warning surface, base course to meet current ADA standards.
    d. All incidental work required to construct ADA ramps per APWA Plan 236.1.

14. Item #14 – Concrete Sidewalk per APWA Plan 231
    a. Measurement: Square Foot
    b. Payment Covers: All costs for labor, equipment, expendable supplies, coordination, and services required to construct concrete flatwork.
    c. Includes all concrete flatwork, expansion joints, matching existing sidewalk, and using transitions if necessary, protection and repair during construction
    d. Untreated base course is required under all sidewalk and is included as part of this item.
    e. All incidental work required to install concrete sidewalk.

15. Item #15 – Asphalt Pavement Restoration per APWA Plan 255
    a. Measurement: Square Foot
    b. Payment Covers: All costs for labor, equipment, expendable supplies, coordination, and services required to construct concrete flatwork.
    c. Includes all labor, shipping and import costs, equipment, expendable supplies, coordination and services to complete asphalt pavement restoration.
    d. All incidental work required to complete asphalt pavement restoration.

16. Item #16 – Type A 24" Curb and Gutter per APWA Plan 205.2
    a. Measurement: Linear Foot
    b. Payment Covers: All costs for labor, equipment, expendable supplies, coordination, and services included in APWA Plan 205 to construct curb and gutter.
    c. Includes all labor, shipping and import costs, equipment, expendable supplies, curb and gutter tie-ins, coordination and services to install curb and gutter.

d. All incidental work required to install curb and gutter.

17. Item #17 – Raise/Lower Storm Drain Grade to Final Grade
    a. Measurement: Each
    b. Payment Covers: All costs and labor to adjust the elevation of the existing frame and cover per Vineyard standards.
    c. All incidental work required to raise/lower existing storm drain to final grade.

18. Item #18 – Landscape Restoration
    a. Vineyard City Standard Specification Reference: Chapter 5 and 11
    b. Measurement: Square Foot.
    c. Payment Covers: All costs for labor, materials, equipment, and appurtenances required to salvage, stockpile, and store existing landscape materials, and restore turf sod, bark mulch, and gravel landscaping matching existing improvements and to be compatible with newly constructed features within the limits of construction.
    d. Price includes sprinkler system modification where needed to be compatible with the newly constructed features.
    e. Match existing sprinkler head and valve Brand and Type. Contractor may elect to furnish new materials at no additional cost.
    f. All incidental work required to complete landscape restoration.

19. Item #19 – Pavement Markings - Paint
    a. Measurement: Linear Foot
    b. Payment Covers: All costs for labor, materials, equipment, and appurtenances required to install paint pavement markings.
    c. Includes cleanup of spillage or splotch paint locations. If paint/thermoplastic is damaged/smeared from vehicle traffic or other reasons before drying/settling, removal and replacement is required.
    d. All incidental work required to complete paint pavement markings.

20. Item #20 – Pavement Markings - Thermoplastic
    a. Measurement: Each
    b. Payment Covers: All costs for labor, materials, equipment, and appurtenances required to install thermoplastic pavement messages.
    c. Includes cleanup of spillage or splotch paint locations. If paint/thermoplastic is damaged/smeared from vehicle traffic or other reasons before drying/settling, removal and replacement is required.
    d. All incidental work required to complete Thermoplastic Pavement Markings.

21. Item #21 – Traffic Signal System at 400 NORTH & MILL ROAD
    a. UDOT Standard Specification Section 02892, UDOT SL Series Standard Drawings
    b. Measurement: Lump Sum.
    c. Payment Covers: All costs for labor, materials, equipment, and appurtenances required to install all owner furnished signal materials, and to furnish and install all remaining required elements as shown on the plans for a fully functional signal in accordance with UDOT Standard Specifications, and as contained herein.
    d. Price includes protecting existing utility facilities, performing exploratory excavation (potholing) to identify utility conflicts, and coordinating with the conflicting utility for needed relocations.

e. Price includes coordination with the owner's designated agent for programming the traffic controller, and obtaining final acceptance for all elements of the traffic control system.
f. Price includes coordination with Rocky Mountain Power and Vineyard City for the power source. The contractor will furnish and install an underground service pedestal capable of providing un-metered power for the intersection luminaires, and metered power for the signalized intersection. Rocky Mountain Crews will make the physical connection to energize the power source.
g. Price includes pickup of all City furnished signal materials from the UDOT Central Warehouse and delivery to the project.

LIST OF SUBCONTRACTORS

The Bidder shall list below the names and location of place of business of each subcontractor who will perform work or labor or who will render service to the prime contractor in or about the construction of the Work or improvement, or a subcontractor duly licensed who, under subcontract to the prime Contractor, specially fabricates and installs a portion of the Work or improvement according to detailed drawings contained in the Contract Documents, in an amount in excess of one-half of one percent of the prime Contractor's total bid, or $10,000, whichever is greater. After the opening of bids, no changes or substitutions will be allowed except as otherwise provided by law. The listing of more than one subcontractor for each item of Work to be performed with the words "and/or" will not be permitted. Does the subcontractor have insurance? Write "yes" or "no" under the column for "Subcontractor Insurance".

Work to be Performed	Contractor License Number	Percent of Total Contract	Subcontractor's Name, Address, and Contact Person	Sub-contractor Insurance
1.				
2.				
3.				
4.				

THIS AGREEMENT is made and entered into as of this 10th day of DECEMBER, 2025, by and between VINEYARD CITY, Utah, a Utah municipal corporation (hereinafter "the City"), and OAK HOLLOW ELECTRIC COMPANY (hereinafter "Contractor").

PURPOSE: For the project known as the Vineyard Loop Road Traffic Signal at Main Street (hereinafter "Project"), which consists of the following:

NOW, **THEREFORE**, in consideration of the mutual promises contained herein, and the payments to the Contractor by the City the parties hereby agree as follows:

SECTION 1. SCOPE OF WORK. Contractor shall furnish all labor, materials and equipment to complete the Project, consisting of the work described in the Information for Bidders as the Basic Bid, and the following additive alternates: NONE, as specifically set out in the contract specifications, which is made a part hereof by reference, herein called the "Project."

The Project will be bound by the specifications referenced herein, according to the Advertisement for Bid, the Information for Bidders, the General Project Requirements and Specifications provided by City, the Bid of the Contractor, Bid Bond, Drawings, Notice of Award and Notice to Proceed, collectively referred to as the Contract Documents, all of which are incorporated herein by reference. To the extent that this Agreement conflicts in any way with a proposed form agreement which may have been submitted as part of the bid specifications, this Agreement shall control.

If any of the work performed by Contractor in any phase of the Project does not meet City standards as outlined in the bid documents and specifications, then Contractor shall immediately repair or correct the work at no additional cost to City.

22. **SUBCONTRACTORS**. No part of this contract shall be subcontracted by the Contractor without prior written approval by City through the Project Manager/Engineer. The Contractor shall be fully responsible to the City for the acts and omissions of its Subcontractors and of persons either directly or indirectly employed by them, as it is for the acts and omissions of persons directly employed by it.

    The Contractor shall, within ten (10) days of a submittal of request for final payment, include an affidavit showing satisfactory evidence that all claims of subcontractors, laborers, and materialmen who supplied services or materials to the Project have been fully paid, discharged, or waived. The Contractor shall submit lien waivers for each pay release.

    If the City reasonably believes that Contractor has failed to pay Subcontractors, materialmen, or laborers for work on the Project within a reasonable time of when payment is due, then City may, after having notified the Contractor, either pay unpaid bills or withhold from the release of Contractor's payment bond for this Project, a sum of money deemed reasonably sufficient to pay any and all such lawful claims until satisfactory evidence is furnished that all liabilities have been fully discharged and a ten percent (10%) fee for administering such claims.

23. **STANDARDS OF WORKMANSHIP**. Contractor shall demonstrate workmanship equal to or better than current industry standards for this Project. Where City specifications exist (for example: asphalt, concrete, irrigation, sprinkling system, and landscaping), they shall provide the benchmark for determination of acceptability.

24. **INSPECTION AND TESTING**. All materials and equipment used in the construction shall be subject to inspection by the Project Manager/Engineer. If laws, ordinances, rules, or regulations of

any public authority having jurisdiction require any work to specifically be inspected, tested, or approved by someone other than the Project Manager/Engineer, the Contractor shall give the Project Manager/Engineer timely notice of readiness. Inspections, tests or approvals by the City or appropriate authorities will not relieve the Contractor from obligations to perform the work in accordance with the requirements of the Contract Documents and/or provisions. The Project Manager/Engineer and other designated persons will at all times have access to the work. All work shall ultimately be inspected for final acceptance by the Project Manager/Engineer within a reasonable time upon receipt of notice from the Contractor that work is complete and ready for final inspection.

During construction, the work will be inspected and observed by the Project Manager/Engineer or his designated representative. All work that is deficient or does not meet specifications shall be removed and replaced with proper material at Contractor's expense.

25. **WARRANTY**. Contractor warrants that all materials and supplies used in the construction of the Project shall be new, except as otherwise agreed to in writing by the City's Representative. All materials, equipment, parts and labor and any necessary corrections to the Project shall be guaranteed for a period of one (1) year following the date of substantial completion of the Project under the terms of the performance bond.

SECTION 2. PERFORMANCE AND PAYMENT BONDS. Contractor shall furnish to the City a payment and performance bond satisfactory to the City guaranteeing Contractor's payment and performance, in the amount, for each separately, of one hundred percent (100%) of the Contract Amount.

SECTION 3. INSURANCE. Unless otherwise specified in the bid documents, the Contractor shall procure and maintain for the duration of the Agreement, insurance against claims for injuries to persons or damage to property which may arise from or in connection with the performance of the work hereunder by the Contractor, their agents, representatives, employees, or subcontractors.

The Contractor shall provide a Certificate of Insurance evidencing:

A. Automobile Liability insurance with limits no less than five hundred thousand dollars ($500,000) combined single limit per accident for bodily injury and property damage.

B. Commercial General Liability insurance written on an occurrence basis with limits no less than one million dollars ($1,000,000) combined single limit per occurrence and two million dollars ($2,000,000) aggregate for personal injury, bodily injury and property damage. Coverage shall include but not be limited to blanket contractual; products/completed operations; broad form property damage; explosion, collapse and underground (XCU) if specifically requested; and employer's liability.

C. Professional Liability (Errors and Omissions) insurance written on an occurrence basis with limits no less than one half million dollars ($500,000) combined single limit per occurrence.

D. Workers Compensation insurance written on an occurrence basis with limits no less than one half million dollars ($500,000) combined single limit per occurrence.

The City shall be named as an additional insured on the insurance policy and a copy of the endorsement naming the City as an additional insured shall be attached to the Certificate of Insurance. The City reserves the right to request certified copies of any required policies.

The Contractor's insurance shall contain a clause stating that coverage shall apply separately to each insured against whom claim is made or suit is brought, except with respect to the limits of the insurer's liability.

SECTION 4. CONTRACT AMOUNT, ACCEPTANCE OF WHOLE, ADDITIONS. City shall pay Contractor the total sum of $ **158,157.06** for all work and materials expended to complete this Project, which shall include the cost of all bonds, insurance, and all charges, fees, permits (including water and sewer fees, unless waived), expenses or assessments of whatever kind or character that are or may be necessary to complete this Project, including any additive alternates listed within the Scope of Work described in Section 1.

This Project, including the additive alternates awarded in Section 1, if any, is awarded in whole to the Contractor; the City will accept the Project in whole. However, nothing contained herein shall prevent the City from reducing the work to be done under this Agreement pursuant to Section 8 herein, nor shall anything herein be construed to require that Contractor be awarded any of the additive alternates bid by the Contractor or change order(s). The City retains the right to award any of the additive alternates or change order(s), or any part of them, to other contractors at any time, except those awarded to the Contractor in Section 1.

SECTION 5. PERMITS AND FEES. As set out in Section 4 above, the Contract Amount includes the price of all normally applicable fees and permits. The City may, at its discretion, arrange for the waiver of certain fees, permits and expenses.

SECTION 6. TERMS OF PAYMENT. The City shall pay for services provided hereunder according to and in an amount not to exceed that detailed in the payment bid schedule and only upon Contractor's request on forms approved by and submitted to the Project Manager. The City shall make payment within thirty (30) days thereafter. Requests for a more rapid payment may be considered if a discount is offered for early payment. At no time shall the aggregate amount of money paid to the Contractor in proportion to the Contract Amount be greater than the proportion of the work performed at that point to the total Project work. No payment shall be made for any service rendered by the Contractor except for services set forth and identified in this Agreement. The City reserves the right to withhold payment in whole or part from the Contractor for non-compliance with the provisions of the Contract Documents.

A. RETAINAGE. The City may, in its sole discretion; (1) retain five percent (5%) of the value of all work done and materials or equipment supplied as part security for the fulfillment of the Agreement by the Contractor; or (2) retain the final payment of up to five percent (5%) of the total project amount. As work nears completion and solely at the City's discretion, the City may reduce the retainage to an amount more in line with the work remaining. The City reserves the right to retain all amounts previously withheld or due, including any liquidated damages, until all services specified herein are complete. Any money withheld pursuant to this section shall be placed in an interest-bearing account, and the interest shall also be payable to the Contractor upon final payment.

Before final payment is made, the Contractor must submit evidence satisfactory to the City that all

payrolls, material bills, subcontracts, and all outstanding indebtedness in connection with the Project have been paid for.

The City may withhold a reasonable amount of the payment bond sufficient to cover any outstanding indebtedness or monies owed or claimed by any person who supplied work or materials to the Project plus ten percent (10%) of such indebtedness as the City's cost of administering such claims until Contractor supplies a release satisfactory to the City, signed by all persons who have supplied labor or materials to the Project or, at the City's option if no claim is made, until 105 days after the date on which any person performed the last of the labor or supplied the last of the material for the Project and upon written request from the Contractor. The Contractor shall supply to the Project Manager/Engineer within a reasonable time after his request a signed statement verifying all the suppliers, subcontractors and other persons who have supplied labor or materials to the Project.

B. FINAL PAYMENT. Acceptance by the Contractor of the final payment from the City shall release the City of all claims, demands and liability of the Contractor, its officers, agents, employees, and subcontractors, whether communicated or not by the Contractor, except with respect to those matters referred to in writing delivered to the Contractor and approved in writing by the Project Manager.

SECTION 7. COMPLETION TIME. The work on this Project shall commence within ten days of receipt of the Notice to Proceed and shall be completed by **MAY 30, 2026**. Work stoppage due to inclement weather conditions and other factors must be approved in writing by the Project Manager. Inclement weather shall not otherwise constitute cause for delay. Unless otherwise agreed by the City by Change Order, no damages shall become due to Contractor for City-caused delay. A Change Order for delay will generally be accepted for delay so excessive and unreasonable that it is beyond the scope of the Contract or delay attributed to direct, active or willful interference by the City. The Change Order must be based upon actual damages sustained by the Contractor which are directly attributed to the delay.

In the event that Contractor fails to complete all of the work required herein within the time limit set out above, then for each partial or complete day during which the work remains uncompleted thereafter, the Contractor agrees to pay the City Liquidated damages as specified in the Information for Bidders of the specifications. The parties agree that the daily liquidated damages provided for herein are reasonable and fair and are not a penalty. TIME IS OF THE ESSENCE IN THIS AGREEMENT.

SECTION 8. ADDITIONAL WORK/CHANGE ORDERS. The City may enlarge or reduce the work to be performed by Contractor hereunder by written notification to Contractor, including changes to the plans and specifications. The City shall pay Contractor for any additional work so requested and shall reduce the payment to the Contractor for any reduction in labor, materials, overhead and profit margin resulting from the reduction in the work. Except as the City shall so notify the Contractor in writing, it is understood and agreed by the parties hereto that no money will be paid to the Contractor for any new or additional labor or materials furnished unless a written modification is agreed to in a document signed by both parties.

The value of any work covered by a change order or of any claim for increase or decrease in the contract price shall be determined by one or more of the following methods in order of precedence listed below:

A. An agreed lump sum: or in the event the parties cannot agree; then

B. The unit rate for the work bid by the Contractor, if applicable, or in the event there was no such rate bid; then

C. The actual cost for: (1) labor; (2) materials; (3) supplies; (4) equipment; (5) direct overhead (not to

exceed 5% of the sum total of Items 1-3, unless approved by the City); and (6) other services necessary and approved by the City to complete the work. In the event of a net increase in the Contract Amount for a change order, the City shall allow a payment to the Contractor of an additional ten percent (10%) of the actual cost of the work, not including direct overhead or bond costs, to cover the cost of general overhead and profit. The Contractor may also charge the City for actual cost of the net increase in bond costs because of the overall change to the Contract Amount. The City specifically reserves the right to request documentation, including but not limited to payroll stubs, bond bills, and invoices, to validate the Contractor's calculations.

SECTION 9. DISPUTES. Except as otherwise provided in this Agreement, every dispute concerning a question of fact arising under this Agreement which is not settled by Agreement between the parties shall be decided by the City. The decision of the City shall be final and conclusive unless, within thirty (30) days from the date of receipt of such decision, the Contractor shall mail or otherwise furnish the City a written signed appeal addressed to the Project Manager/Engineer. In connection with any appeal proceeding under this clause, the Contractor will be afforded an opportunity to be heard and to offer evidence in support of its appeal. Pending final decision of a dispute hereunder, the Contractor will proceed diligently with the performance of the contract and in accordance with the City's decision. The decision of the City shall be final and conclusive but shall not be arbitrary or unreasonable. Although this Contract has been drafted by the City, the Contractor expressly agrees that any ambiguity herein shall be resolved in favor of the City.

SECTION 10. DEFAULT, REMEDY AND TERMINATION. The City may terminate this agreement upon the occurrence of one or more of the following events:

A. If Contractor or any Subcontractor should substantially violate any of the provisions of this contract;

B. If Contractor substantially fails to perform any part of this Agreement;

C. If Contractor repeatedly fails or becomes unable to perform the services under this Agreement as required herein, or substantially fails to provide services under this Agreement for a period of seventy-two (72) hours;

D. If Contractor (1) shall become insolvent in a bankruptcy sense; (2) shall be generally not paying its debts as they become due, or within a reasonable time thereafter; (3) shall suffer, voluntarily or involuntarily, the entry of an order by any court or governmental authority authorizing the appointment of or appointing of a custodian (as that term is defined in 11 U.S.C. §101[10]), receiver, trustee, or other officer with similar powers with respect to it or any portion of its property which remains and is not dismissed for a period of ninety (90) days; (4) shall suffer, voluntarily or involuntarily, with or without judicial or governmental authorization, any such custodian, receiver, trustee, or other officer with similar powers to take possession of any part of its property which third party remains in possession for an excess of ninety (90) days; (5) shall suffer, voluntarily or involuntarily, the filing of a petition respecting an assignment for the benefit of creditors which is not dismissed for a period of ninety (90) days; (6) shall be dissolved; (7) shall become the subject of any proceeding, suit, or action at law or in equity under or relating to any bankruptcy, reorganization or arrangement of debt, insolvency, readjustment of debt, receivership, liquidation, or dissolution law or statute or amendments thereto to be commenced by or against it or against any of its property which remains un-dismissed for a period of ninety (90) days; (8) shall voluntarily suspend substantially all of its business operations; (9) shall be merged with, acquired by, or otherwise absorbed by any individual, corporation, or other business entity or organization of any kind except for any individual corporation or other business entity or organization which is controlled by, controlling, or under common control with the Contractor; or (10) shall take action for the purpose of any of the foregoing,

After serving ten (10) days written notice on the Contractor and its surety of its intention to terminate the services of Contractor, and if within ten (10) days after serving such notice, the violation is not corrected to City's reasonable satisfaction, the City then may take over the work and prosecute it to completion by contract or by any other method it may deem advisable at the expense of the Contractor. The Contractor and the bonding company shall be liable to the City for any reasonable cost occasioned by the City in excess of the amount agreed for the service herein.

The Contractor shall be entitled to a hearing before a City hearing officer upon the issue of termination if it submits a written request therefore within seven (7) days of the service of the notice of the City's intent to terminate. The Contractor shall be entitled to be heard at such hearing on the issue of termination. The Contractor shall not bring an action against the City, its officers, agents or employees arising out of or relating to the termination of this Agreement before the decision is issued by the City's hearing officer(s).

Waiver of any default shall not be deemed to be a waiver of any subsequent default. Waiver of any provision of this Agreement shall not be construed to be modification of the terms of this Agreement, unless stated to be such in writing, signed by the City's authorized representative.

The Contractor shall continue the performance of this agreement to the extent not terminated under the provisions of this section.

The rights and remedies of the City provided in this clause shall not be exclusive and are in addition to any other rights and remedies provided by law or under this agreement.

SECTION 11. HOLD HARMLESS INDEMNIFICATION. The Contractor clearly and unequivocally agrees to indemnify and to hold the City and its agents, employees, and officers, harmless from and shall process and to defend at its own expense any and all claims, demands, suits, at law or equity, actions, penalties, losses, damages, or costs, of whatsoever kind or nature, brought against the City arising out of, in connection with, or incident to the execution of this Agreement and/or the Contractor's performance or failure to perform any aspect of this Agreement; provided, however, that if such claims are caused by or result from the concurrent negligence of the City, its agents, employees, and officers, this indemnity provision shall be valid and enforceable only to the extent of the negligence of the Contractor or others; and provided further, that nothing herein shall require the Contractor to hold harmless or defend the City, its agents, employees and/or officers from any claims arising from the sole negligence of the City, its agents, employees, and/or officers. The Contractor expressly agrees that the indemnification provided herein constitutes the contractor's waiver of immunity under Utah Code Section 34A-2-105 for the purposes of this Agreement. This waiver has been mutually negotiated by the parties. The provisions of this section shall survive the expiration or termination of this Agreement. No liability shall attach to the City by reason of entering into this Agreement except as expressly provided herein.

SECTION 12. CONTROLLING LAW. These general conditions shall be construed in accordance with and enforced under the laws of the State of Utah. Any action of law, suit in equity, or judicial proceeding for the enforcement of the Agreement, or any provisions thereof, shall be instituted and maintained only in any of the courts of competent jurisdiction in Utah County, Utah.

SECTION 13. ASSIGNMENT. The Contractor shall not assign nor transfer any interest in this agreement without the prior written consent of the City, provided however, that claims for compensation due or to become due the Contractor from the City under this agreement may be assigned to a bank, trust company, or other financial institution without such approval. Written notice of any such assignment shall be promptly furnished to City.

SECTION 14. SAFETY AND TRAFFIC CONTROL. Contractor shall take all reasonable precautions to protect the safety of pedestrians, school children, motorists, and others who may use or come near to the Project site, including but not limited to compliance with the Manual of Uniform Traffic Control Devices.

SECTION 15. SAFETY AND PROTECTION OF THE WORK. Contractor shall be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the project work. Contractor shall provide reasonable protection to prevent damage, injury or loss to employees on the Project work and all other persons who may be affected thereby, materials and equipment, whether on or off the site, and other property at the work site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures and utilities not designated for removal, relocation or replacement in the course of construction. In addition, the Contractor shall give all notices and comply with all applicable laws, ordinances, rules, regulations, and lawful orders of any public authority bearing on the safety of persons or property or their protection from damage, injury or loss.

The Contractor shall erect and maintain, as required by the existing conditions and progress of the work, all reasonable safeguards for safety and protection, including posting danger signs and other warnings against hazards, setting safety regulations, and notifying owners and user of adjacent utilities.

The Contractor shall promptly remedy all damage or loss to any property referred to in this Section caused in whole or in part by the Contractor, any subcontractor, sub-subcontractor or anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable and for which the Contractor is responsible, except for acts or omissions by the City or anyone directly or indirectly employed by it, or by anyone for whose acts it may be liable, and not attributable to the fault or negligence of the Contractor. Contractor shall remove from the site all cuttings, debris, equipment and unused material.

SECTION 16. UNENFORCEABLE CONTRACT, WAIVERS. In the event that any provision of this contract shall be ruled invalid and unenforceable, the remaining provisions shall be valid and binding upon the parties. One or more waivers by either party of any provision, term or covenant shall not be construed by the other party as a waiver of a subsequent breach of the same provision by the other party.

SECTION 17. ENTIRE AGREEMENT. This contract represents the entire integrated agreement between City and Contractor and supersedes all prior negotiations, representations, or agreements, either written or oral. This agreement may be amended only by written modification signed by both parties.

SECTION 18. COMMENCEMENT OF WORK. Contractor will commence work as required by the specifications within ten calendar days after receiving the NOTICE TO PROCEED.

SECTION 19. UTILITIES. The right is reserved to the owners of public utilities and franchises to enter upon the street or work site for the purpose of making repairs or changes of their property that may become necessary by the work. The City shall also have the privilege of entering upon the street or work site for the purpose of repairing culverts, storm drains, water system repairs or adjustments and all other necessary City work.

The Contractor takes the whole risk, responsibility, and expense with respect to the location of utilities, and in working with utility owners about locating, moving, repairing, and modifying utilities. All utility locations shown on the plans and specifications are approximate and are marked on the plans, if at all, only for convenience. The City makes no representation about the location of any such utilities, and Contractor is encouraged to contact utility companies and owners about the location of all utilities that may be impacted by or impact the Project work.

SECTION 20. HOURS AND DAYS OF WORK. All work performed by the Contractor, its subcontractors, materialmen, agents and employees shall be performed during work hours of 7:00 a.m. to 7:00 p.m. Monday through Saturday unless otherwise specified. When work is prohibited, no exterior construction, excavation or delivery of supplies and concrete are allowed.

SECTION 21. OBEY LAWS. Contractor shall obey all laws, ordinances and regulations of the United States, the State of Utah, and City in performing this Agreement.

SECTION 22. NONDISCRIMINATION.

A. The City is an equal opportunity employer.

B. In the performance of this Agreement, the Contractor will not discriminate against any employee or applicant for employment on the grounds of race, creed, color, national origin, sex, marital status, age or the presence of any sensory, mental or physical handicap; provided that the prohibition against discrimination in employment because of handicap shall not apply if the particular disability prevents the proper performance of the particular worker involved. The Contractor shall ensure that applicants are employed, and that employees are treated during employment without discrimination because of their race, creed, color, national origin, sex, marital status, age or the presence of any sensory, mental or physical handicap. Such action shall include, but not be limited to employment, upgrading, demotion or transfers, recruitment or recruitment advertising, layoff or termination, rates of pay or other forms of compensation, and programs for training including apprenticeships. The Contractor shall take such action with respect to this Agreement as may be required to ensure full compliance with local, state and federal laws prohibiting discrimination in employment.

C. The Contractor will not discriminate against any recipient of any services or benefits provided for in this Agreement on the grounds of race, creed, color, national origin, sex, marital status, age or the presence of any sensory, mental or physical handicap.

D. If any assignment or subcontracting has been authorized by the City, said assignment or subcontract shall include appropriate safeguards against discrimination. The Contractor shall take such action as may be required to ensure full compliance with the provisions in the immediately preceding paragraphs herein.

SECTION 23. THIRD PARTY RIGHTS. Nothing herein is intended to confer rights of any kind in any third party. No member, officer, or employee of the City shall have any interest, direct or indirect, in this Agreement or the proceeds thereof.

SECTION 24. PROJECT MANAGER/ENGINEER. The Project Manager/ Engineer for this Project is Christopher T. Trusty, City Engineer, or such other person designated by the City to the Contractor orally or in writing.

SECTION 25. PARTIES' REPRESENTATIVES. For purposes of notice required or desired by the parties, or communication involving the services under this Agreement, such notice or communication shall be deemed to have been given when personally delivered or mailed, or sent by electrical transmission certified mail, postage pre-paid, to the parties at the following addresses:

Contractor: _____

Attention: _____

Address: _____

City, State, ZIP: _____

or such other person designated in writing by the Contractor's chief administrative officer, at the Contractor's address set out first above;

City: Project Manager/Engineer, at the address set out first above for the City, or when given to such other person as either of the above representatives shall designate in writing. The designation of any address may be changed by notice given in the same manner as provided in this paragraph.

SECTION 26. SEVERABILITY. Should any part of this Agreement for any reason be declared invalid, such decision shall not affect the validity of any remaining provisions, which remaining provisions shall remain in force and effect as if this Agreement had been executed with the invalid portion thereof eliminated, and it is hereby declared the intention of the parties that they would have executed the remaining portion of this Agreement without including any such part, parts, or portions which may, for any reason, be hereafter declared invalid. If any provision of this Agreement is held invalid or unenforceable with respect to particular circumstances, such provision shall nevertheless remain in full force and effect in all other circumstances.

SECTION 27. DISPUTE RESOLUTION. The parties agree to attempt in good faith to resolve all disputes arising between them first through expedited mediation (not to exceed seven business days from the receipt by a party of a notice of request for mediation) and, if mediation is not successful, through negotiated settlement or court action. In the event that the actions of one party will cause or are causing the other immediate irreparable injury requiring temporary injunctive relief and the acting party is unwilling to suspend its planned or existing activity to allow for expedited mediation, the aggrieved party may file suit and seek such temporary injunctive relief in a court with jurisdiction over the subject matter of the dispute. Dispute resolution under this section shall be initiated by service by one party upon the other of a written notice and request to mediate, identifying the subject matter of the dispute and the nature of the relief sought. Unless otherwise agreed in writing at the time of mediation, mediation shall be conducted through and under the mediation rules of the American Arbitration Association.

The parties agree to submit all disputes not resolved by mediation to binding arbitration under the construction industry arbitration rules of the American Arbitration Association and the Utah Uniform Arbitration Act.

IN WITNESS WHEREOF, the parties have entered into this agreement on the day and year set out at the top of this Agreement.

VINEYARD CITY

_____

_____

Title

CONTRACTOR

_____

Company Name

_____

Signature – *must be notarized*

_____

Printed Name

_____

Title

_____

Utah Contractor License Number

ATTACHMENTS

NOTICE TO PROCEED

VINEYARD CITY
400 NORTH TRAFFIC SIGNAL AT MILL ROAD

DATE: / /2025_____

TO:_____
_____
_____

You are hereby notified to commence work in accordance with the Contract dated_____, and you are to complete the work within by (05/30/2026).
Bid Schedule.

The date of final completion is therefore (05/30/2026)

By: _____

Title: City Engineer

ACCEPTANCE OF NOTICE

Receipt of the above NOTICE to
PROCEED is hereby acknowledged by
_____,
this the_____day of_____20____.

By: _____

Title: _____

CONTRACTOR'S APPLICATION FOR PAYMENT

To: _____

From: _____

_____

Project:_____
Payment Request No.: _____
Period:_____through _____

1. Contract Time	_____	Calendar Days
2. Time Elapsed	_____	Calendar Days
3. Remainder	_____	Calendar Days
4. Work Completed	_____	Percent
5. Time Elapsed Percent	_____	Percent

6. Original Contract Amount		$_____
7. Approved Change Order No's	_____	$_____
8. Adjusted Contract Amount		$_____

	Previous Period	This Period
9. Total Value to Date	9a_____	9b _____
10. Total Retainage to Date	10a_____	10b_____
11. Value This Request	11a_____	11b_____
12. Retainage This Request	12a_____	12b_____
13. Reduction of Retainage	13a_____	13b_____

14. NET PAYMENT AMOUNT TO CONTRACTOR _____

We certify the above is a true statement of work done.

CONTRACTOR - _____

BY:_____

TITLE:_____

DATE: _____

OWNER – VINEYARD CITY

BY:_____	BY:_____
TITLE:_____	TITLE:_____
DATE:_____	DATE: _____

(Instructions on Next Page)

PAYMENT REQUEST INSTRUCTIONS

ITEM

2. Elapsed Calendar Days from Date of Notice to Proceed.

3. Item 1 Minus Item 2

4. Divide Item 9b by Item 8 and Multiply by 100

5. Divide Item 2 by Item 1 and Multiply by 100

9a. Item 9b from Previous Payment Request

10a. Item 10b from Previous Payment Request

11a. Item 11b from Previous Payment Request

12a. Item 12b from Previous Payment Request

13a. Item 13b from Previous Payment Request

9b. Total Value of Work Completed to Date of this Request (Attach Payment Breakdown).

10b. 10% of Item 9b Unless Percent Reduction is Allowed by Owner.

11b. Item 9b Minus Item 9a.

12b. Item 10b Minus Item 10a.

13b. Amount Authorized by Owner.

14. Item 11b Minus Item 12b Plus Item 13b.

CHANGE ORDER

ORDER NO. _____

DATE _____

CONTRACT FOR: 400 NORTH TRAFFIC SIGNAL AT MILL ROAD

OWNER: Vineyard City

TO: _____
(Contractor)

You are hereby requested to comply with the following changes from the Contract Documents, Plans and Specifications:

Description of Changes (Supplemental Plans & Specifications Attached)	Item	Decrease Contract Price	Increase Contract Price

_____

JUSTIFICATION: _____

_____

The amount of the Contract Price will be (_____) by the sum of: ($_____).

The Contract Price including this and previous Change Orders will be:

_____ ($_____).

This document will become a modification to the Contract and all provision will apply hereto.

Requested _____ _____
(Contractor) (Date)

Recommended _____ _____
(Engineer) (Date)

Approved _____ _____
(Owner) (Date)

AFFIDAVIT OF PAYMENT

VINEYARD CITY

To All Whom it May Concern:

WHEREAS, the undersigned Contractor has furnished labor and materials under a contract dated for the project named 400 NORTH TRAFFIC SIGNAL AT MILL ROAD of which Vineyard City is the Owner.

NOW, THEREFORE, this_____day of_____, 20___, the undersigned Contractor hereby certifies that, except as listed below, he has paid in full or has otherwise satisfied all obligations for all materials and equipment furnished, for all work, labor, and services performed, and for all known indebtedness and claims against the Contractor for damages arising in any manner in connection with the performance of the Contract referenced above for which the Owner or his property might in any way be held responsible.

EXCEPTIONS: (If none, write "none". If required by the Owner, the Contractor shall furnish bond satisfactory to the Owner for each Exception.)

_____

Contractor (Name of sole ownership, corporation or partnership)

Affix corporate
seal here

_____

(Signature of Authorized Representative)

Title: _____

CONSENT OF SURETY FOR FINAL PAYMENT

VINEYARD CITY

Project Name: 400 NORTH TRAFFIC SIGNAL AT MILL ROAD

Location: Vineyard City

Type of Contract:_____

Amount of Contract _____

In accordance with the provisions of the above-named contract between the Owner and the Contractor, the following named surety:

_____

_____

_____

On the Payment Bond of the following named Contractor:

_____

_____

_____

Hereby approves of final payment to the Contractor, and further agrees that said final payment to the Contractor shall not relieve the Surety Company named herein of any of its obligations to the following named Owner (as set forth in said Surety Company's bond):

_____

_____

_____

IN WITNESS WHEREOF, the Surety Company has hereunto set its hand and seal this _____Day of_____, 20___.

_____
(Name of Surety Company)

_____
(Signature of Authorized Representative)

_____
(Name of Authorized Representative)

Title: _____

-

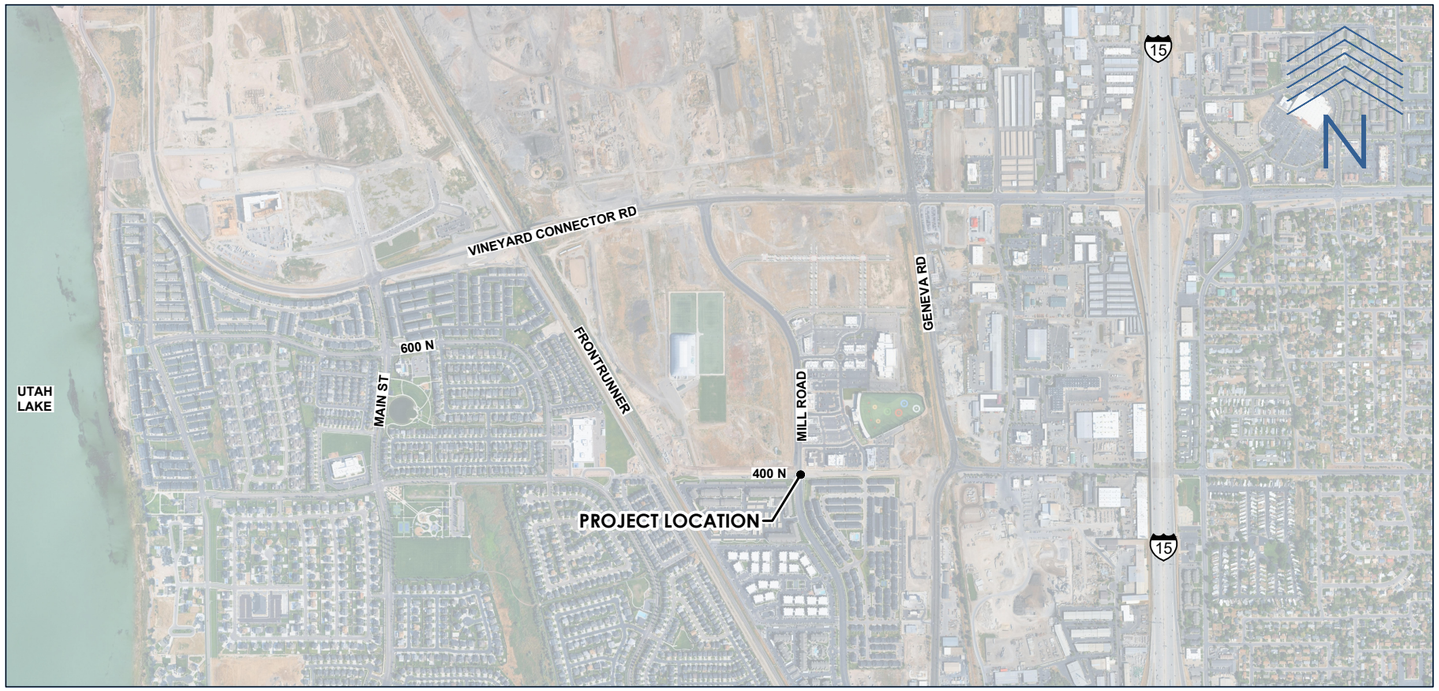
Avenue Project No. 25-140

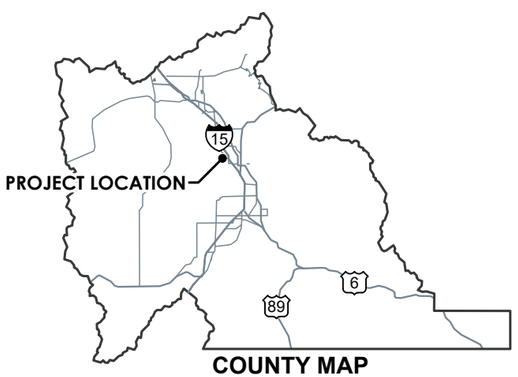
VINEYARD CITY

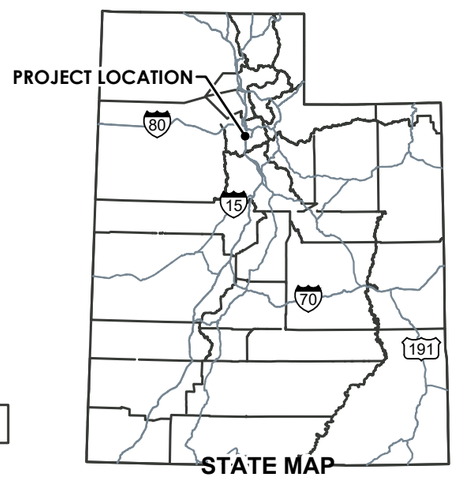
400 NORTH & MILL ROAD TRAFFIC SIGNAL

ISSUED: 08 SEPTEMBER 2025

VICINITY MAP







PROJECT CONTACTS

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125 SOUTH MAIN STREET
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CONTACT: JUSTINE MARSHALL, CFM
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UTILITY CONTACTS

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ROCKY MOUNTAIN POWER
70 N. 200 E.
AMERICAN FORK, UTAH
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EMAIL: alan.young@rockymountainpower.net

STREET LIGHTS

BLACK & MCDONALD LIMITED
1106 S LEGACY VIEW ST,
SALT LAKE CITY, UT 84104
CONTACT: WADE LONG
PHONE: (801) 3831-9654
EMAIL: wlong@blackandmcdonald.com

SHEET INDEX

SHEET NUMBER	SHEET TITLE	SHEET DESCRIPTION
1	G001	COVER PAGE
2	CS100	SURVEY CONTROL SHEET
3	CS101	EXISTING CONDITIONS & DEMOLITION PLAN
4	CP101	SITE PLAN
5	CP401	SITE GRADING DETAILS
6	SG101	SIGNAL PLAN
7	SG102	SIGNAL CIRCUIT
8	SGS01	SIGNAL DETAILS AND SCHEDULES
9	SGS02	SIGNAL DETAILS AND SCHEDULES
10	SGS03	SIGNAL DETAILS AND SCHEDULES

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PROFESSIONAL ENGINEER
No. 10484815
KEVIN J. CROSHAW
STATE OF UTAH
09/10/25

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COVER PAGE

VINEYARD CITY

400 NORTH & MILL ROAD TRAFFIC SIGNAL

400 NORTH MILL ROAD, VINEYARD, UTAH

Designer KF, PE | Checker KC, PE

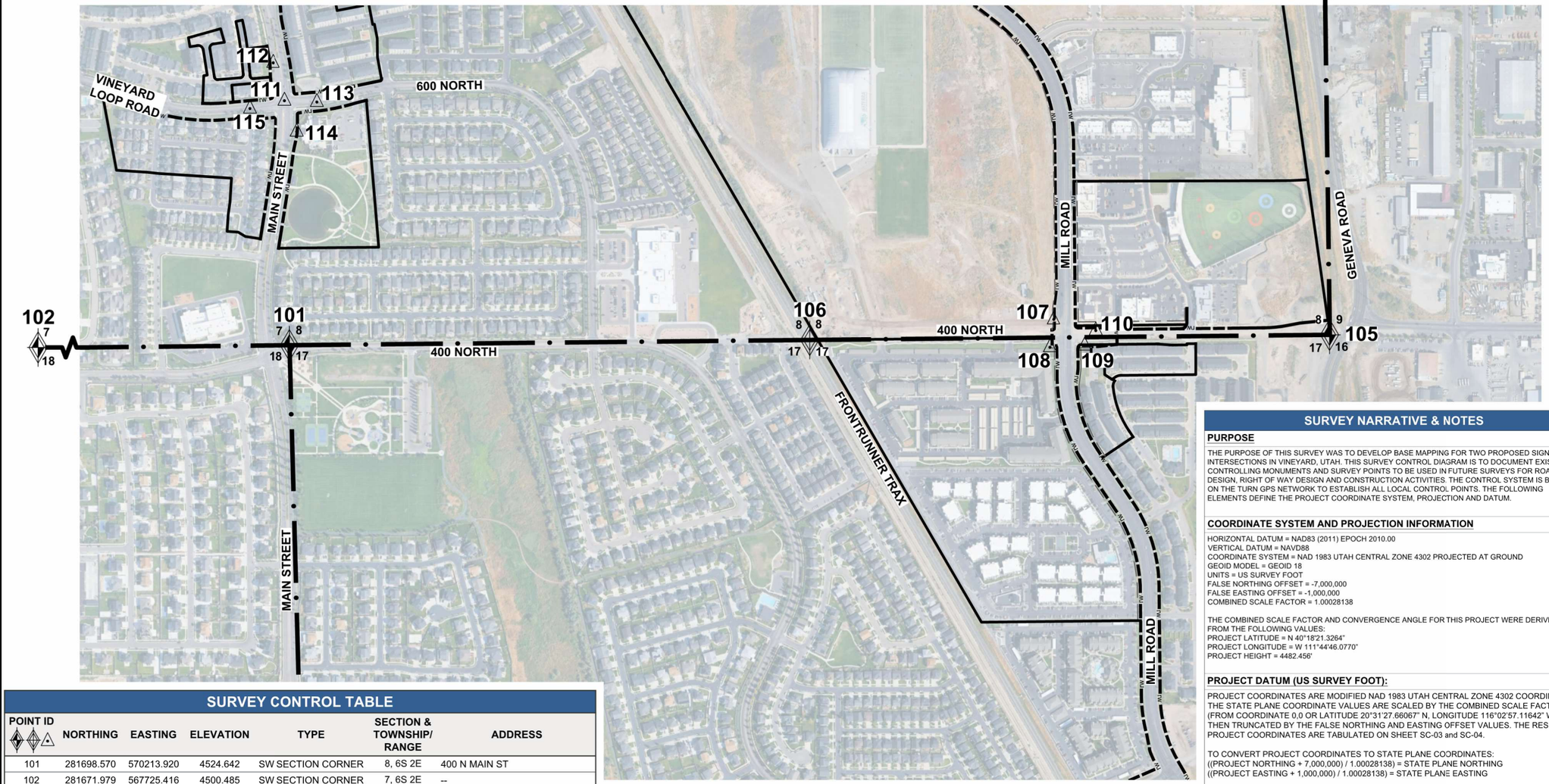
SHEET NO. 1 OF 10

SHEET TITLE G001

p:_2025\25-140 - mill rd and 400 north traffic signal design\000_cad\005_sheets\25-140 cover page.dwg

9/8/2025

Avenue Project No. 25-140



SURVEY CONTROL TABLE

POINT ID	NORTHING	EASTING	ELEVATION	TYPE	SECTION & TOWNSHIP/ RANGE	ADDRESS
101	281698.570	570213.920	4524.642	SW SECTION CORNER	8, 6S 2E	400 N MAIN ST
102	281671.979	567725.416	4500.485	SW SECTION CORNER	7, 6S 2E	--
103	284413.175	575608.228	4570.218	E 1/4 CORNER	8, 6S 2E	GENEVA RD CYN PKWY
104	287070.262	575571.726	4576.577	NE SECTION CORNER	8, 6S 2E	1660 W 1200 N
105	281753.082	575645.271	4563.814	SE SECTION CORNER	8, 6S 2E	400 N GENEVA RD
106	281726.232	572929.526	4542.596	S 1/4 CORNER	8, 6S 2E	400 N FRONTRUNNER TRAX
107	281833.364	574203.194	4551.615	CP - REBAR W/ CAP	8, 6S 2E	400 N MILL RD
108	281688.505	571483.663	4550.721	CP - SCRIBE ON SE COR VAULT	17, 6S 2E	400 N MILL RD
109	281697.843	574366.642	4551.921	CP - MAGSPIKE	17, 6S 2E	400 N MILL RD
110	281775.370	574424.604	4551.844	CP - MAGSPIKE	8, 6S 2E	400 N MILL RD
111	282977.100	570186.468	4519.397	CP - MAGSPIKE	7, 6S 2E	VINEYARD LOOP RD MILL RD
112	283175.332	570126.820	4520.016	CP - MAGSPIKE	7, 6S 2E	VINEYARD LOOP RD MAIN ST
113	282970.506	570357.514	4518.629	CP - MAGSPIKE	8, 6S 2E	VINEYARD LOOP RD MAIN ST
114	282936.401	570250.416	4519.893	CP - MAGSPIKE	8, 6S 2E	VINEYARD LOOP RD MAIN ST
115	282936.401	570003.734	4518.350	CP - MAGSPIKE	7, 6S 2E	VINEYARD LOOP RD MAIN ST

N

300 0 300 600

SCALE 1" = 600' US FT

SURVEYOR'S CERTIFICATION - CONTROL SHEET

I, CRAIG R. YATES, DO HEREBY CERTIFY THAT I AM A PROFESSIONAL LAND SURVEYOR, HOLDING CERTIFICATE NUMBER 5398429, AS PRESCRIBED BY THE LAWS OF THE STATE OF UTAH. I FURTHER CERTIFY THAT THE CONTROL DIAGRAM REPRESENTED HEREIN, WAS PREPARED UNDER MY DIRECT SUPERVISION AND THAT THE SAME IS AN ACCURATE REPRESENTATION OF THE CONTROL SURVEY FOR THIS PROJECT.

CRAIG R. YATES
PLS NO. 5398429

PLS SIGNATURE

07/21/2025
DATE

STAMP

PROFESSIONAL LAND SURVEYOR No. 5398429 CRAIG R. YATES STATE OF UTAH

SURVEY NARRATIVE & NOTES

PURPOSE

THE PURPOSE OF THIS SURVEY WAS TO DEVELOP BASE MAPPING FOR TWO PROPOSED SIGNALIZED INTERSECTIONS IN VINEYARD, UTAH. THIS SURVEY CONTROL DIAGRAM IS TO DOCUMENT EXISTING CONTROLLING MONUMENTS AND SURVEY POINTS TO BE USED IN FUTURE SURVEYS FOR ROADWAY DESIGN, RIGHT OF WAY DESIGN AND CONSTRUCTION ACTIVITIES. THE CONTROL SYSTEM IS BASED ON THE TURN GPS NETWORK TO ESTABLISH ALL LOCAL CONTROL POINTS. THE FOLLOWING ELEMENTS DEFINE THE PROJECT COORDINATE SYSTEM, PROJECTION AND DATUM.

COORDINATE SYSTEM AND PROJECTION INFORMATION

HORIZONTAL DATUM = NAD83 (2011) EPOCH 2010.00
VERTICAL DATUM = NAVD88
COORDINATE SYSTEM = NAD 1983 UTAH CENTRAL ZONE 4302 PROJECTED AT GROUND
GEOID MODEL = GEOID 18
UNITS = US SURVEY FOOT
FALSE NORTHING OFFSET = -7,000,000
FALSE EASTING OFFSET = -1,000,000
COMBINED SCALE FACTOR = 1.00028138

THE COMBINED SCALE FACTOR AND CONVERGENCE ANGLE FOR THIS PROJECT WERE DERIVED FROM THE FOLLOWING VALUES:
PROJECT LATITUDE = N 40°18'21.3264"
PROJECT LONGITUDE = W 111°44'46.0770"
PROJECT HEIGHT = 4482.456'

PROJECT DATUM (US SURVEY FOOT):

PROJECT COORDINATES ARE MODIFIED NAD 1983 UTAH CENTRAL ZONE 4302 COORDINATES. THE STATE PLANE COORDINATE VALUES ARE SCALED BY THE COMBINED SCALE FACTOR (FROM COORDINATE 0,0 OR LATITUDE 20°31'27.66067" N, LONGITUDE 116°02'57.11642" W) THEN TRUNCATED BY THE FALSE NORTHING AND EASTING OFFSET VALUES. THE RESULTING PROJECT COORDINATES ARE TABULATED ON SHEET SC-03 and SC-04.

TO CONVERT PROJECT COORDINATES TO STATE PLANE COORDINATES:
((PROJECT NORTHING + 7,000,000) / 1.00028138) = STATE PLANE NORTHING
((PROJECT EASTING + 1,000,000) / 1.00028138) = STATE PLANE EASTING

SURVEY NOTES

1. TRIG LEVELLING WAS PERFORMED AS PART OF THIS CONTROL SURVEY USING THE SCRIBE ON THE SOUTHEAST CORNER OF THE VAULT CONTROL POINT #108 LOCATED NEAR 400 NORTH AND MILL ROAD AS PROJECT BENCHMARK AND HAVING GPS DERIVED ELEVATION (FROM GOID 18) OF 4550.721 FEET (NVD88 DATUM) AND THE MAGSPIKE CONTROL POINT #111 LOCATED NEAR VINEYARD LOOP ROAD AS A PROJECT BENCHMARK AND HAVING A GPS DERIVED ELEVATION (FROM GEOID 18) OF 4519.397 FEET (NAVD88 DATUM).
2. THIS CONTROL SURVEY CONFORMS TO THE UDOT SURVEY AND GEOMATICS STANDARDS 2017.
3. ALL BEARINGS SHOWN, OR COMPUTED FROM COORDINATE VALUES TABULATED HEREIN, ARE GRID BEARINGS OF THE NAD 1983 UTAH CENTRAL ZONE 4302.
4. SURVEY CONTROL POINTS MEET OR EXCEED THE ACCURACY REQUIREMENTS OF UDOT HORIZONTAL PROJECT CONTROL AT 2CM (0.07') LOCAL POSITIONAL ACCURACY WITH 95% CERTAINTY.
5. CONTROL POINT MARKS ARE SUBJECT TO THE EFFECTS OF SURFACE ACTIVITY AND SEASONAL MOVEMENTS. MARKS MAY ALSO BE DISTURBED, DAMAGED OR REMOVED AFTER THE COMPLETION OF THIS SURVEY. CONTROL POINT POSITIONS SHOULD BE FIELD VERIFIED PRIOR TO SUBSEQUENT SURVEY ACTIVITIES. THIS CONTROL SURVEY WAS COMPLETED IN MAY 2025.

REVISIONS:

VINEYARD STAY CONNECTED

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SEE SURVEYOR'S CERTIFICATION

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SURVEY CONTROL SHEET

VINEYARD CITY

400 NORTH & MILL ROAD TRAFFIC SIGNAL

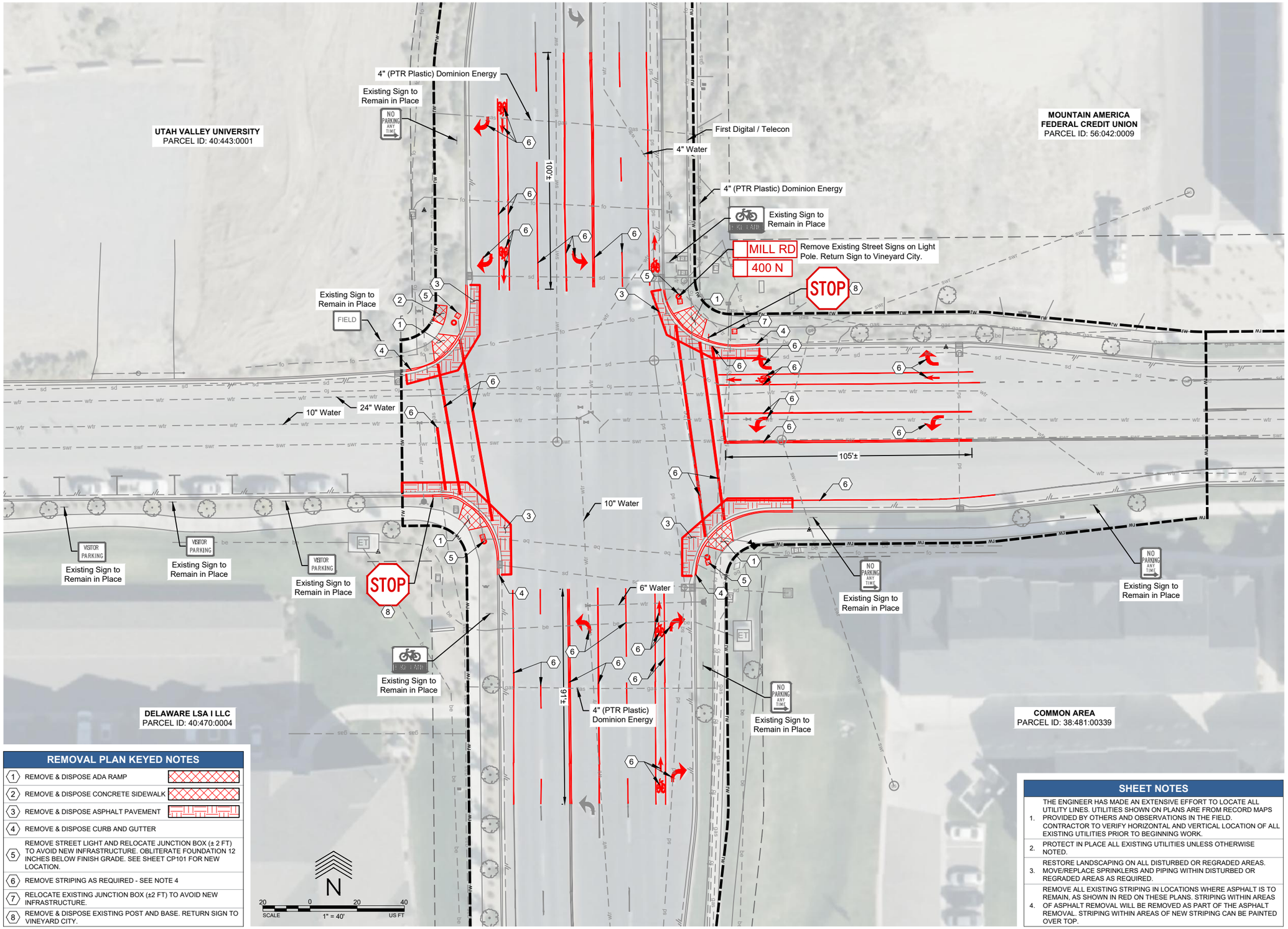
400 NORTH MILL ROAD, VINEYARD, UTAH

Designer KF, PE	Checker KC, PE
SHEET NO.	2 OF 10
SHEET TITLE	CS100

p:_2025\25-140 - mill rd and 400 north traffic signal design\000_cad\005_sheets\25-140 cs100 survey control sheet.dwg

7/17/2025

Avenue Project No. 25-140



REMOVAL PLAN KEYED NOTES

1	REMOVE & DISPOSE ADA RAMP
2	REMOVE & DISPOSE CONCRETE SIDEWALK
3	REMOVE & DISPOSE ASPHALT PAVEMENT
4	REMOVE & DISPOSE CURB AND GUTTER
5	REMOVE STREET LIGHT AND RELOCATE JUNCTION BOX (± 2 FT) TO AVOID NEW INFRASTRUCTURE. OBLITERATE FOUNDATION 12 INCHES BELOW FINISH GRADE. SEE SHEET CP101 FOR NEW LOCATION.
6	REMOVE STRIPING AS REQUIRED - SEE NOTE 4
7	RELOCATE EXISTING JUNCTION BOX (±2 FT) TO AVOID NEW INFRASTRUCTURE.
8	REMOVE & DISPOSE EXISTING POST AND BASE. RETURN SIGN TO VINEYARD CITY.

SHEET NOTES

1. THE ENGINEER HAS MADE AN EXTENSIVE EFFORT TO LOCATE ALL UTILITY LINES. UTILITIES SHOWN ON PLANS ARE FROM RECORD MAPS PROVIDED BY OTHERS AND OBSERVATIONS IN THE FIELD. CONTRACTOR TO VERIFY HORIZONTAL AND VERTICAL LOCATION OF ALL EXISTING UTILITIES PRIOR TO BEGINNING WORK.
2. PROTECT IN PLACE ALL EXISTING UTILITIES UNLESS OTHERWISE NOTED.
3. RESTORE LANDSCAPING ON ALL DISTURBED OR REGRADED AREAS. MOVE/REPLACE SPRINKLERS AND PIPING WITHIN DISTURBED OR REGRADED AREAS AS REQUIRED.
4. REMOVE ALL EXISTING STRIPING IN LOCATIONS WHERE ASPHALT IS TO REMAIN, AS SHOWN IN RED ON THESE PLANS. STRIPING WITHIN AREAS OF ASPHALT REMOVAL WILL BE REMOVED AS PART OF THE ASPHALT REMOVAL. STRIPING WITHIN AREAS OF NEW STRIPING CAN BE PAINTED OVER TOP.

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PROFESSIONAL ENGINEER
No. 10484815
KEVIN J. CROSHAW
09/10/25
STATE OF UTAH
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EXISTING CONDITIONS & DEMOLITION PLAN

VINEYARD CITY

400 NORTH & MILL ROAD TRAFFIC SIGNAL

400 NORTH MILL ROAD, VINEYARD, UTAH

Designer KF, PE	Checker KC, PE
SHEET NO.	3 OF 10
SHEET TITLE	CS101

p:_2025\25-140 - mill rd and 400 north traffic signal design\000_cad\005_sheets\25-140 cs101 existing conditions.dwg

9/5/2025

Avenue Project No. 25-140

UTAH VALLEY UNIVERSITY
PARCEL ID: 40:443:0001

MOUNTAIN AMERICA FEDERAL CREDIT UNION
PARCEL ID: 56:042:0009

MILL ROAD

400 NORTH (PRIVATE)

400 NORTH (PUBLIC)

DELAWARE LSA I LLC
PARCEL ID: 40:470:0004

COMMON AREA
PARCEL ID: 38:481:00339

STRIPING KEY

SWL	SOLID WHITE LINE	
BWL	BROKEN WHITE LINE	
DYL	DOUBLE YELLOW LINE	
XX' CW	XX' 12" CROSSWALK LINE	
XX' SL	XX' 12" STOP LINE	
PM	PAVEMENT MESSAGE	
BPM	BIKE PAVEMENT MESSAGE	

NOTES:
1. ALL PAVEMENT STRIPING ARE TO BE PAINT & ALL PAVEMENT MESSAGES ARE TO BE THERMOPLASTIC UNLESS OTHERWISE NOTED.

SITE PLAN KEYED NOTES

1	ADA RAMP PER APWA PLAN 236.1 EXAMPLE 1
2	CONCRETE SIDEWALK PER APWA PLAN 231
3	ASPHALT PAVEMENT RESTORATION PER APWA PLAN 255
4	TYPE A 24" STANDARD CURB AND GUTTER PER APWA PLAN 205.1. USE TYPE A 24" ADA ACCESS IN FRONT OF DETECTABLE WARNING SURFACES. TRANSITION BETWEEN CURB TYPES TO BE IN FRONT OF RAMP FLARE.
5	RAISE/LOWER STORM DRAIN GRATE TO FINAL GRADE
6	NEW JUNCTION BOX LOCATION. SEE SHEET CS101

N

SCALE 15 0 15 30 — 1" = 15' — US FT

SHEET NOTES

1. PROTECT IN PLACE ALL EXISTING UTILITIES UNLESS OTHERWISE NOTED.
2. PLACE STOP BAR LINE 5' BEHIND CROSSWALK.
3. CONTRACTOR TO RESTORE ALL DISTURBED LANDSCAPING AND SPRINKLERS AS REQUIRED.
4. CONTRACTOR TO COORDINATE WITH VINEYARD CITY BEFORE CONDUCTING ANY WORK OUTSIDE OF RIGHT-OF-WAY. PLAN INDICATE PAVEMENT STRIPING AND MARKINGS ON 400 NORTH (PRIVATE).

REVISIONS:

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09/10/25
STATE OF UTAH
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SITE PLAN

VINEYARD CITY

400 NORTH & MILL ROAD TRAFFIC SIGNAL

400 NORTH MILL ROAD, VINEYARD, UTAH

Designer KF, PE | Checker KC, PE

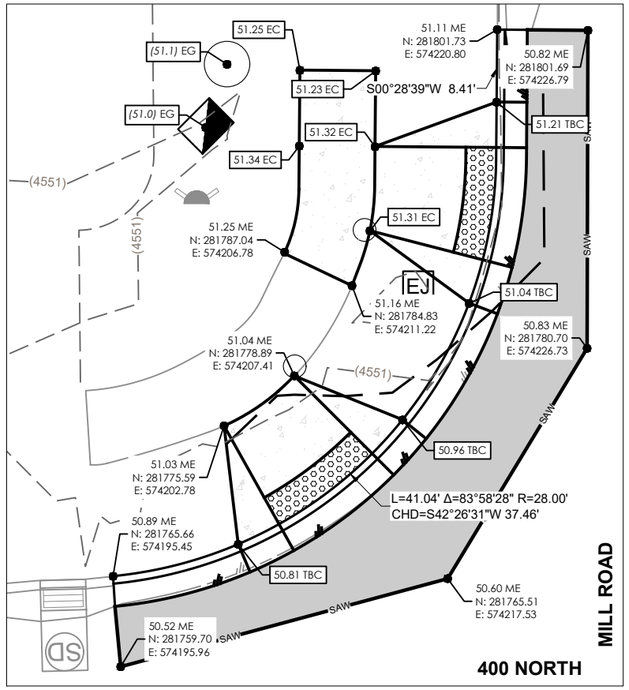
SHEET NO. 4 OF 10

SHEET TITLE CP101

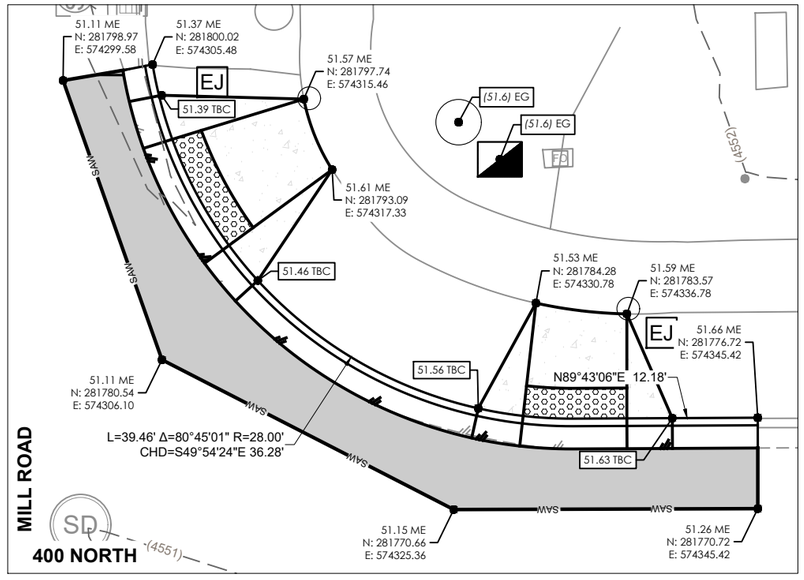
p:_2025\25-140 - mill rd and 400 north traffic signal design\000_cad\005_sheets\25-140 cp101 site plan.dwg

9/5/2025

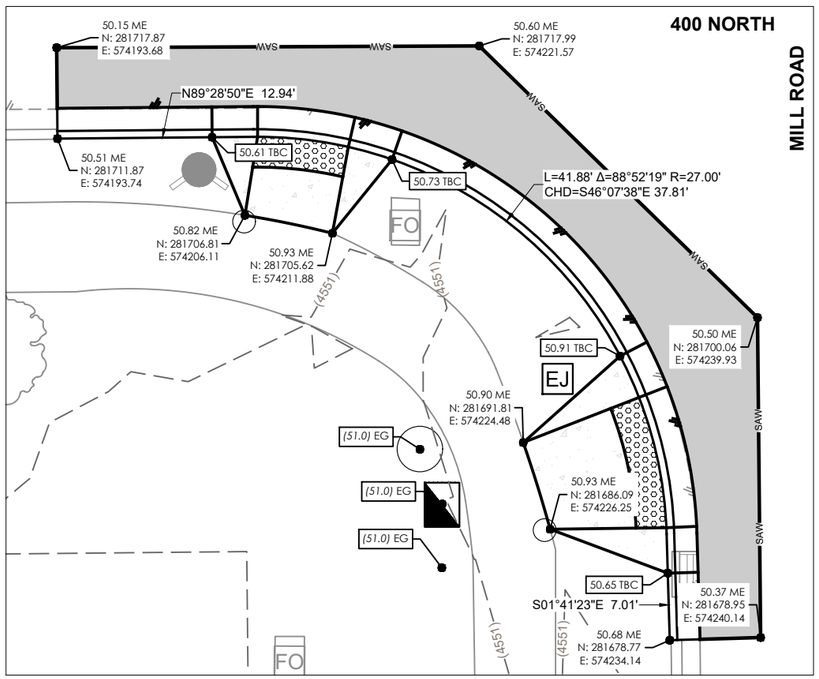
Avenue Project No. 25-140



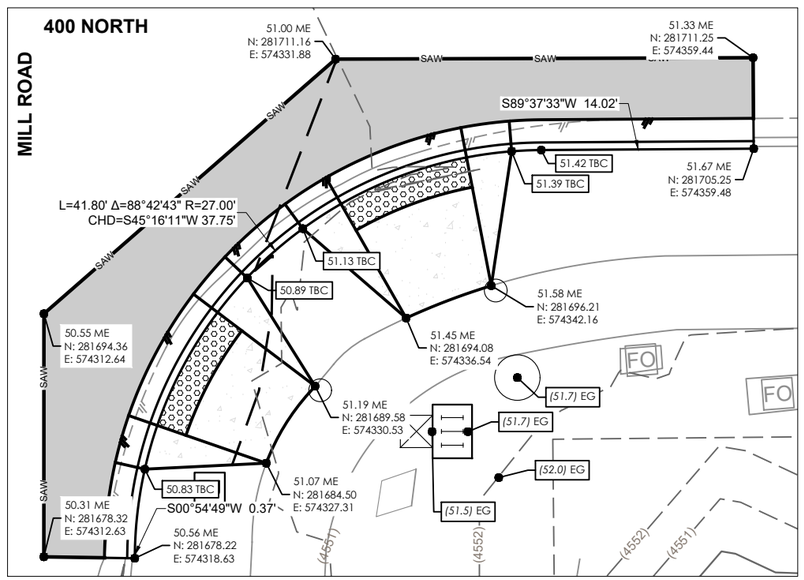
1 NORTH WEST
CP401 1"=10'



2 NORTH EAST
CP401 1"=10'



3 SOUTH WEST
CP401 1"=10'



4 SOUTH EAST
CP401 1"=10'

N

ABBREVIATIONS	
EC	EDGE OF CONCRETE
EG	EXISTING GRADE
FG	FINISH GRADE
ME	MATCH EXISTING
TBC	TOP BACK OF CURB

SHEET NOTES

1. ADD 4500 TO FINISH GRADE ELEVATIONS SHOWN TO OBTAIN ACTUAL GRADE ELEVATION.

REVISIONS:

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09/10/25
STATE OF UTAH
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SITE GRADING DETAILS

VINEYARD CITY

400 NORTH & MILL ROAD TRAFFIC SIGNAL

400 NORTH MILL ROAD, VINEYARD, UTAH

Designer KF, PE	Checker KC, PE
SHEET NO.	5 OF 10
SHEET TITLE	CP401

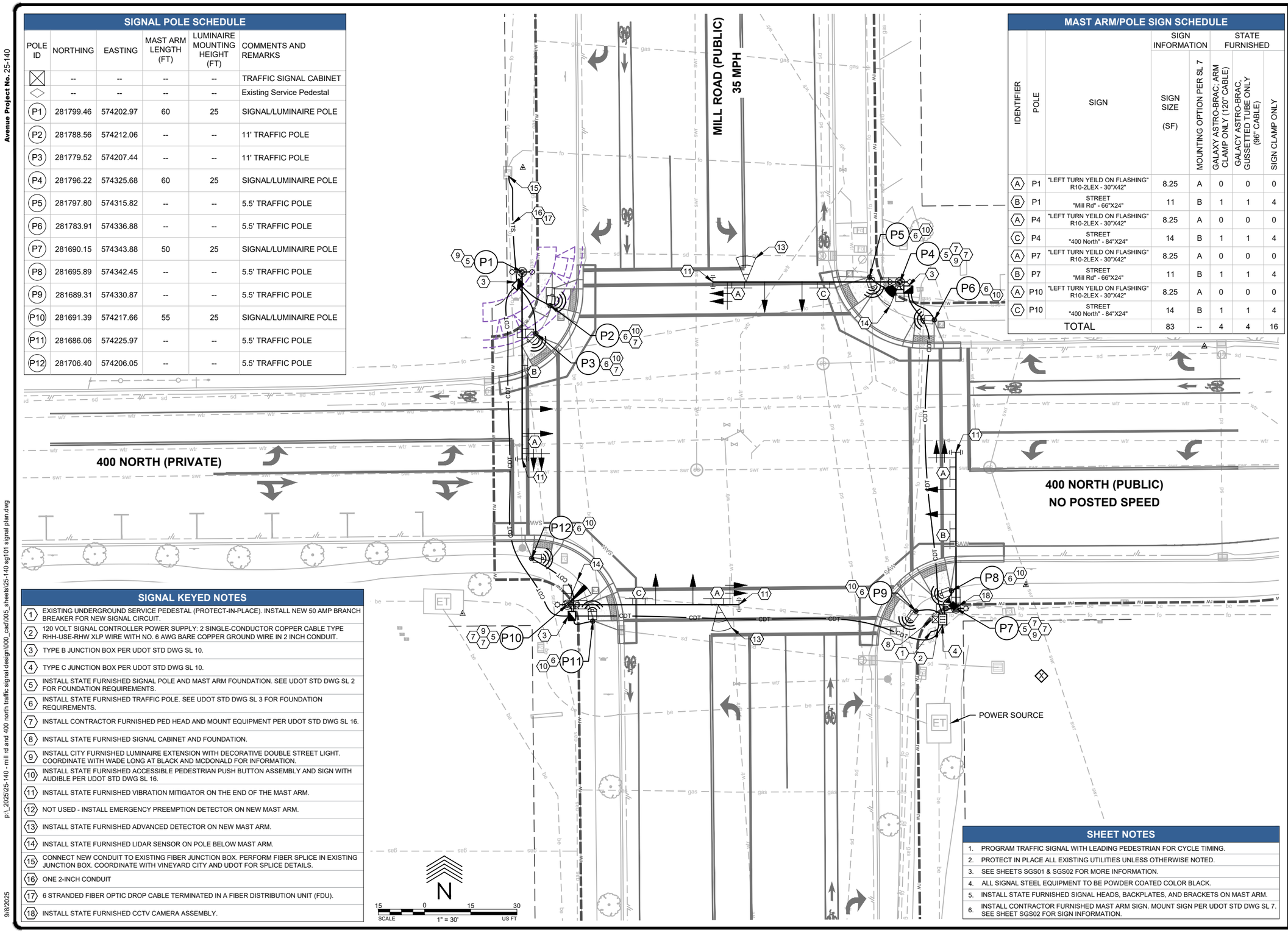
p:_2025\25-140 - mill rd and 400 north traffic signal design\000_cad\005_sheets\25-140 cp101 site plan.dwg

9/5/2025

Avenue Project No. 25-140

SIGNAL POLE SCHEDULE

POLE ID	NORTHING	EASTING	MAST ARM LENGTH (FT)	LUMINAIRE MOUNTING HEIGHT (FT)	COMMENTS AND REMARKS
⊠	--	--	--	--	TRAFFIC SIGNAL CABINET
◇	--	--	--	--	Existing Service Pedestal
P1	281799.46	574202.97	60	25	SIGNAL/LUMINAIRE POLE
P2	281788.56	574212.06	--	--	11' TRAFFIC POLE
P3	281779.52	574207.44	--	--	11' TRAFFIC POLE
P4	281796.22	574325.68	60	25	SIGNAL/LUMINAIRE POLE
P5	281797.80	574315.82	--	--	5.5' TRAFFIC POLE
P6	281783.91	574336.88	--	--	5.5' TRAFFIC POLE
P7	281690.15	574343.88	50	25	SIGNAL/LUMINAIRE POLE
P8	281695.89	574342.45	--	--	5.5' TRAFFIC POLE
P9	281689.31	574330.87	--	--	5.5' TRAFFIC POLE
P10	281691.39	574217.66	55	25	SIGNAL/LUMINAIRE POLE
P11	281686.06	574225.97	--	--	5.5' TRAFFIC POLE
P12	281706.40	574206.05	--	--	5.5' TRAFFIC POLE



MAST ARM/POLE SIGN SCHEDULE

IDENTIFIER	POLE	SIGN	SIGN INFORMATION: SIGN SIZE (SF)	SIGN INFORMATION: MOUNTING OPTION PER SL 7	STATE FURNISHED: GALAXY ASTRO-BRAC; ARM CLAMP ONLY (120" CABLE)	STATE FURNISHED: GALACY ASTRO-BRAC; GUSSETTED TUBE ONLY (96" CABLE)	STATE FURNISHED: SIGN CLAMP ONLY
A	P1	"LEFT TURN YEILD ON FLASHING" R10-2LEX - 30"X42"	8.25	A	0	0	0
B	P1	STREET "Mill Rd" - 66"X24"	11	B	1	1	4
A	P4	"LEFT TURN YEILD ON FLASHING" R10-2LEX - 30"X42"	8.25	A	0	0	0
C	P4	STREET "400 North" - 84"X24"	14	B	1	1	4
A	P7	"LEFT TURN YEILD ON FLASHING" R10-2LEX - 30"X42"	8.25	A	0	0	0
B	P7	STREET "Mill Rd" - 66"X24"	11	B	1	1	4
A	P10	"LEFT TURN YEILD ON FLASHING" R10-2LEX - 30"X42"	8.25	A	0	0	0
C	P10	STREET "400 North" - 84"X24"	14	B	1	1	4
TOTAL			83	--	4	4	16

SIGNAL KEYED NOTES

1. EXISTING UNDERGROUND SERVICE PEDESTAL (PROTECT-IN-PLACE). INSTALL NEW 50 AMP BRANCH BREAKER FOR NEW SIGNAL CIRCUIT.
2. 120 VOLT SIGNAL CONTROLLER POWER SUPPLY: 2 SINGLE-CONDUCTOR COPPER CABLE TYPE RHH-USE-RHW XLP WIRE WITH NO. 6 AWG BARE COPPER GROUND WIRE IN 2 INCH CONDUIT.
3. TYPE B JUNCTION BOX PER UDOT STD DWG SL 10.
4. TYPE C JUNCTION BOX PER UDOT STD DWG SL 10.
5. INSTALL STATE FURNISHED SIGNAL POLE AND MAST ARM FOUNDATION. SEE UDOT STD DWG SL 2 FOR FOUNDATION REQUIREMENTS.
6. INSTALL STATE FURNISHED TRAFFIC POLE. SEE UDOT STD DWG SL 3 FOR FOUNDATION REQUIREMENTS.
7. INSTALL CONTRACTOR FURNISHED PED HEAD AND MOUNT EQUIPMENT PER UDOT STD DWG SL 16.
8. INSTALL STATE FURNISHED SIGNAL CABINET AND FOUNDATION.
9. INSTALL CITY FURNISHED LUMINAIRE EXTENSION WITH DECORATIVE DOUBLE STREET LIGHT. COORDINATE WITH WADE LONG AT BLACK AND MCDONALD FOR INFORMATION.
10. INSTALL STATE FURNISHED ACCESSIBLE PEDESTRIAN PUSH BUTTON ASSEMBLY AND SIGN WITH AUDIBLE PER UDOT STD DWG SL 16.
11. INSTALL STATE FURNISHED VIBRATION MITIGATOR ON THE END OF THE MAST ARM.
12. NOT USED - INSTALL EMERGENCY PREEMPTION DETECTOR ON NEW MAST ARM.
13. INSTALL STATE FURNISHED ADVANCED DETECTOR ON NEW MAST ARM.
14. INSTALL STATE FURNISHED LIDAR SENSOR ON POLE BELOW MAST ARM.
15. CONNECT NEW CONDUIT TO EXISTING FIBER JUNCTION BOX. PERFORM FIBER SPLICE IN EXISTING JUNCTION BOX. COORDINATE WITH VINEYARD CITY AND UDOT FOR SPLICE DETAILS.
16. ONE 2-INCH CONDUIT
17. 6 STRANDED FIBER OPTIC DROP CABLE TERMINATED IN A FIBER DISTRIBUTION UNIT (FDU).
18. INSTALL STATE FURNISHED CCTV CAMERA ASSEMBLY.

SHEET NOTES

1. PROGRAM TRAFFIC SIGNAL WITH LEADING PEDESTRIAN FOR CYCLE TIMING.
2. PROTECT IN PLACE ALL EXISTING UTILITIES UNLESS OTHERWISE NOTED.
3. SEE SHEETS SGS01 & SGS02 FOR MORE INFORMATION.
4. ALL SIGNAL STEEL EQUIPMENT TO BE POWDER COATED COLOR BLACK.
5. INSTALL STATE FURNISHED SIGNAL HEADS, BACKPLATES, AND BRACKETS ON MAST ARM.
6. INSTALL CONTRACTOR FURNISHED MAST ARM SIGN. MOUNT SIGN PER UDOT STD DWG SL 7. SEE SHEET SGS02 FOR SIGN INFORMATION.

REVISIONS:

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PROFESSIONAL ENGINEER
No. 10484815
KEVIN J. CROSHAW
09/10/25
STATE OF UTAH

Stamp

SIGNAL PLAN

VINEYARD CITY

400 NORTH & MILL ROAD TRAFFIC SIGNAL

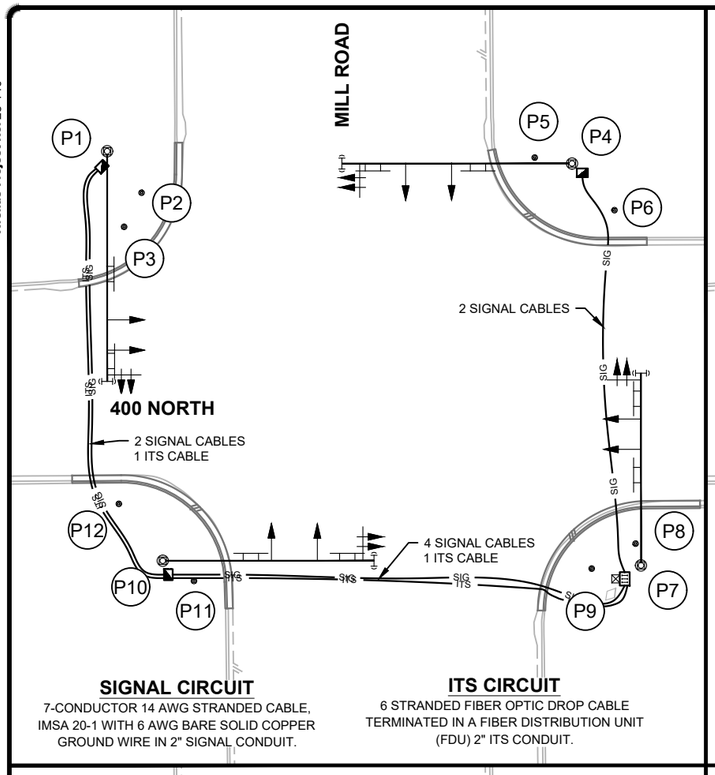
400 NORTH MILL ROAD, VINEYARD, UTAH

Designer KF, PE	Checker KC, PE
SHEET NO.	6 OF 10
SHEET TITLE	SG101

p:_2025\25-140 - mill rd and 400 north traffic signal design\000_cad\005_sheets\25-140 sg101 signal plan.dwg

9/8/2025

Avenue Project No. 25-140

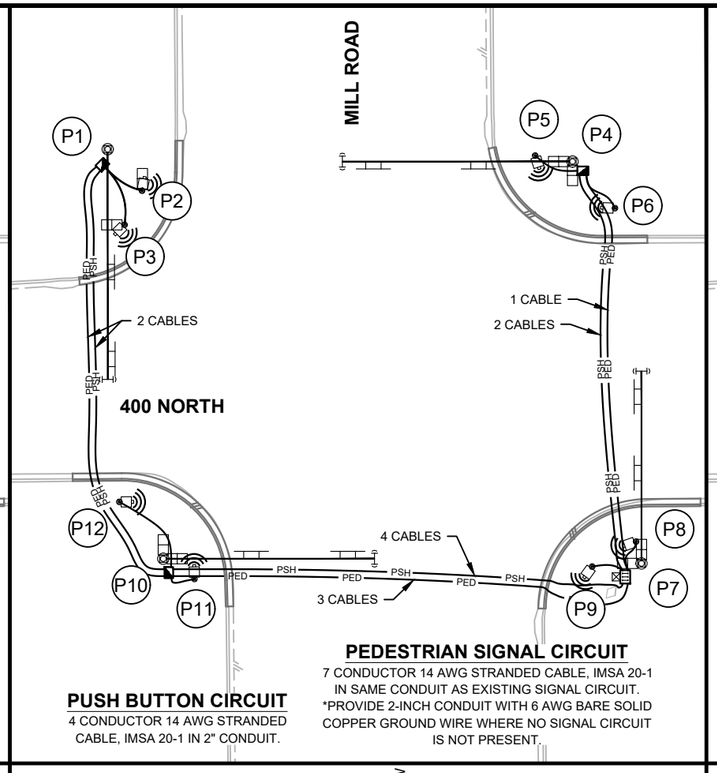


SIGNAL CIRCUIT

7-CONDUCTOR 14 AWG STRANDED CABLE, IMSA 20-1 WITH 6 AWG BARE SOLID COPPER GROUND WIRE IN 2" SIGNAL CONDUIT.

ITS CIRCUIT

6 STRANDED FIBER OPTIC DROP CABLE TERMINATED IN A FIBER DISTRIBUTION UNIT (FDU) 2" ITS CONDUIT.

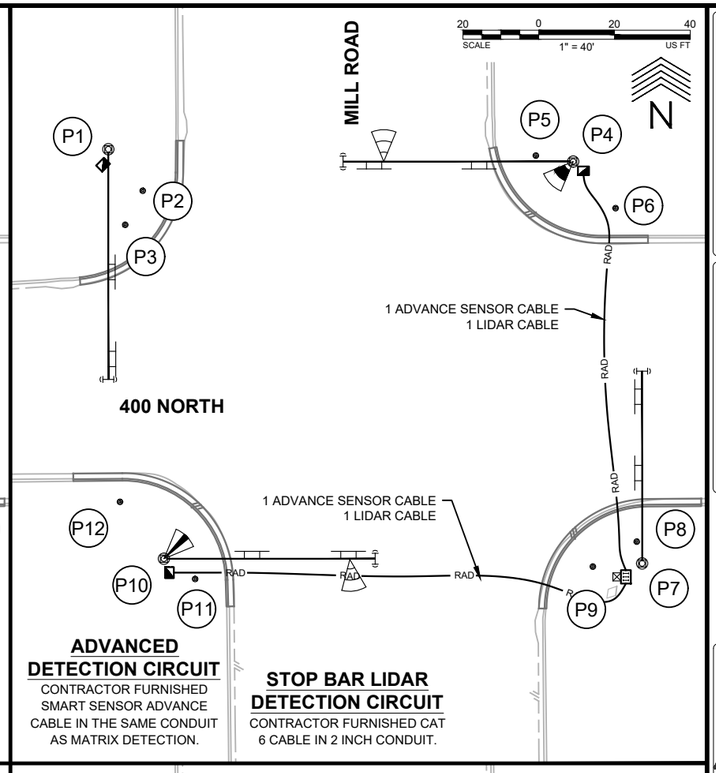


PUSH BUTTON CIRCUIT

4 CONDUCTOR 14 AWG STRANDED CABLE, IMSA 20-1 IN 2" CONDUIT.

PEDESTRIAN SIGNAL CIRCUIT

7 CONDUCTOR 14 AWG STRANDED CABLE, IMSA 20-1 IN SAME CONDUIT AS EXISTING SIGNAL CIRCUIT. *PROVIDE 2-INCH CONDUIT WITH 6 AWG BARE SOLID COPPER GROUND WIRE WHERE NO SIGNAL CIRCUIT IS NOT PRESENT.

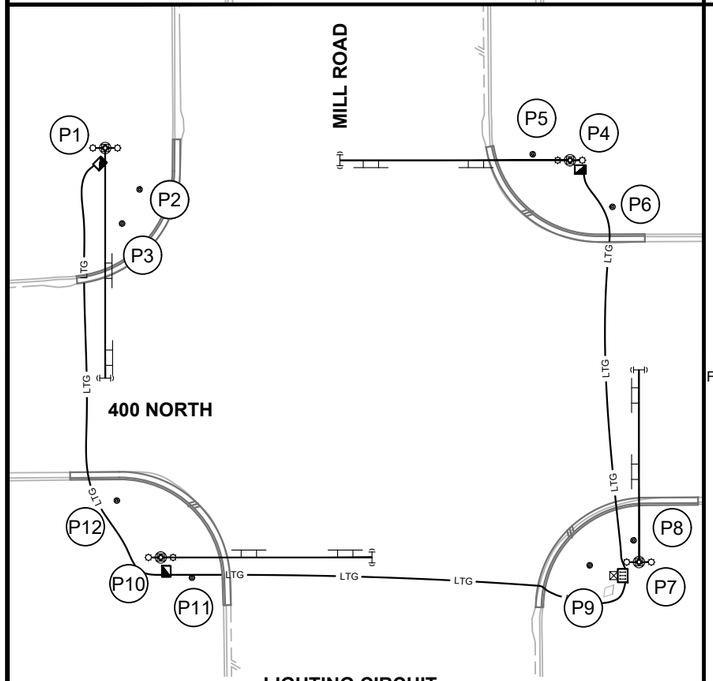


ADVANCED DETECTION CIRCUIT

CONTRACTOR FURNISHED SMART SENSOR ADVANCE CABLE IN THE SAME CONDUIT AS MATRIX DETECTION.

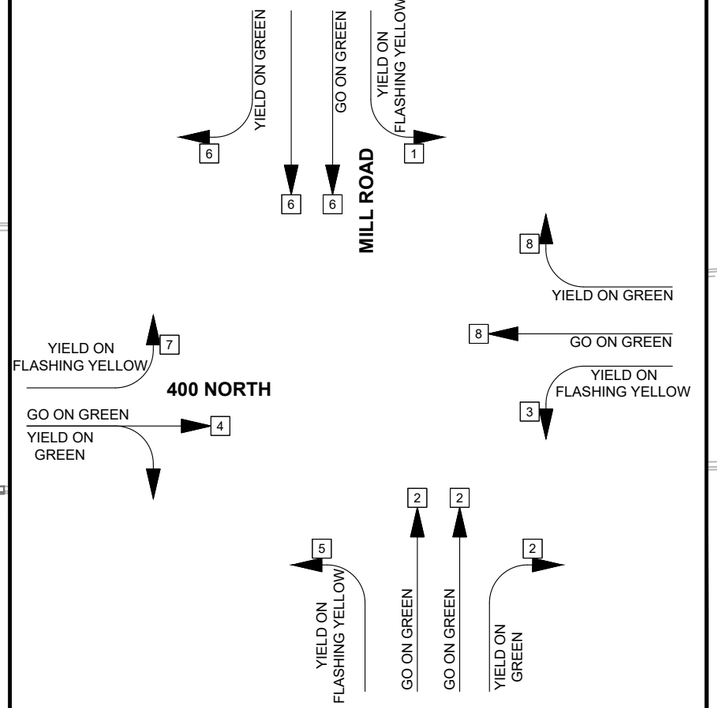
STOP BAR LIDAR DETECTION CIRCUIT

CONTRACTOR FURNISHED CAT 6 CABLE IN 2 INCH CONDUIT.

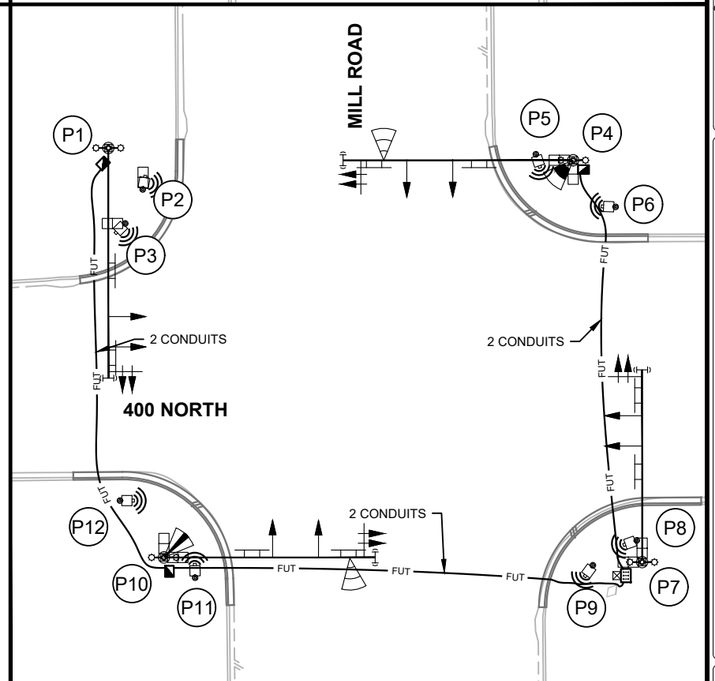


LIGHTING CIRCUIT

2 NO. 10 SINGLE CONDUCTOR STRANDED COPPER CABLE TYPE RHH-USE2-RHW2 XLP WIRES WITH BLUE INSULATION, WITH NO. 6 AWG BARE SOLID COPPER GROUND WIRE IN 2" CONDUIT.



PHASING DIAGRAM



FUTURE USE CONDUIT

2" CONDUITS WITH DETECTABLE PULL TAPE.

REVISIONS:

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SIGNAL CIRCUIT

VINEYARD CITY

400 NORTH & MILL ROAD TRAFFIC SIGNAL

400 NORTH MILL ROAD, VINEYARD, UTAH

Designer KF, PE	Checker KC, PE
SHEET NO.	7 OF 10
SHEET TITLE	SG102

p:_2025\25-140 - mill rd and 400 north traffic signal design\000_cad\005_sheets\25-140 sg101 signal plan.dwg

9/8/2025

THE CONTRACTOR SHALL CAREFULLY READ ALL OF THE NOTES AND SPECIFICATIONS. THE CONTRACTOR SHALL BE SATISFIED AS TO THEIR TRUE MEANING AND INTENT AND SHALL BE RESPONSIBLE FOR COMPLYING WITH EACH.

GENERAL NOTES:

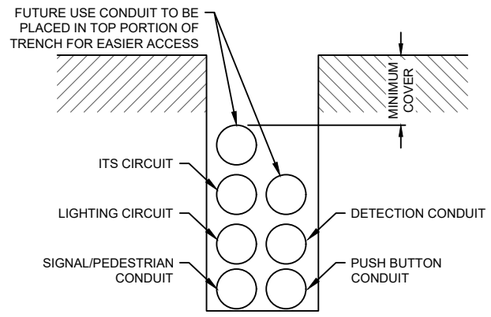
1) ALL IMPROVEMENTS SHALL BE CONSTRUCTED IN STRICT ACCORDANCE WITH ALL JURISDICTIONAL AUTHORITIES.
2) CONTRACTOR SHALL COMPLY WITH THE STANDARDS INDICATED ABOVE AND WITHIN THE CONSTRUCTION DOCUMENTS. THE CONTRACTOR SHALL NOTIFY ALL AGENCIES, OWNERS, ENGINEERS, AND UTILITY COMPANIES 5 DAYS PRIOR TO A PRE-CONSTRUCTION MEETING.
3) IT IS INTENDED THAT THESE PLANS AND SPECIFICATIONS REQUIRE ALL LABOR AND MATERIALS NECESSARY AND PROPER FOR THE WORK CONTEMPLATED AND THAT THE WORK BE COMPLETED IN ACCORDANCE WITH THEIR TRUE INTENT AND PURPOSE. THE CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY REGARDING ANY DISCREPANCIES OR AMBIGUITIES WHICH MAY EXIST IN THE PLANS OR SPECIFICATIONS. THE ENGINEER'S INTERPRETATION THEREOF SHALL BE CONCLUSIVE.
4) WHERE THE PLANS OR SPECIFICATIONS DESCRIBE PORTIONS OF THE WORK IN GENERAL TERMS BUT NOT IN COMPLETE DETAIL, IT IS UNDERSTOOD THAT ONLY THE BEST GENERAL PRACTICE IS TO PREVAIL AND THAT ONLY MATERIALS AND WORKMANSHIP OF THE FIRST QUALITY ARE TO BE USED.
5) THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL PERMITS AND LICENSES REQUIRED FOR THE CONSTRUCTION AND COMPLETION OF THE PROJECT, AND SHALL PERFORM ALL WORK IN ACCORDANCE WITH THE REQUIREMENTS AND CONDITIONS OF ALL PERMITS AND APPROVALS APPLICABLE TO THIS PROJECT. THE CONTRACTOR SHALL ENSURE THAT THE NECESSARY RIGHTS-OF-WAY, EASEMENTS, AND/OR PERMITS ARE SECURED PRIOR TO CONSTRUCTION.
6) THE CONTRACTOR SHALL PROVIDE ALL LIGHTS, BARRICADES, SIGNS, FLAGMEN OR OTHER DEVICES NECESSARY FOR PUBLIC SAFETY.
7) THE CONTRACTOR AGREES THAT:
   A) THEY SHALL BE RESPONSIBLE TO CLEAN THE JOB SITE AT THE END OF EACH DAY.
   B) THEY SHALL BE RESPONSIBLE TO REMOVE AND DISPOSE OF ALL TRASH, SCRAP AND UNUSED MATERIAL AT THEIR OWN EXPENSE IN A TIMELY MANNER.
   C) THEY SHALL BE RESPONSIBLE TO MAINTAIN THE SITE IN A NEAT, SAFE AND ORDERLY MANNER AT ALL TIMES.
   D) THEY SHALL BE RESPONSIBLE TO KEEP MATERIALS, EQUIPMENT, AND TRASH OUT OF THE WAY OF OTHER CONTRACTORS SO AS NOT TO DELAY THE JOB. FAILURE TO DO SO WILL RESULT IN A DEDUCTION FOR THE COST OF CLEAN UP FROM THE FINAL PAYMENT.
   E) THEY SHALL BE RESPONSIBLE FOR THEIR OWN SAFETY, TRAFFIC CONTROL, PERMITS, RETESTING AND RE-INSPECTIONS AT THEIR OWN EXPENSE.
8) THE CONTRACTOR SHALL ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOBSITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THIS PROJECT, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY. THIS REQUIREMENT SHALL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS. THE CONTRACTOR SHALL DEFEND, INDEMNIFY AND HOLD THE OWNER AND ENGINEER HARMLESS FROM ANY AND ALL LIABILITY, REAL OR ALLEGED, IN CONNECTION WITH THE PERFORMANCE OF WORK ON THIS PROJECT, EXCEPTING FOR LIABILITY ARISING FROM THE SOLE AND GROSS NEGLIGENCE OF THE OWNER OR THE ENGINEER.
9) FOR ALL WORK WITHIN PUBLIC RIGHTS-OF-WAYS OR EASEMENTS, THE CONTRACTOR SHALL PRESERVE THE INTEGRITY AND LOCATION OF ANY AND ALL PUBLIC UTILITIES AND PROVIDE THE NECESSARY CONSTRUCTION TRAFFIC CONTROL. CONTRACTOR SHALL, THROUGH THE ENCROACHMENT PERMIT PROCESS, VERIFY WITH THE NECESSARY REGULATORY AGENCIES, THE NEED FOR ANY TRAFFIC ROUTING PLAN. IF PLAN IS REQUIRED, CONTRACTOR SHALL PROVIDE PLAN AND RECEIVE PROPER APPROVALS PRIOR TO BEGINNING CONSTRUCTION.
10) IF EXISTING FEATURES NEED TO BE DISTURBED AND/OR REMOVED FOR THE PROPER PLACEMENT OF IMPROVEMENTS TO BE CONSTRUCTED BY THESE PLANS, THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING EXISTING FEATURES FROM DAMAGE. COST OF REPLACING OR REPAIRING EXISTING FEATURES SHALL BE INCLUDED IN THE BID PRICE FOR ITEMS REQUIRING REMOVAL AND/OR REPLACEMENT.
11) TRAFFIC CONTROL IS TO CONFORM TO THE CURRENT MUTCD AND UDOT STANDARDS.
12) CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE TO ADJACENT SURFACE IMPROVEMENTS.

GENERAL UTILITY NOTES

1) THE LOCATIONS OF UNDERGROUND FACILITIES SHOWN ON THESE PLANS ARE BASED ON FIELD SURVEYS AND LOCAL UTILITY COMPANY RECORDS. IT SHALL BE THE CONTRACTORS FULL RESPONSIBILITY TO CONTACT THE VARIOUS UTILITY COMPANIES TO LOCATE THEIR FACILITIES PRIOR TO PROCEEDING WITH CONSTRUCTION. NO ADDITIONAL COMPENSATION SHALL BE PAID TO THE CONTRACTOR FOR DAMAGE AND REPAIR TO THESE FACILITIES CAUSED BY CONTRACTORS WORK FORCE.
2) CONTRACTOR SHALL LAYOUT AND POTHOLE FOR ALL POTENTIAL CONFLICTS WITH UTILITY LINES ON OR OFF SITE AS REQUIRED PRIOR TO ANY CONSTRUCTION.
3) VERIFY DEPTHS OF UTILITIES IN THE FIELD BY POT HOLING A MINIMUM OF 300 FEET AHEAD OF PIPELINE CONSTRUCTION TO AVOID CONFLICTS WITH DESIGNED PIPELINE GRADE AND ALIGNMENT. IF A CONFLICT ARISES RESULTING FROM THE CONTRACTOR'S NEGLIGENCE TO POTHOLE UTILITIES THE CONTRACTOR WILL BE REQUIRED TO RESOLVE THE CONFLICT WITHOUT ADDITIONAL COST OR CLAIM TO THE OWNER OR ENGINEER.
4) ALL DIMENSIONS, GRADES, AND UTILITY DESIGNS SHOWN ON THE PLANS SHALL BE VERIFIED BY THE CONTRACTOR PRIOR TO CONSTRUCTION. NOTIFY THE ENGINEER IF ANY DISCREPANCIES EXIST, PRIOR TO PROCEEDING WITH CONSTRUCTION FOR NECESSARY PLAN OR GRADE CHANGES. NO EXTRA COMPENSATION SHALL BE PAID TO THE CONTRACTOR FOR WORK HAVING TO BE REDONE DUE TO THE DIMENSIONS OR GRADES SHOWN INCORRECTLY ON THESE PLANS, IF SUCH NOTIFICATION HAS NOT BEEN GIVEN.

SIGNAL PLAN LEGEND

EXISTING	PROPOSED	
be	BE	POWER SOURCE CIRCUIT CONDUIT
sig	SIG	SIGNAL CIRCUIT CONDUIT
ped	PED	PEDESTRIAN SIGNAL CIRCUIT CONDUIT
psh	PSH	PEDESTRIAN PUSH BUTTON CIRCUIT CONDUIT
rad	RAD	RADAR DETECTION CIRCUIT CONDUIT
ltg	LTG	LIGHTING CIRCUIT CONDUIT
	FUT	FUTURE USE CONDUIT
cdt	CDT	UNDERGROUND CONDUIT BANK
	ITS	ITS CONDUIT
P1	P1	SIGNAL POLE IDENTIFICATION
		MAST ARM SIGNAL POLE
		SIGNAL POLE LUMINAIRE EXTENSION WITH ARM
		MAST ARM MOUNTED SIGN
PS	PS	POWER SOURCE
		TRAFFIC SIGNAL POLE
		TYPE 0 - 1 SECTION SIGNAL HEAD ASSEMBLY
		TYPE I - 3 SECTION SIGNAL HEAD ASSEMBLY
		TYPE II - 3 SECTION SIGNAL HEAD ASSEMBLY
		TYPE III - 3 SECTION (ALL ARROWS) SIGNAL HEAD ASSEMBLY
		TYPE IV - 4 SECTION SIGNAL HEAD ASSEMBLY
		TYPE V - 5 SECTION SIGNAL HEAD ASSEMBLY
		TYPE VI - 4 SECTION (ALL ARROWS) SIGNAL HEAD ASSEMBLY
		TYPE VII - 4 SECTION SIGNAL HEAD ASSEMBLY
		PEDESTRIAN HYBRID BEACON - 3 SECTION SIGNAL HEAD ASSEMBLY
		VIBRATION MITIGATOR
		TRAFFIC SIGNAL CONTROLLER CABINET
II-PC	II-PC	TYPE II ITS JUNCTION BOX
		TYPE B JUNCTION BOX
III	III	TYPE C JUNCTION BOX
		PEDESTRIAN SIGNAL HEAD WITH PUSH BUTTON
		AUDIBLE PEDESTRIAN SIGNAL HEAD WITH PUSH BUTTON
		PEDESTRIAN SIGNAL HEAD
		PEDESTRIAN PUSH BUTTON
		UNDERGROUND SERVICE PEDESTAL (USP)
		PREEMPTION CONTROL SYSTEM DETECTOR
		CCTV CAMERA
		RADAR DETECTION, DILEMMA ZONE
		RADAR DETECTION, STOP BAR



NOTES:
1. REFER TO UDOT SL SERIES STANDARD DRAWINGS FOR MINIMUM CONDUIT DEPTH REQUIREMENTS.
2. MINIMUM OF 6 CONDUITS ARE REQUIRED FOR EACH ROAD CROSSING LOCATION.

1 TRENCHING AND BORING DETAIL
SGS01 NOT TO SCALE

NOTES:
1) CONTACT CITY TO SCHEDULE AND COORDINATE ON THE FOLLOWING ITEMS:
   1)1) SALVAGED ITEMS: PROVIDE 2 DAYS NOTICE. ENSURE ALL SALVAGED ITEMS HAVE ALL PARTS AND ASSOCIATED HARDWARE.
   1)2) SIGNAL INSPECTION: 8 DAYS PRIOR TO TURN-ON CONTACT CITY TO REQUEST AN IN-PROGRESS SIGNAL INSPECTION.
   1)3) SIGNAL TURN-ON: PROVIDE 5 DAYS NOTICE. COMPLETE CITY TURN-ON CHECKLIST PRIOR TO CALLING SIGNAL CREW.
2) CONTRACTOR IS RESPONSIBLE TO DISPOSE OF REMOVAL ITEMS AND ASSUME RESPONSIBILITY THEREAFTER. REUSE MATERIALS ONLY AS SPECIFIED OR AS APPROVED BY THE ENGINEER.
3) REFER TO UDOT STD DWG SL SERIES FOR DETAILS.

LIMITATIONS OF OPERATIONS:
A. TRAFFIC LIMITATIONS
   1) SHIFTS ARE ALLOWED FROM 10:00 AM TO 3:00 PM.
   2) SHOULDER CLOSURES ARE ALLOWED ANYTIME.
   3) PROVIDE ADA ACCESSIBLE ROUTES THROUGH ARE AROUND THE WORK ZONE AT ALL TIMES. PROVIDE SIGNAGE FOR ALL ALTERNATE ROUTES.
B. NO WORK WILL BE ALLOWED ON CATEGORY II HOLIDAYS WHICH WILL EXTEND AS FOLLOWS:
   1) THANKSGIVING DAY - FROM 3 PM WEDNESDAY TO 5 AM MONDAY.
   2) CHRISTMAS - FROM 3 PM ON DECEMBER 24TH TO 5 AM ON DECEMBER 28TH.
   3) NEW YEARS DAY - FROM 3 PM DECEMBER 31ST TO 5 AM JANUARY 4TH.
C. OBTAIN COUNTY PERMIT FOR ANY GOVERNMENT SURVEY MONUMENT WITHIN THIRTY FEET OF WORK, PER UDOT SPECIFICATION 00820M. FIND 00820M ON UDOT'S SPECIAL PROVISIONS WEBSITE.

REVISIONS:

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PROFESSIONAL ENGINEER
No. 10134815
KEVIN J. CROSHAW
09/10/25
STATE OF UTAH
Stamp

SIGNAL DETAILS AND SCHEDULES

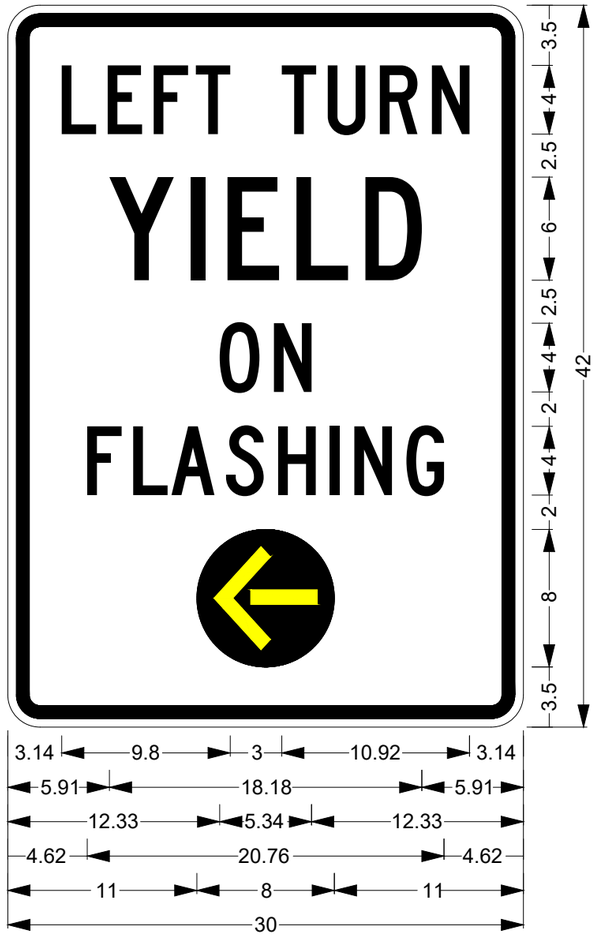
VINEYARD CITY

400 NORTH & MILL ROAD TRAFFIC SIGNAL

400 NORTH MILL ROAD, VINEYARD, UTAH

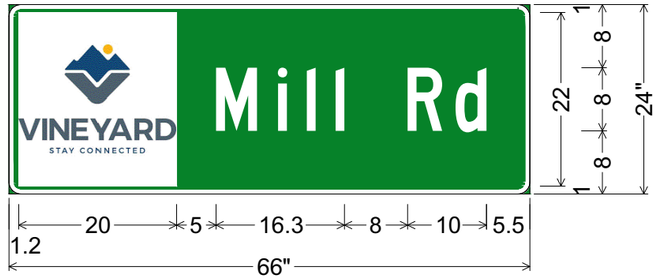
Designer KF, PE	Checker KC, PE
SHEET NO.	8 OF 10
SHEET TITLE	SGS01

A



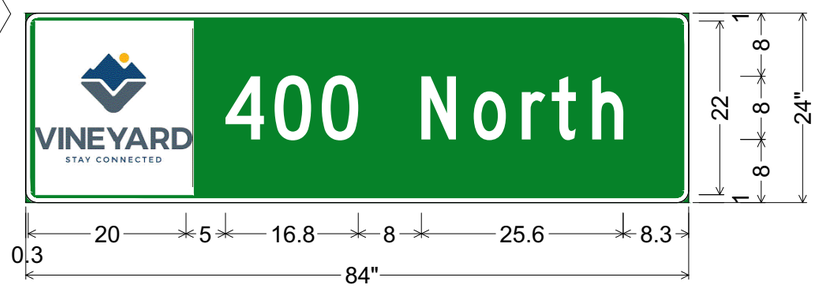
Identifier : RS10-21ex LEFT TURN YIELD ON FLASHING Yellow Arrow SymboL Sign;
1.88" Radius, 0.75" Border, 0.50" Indent, Black on White;
[LEFT TURN] C; [YIELD] C; [ON] C; [FLASHING] C;
Rounded Rectangle 4.00" Radius

B



1.5" Radius, 0.5" Border, White on Green;
Rectangle Black; "Mill Rd", C;

C



DS3-4 Single Street Name Sign Mast Arm Connection;
1.5" Radius, 0.5" Border, White on Green;
Rectangle Black; "400 North", C;

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09/10/25
STATE OF UTAH
Stamp

SIGNAL DETAILS AND SCHEDULES

VINEYARD CITY

400 NORTH & MILL ROAD TRAFFIC SIGNAL

400 NORTH MILL ROAD, VINEYARD, UTAH

Designer KF, PE	Checker KC, PE
SHEET NO.	9 OF 10
SHEET TITLE	SGS02

p:_2025\25-140 - mill rd and 400 north traffic signal design\000_cad\005_sheets\25-140 cover page.dwg
9/8/2025

Avenue Project No. 25-140

STATE FURNISHED MATERIALS - SIGNAL

| | SIGNAL SCHEDULE | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | DETECTION SCHEDULE | | | | | | | | | | | | | | | | | | | | | | | | SIGNAL HEAD SCHEDULE | | | | | | | | | | | | | | | | | | | | | | | | SIGNS | | | |
|---|---|---

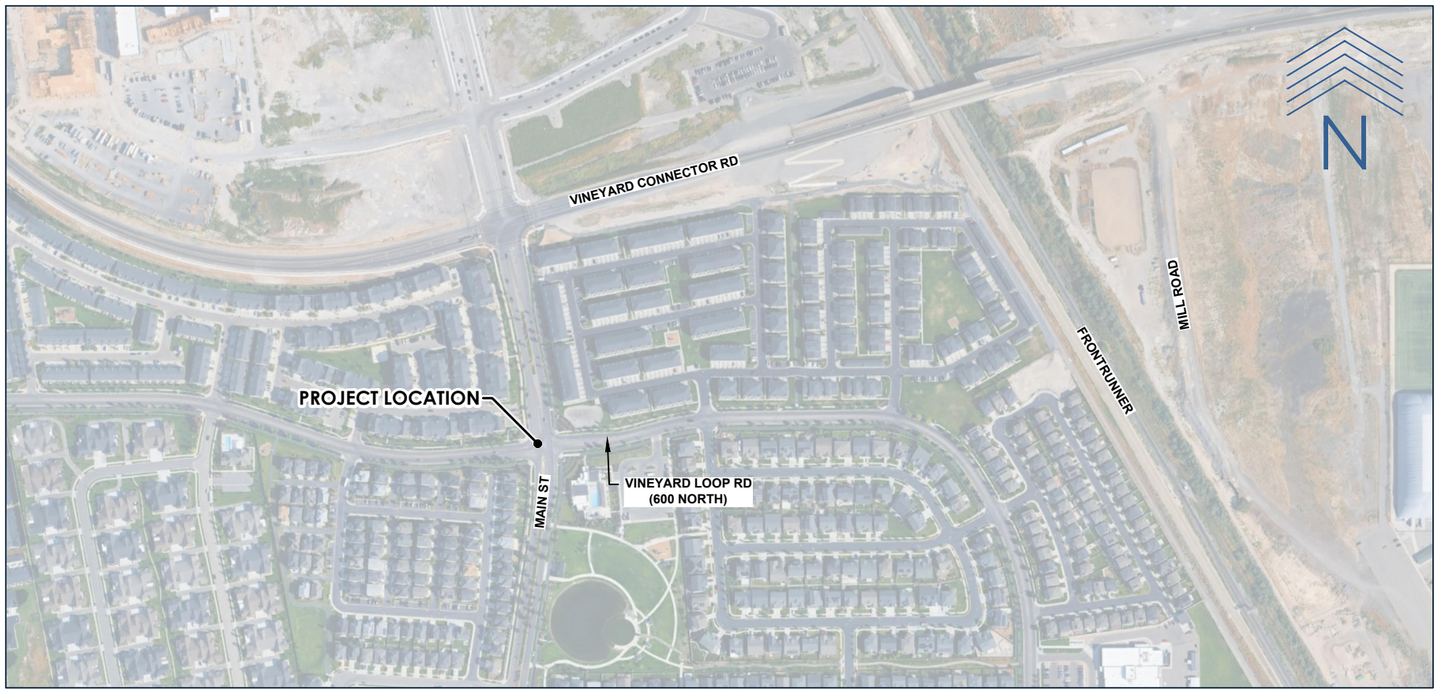
Avenue Project No. 25-140

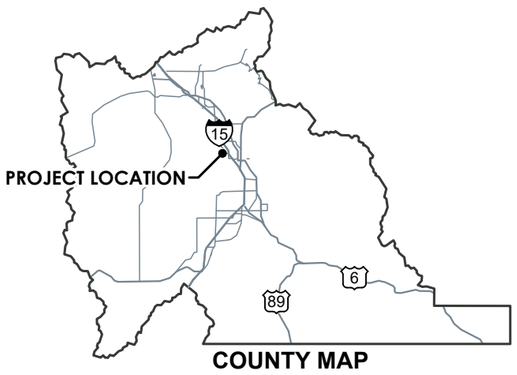
VINEYARD CITY

VINEYARD LOOP RD & MAIN ST TRAFFIC SIGNAL

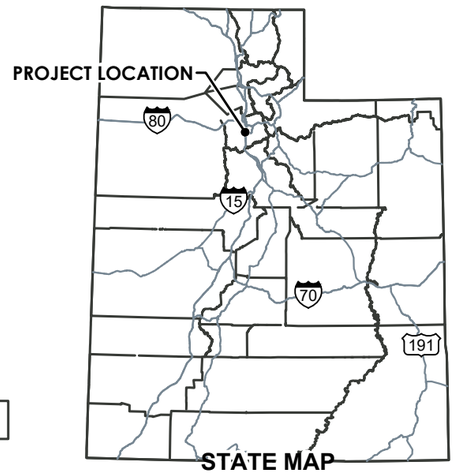
ISSUED: 15 SEPTEMBER 2025

VICINITY MAP





COUNTY MAP



STATE MAP

PROJECT CONTACTS

OWNER
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125 SOUTH MAIN STREET
VINEYARD CITY, UTAH
CONTACT: JUSTINE MARSHALL, CFM
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EMAIL: justinem@vineyardutah.gov

CIVIL ENGINEER / SURVEYOR
AVENUE CONSULTANTS
588 W 400 S, Suite 250
Lindon, UT 84042
CONTACT: KEVIN CROSHAW, P.E.
PHONE: (425) 269-2752
EMAIL: kcroshaw@avenueconsultants.com

UTILITY CONTACTS

POWER
ROCKY MOUNTAIN POWER
70 N. 200 E.
AMERICAN FORK, UTAH
CONTACT: ALAN YOUNG
PHONE: (801) 756-1205
EMAIL: alan.young@rockymountainpower.net

STREET LIGHTS
BLACK & MCDONALD LIMITED
1106 S LEGACY VIEW ST,
SALT LAKE CITY, UT 84104
CONTACT: WADE LONG
PHONE: (801) 3831-9654
EMAIL: wlong@blackandmcdonald.com

SHEET INDEX

SHEET NUMBER	SHEET TITLE	SHEET DESCRIPTION
1	G001	COVER PAGE
2	CS100	SURVEY CONTROL SHEET
3	CS101	EXISTING CONDITIONS & DEMOLITION PLAN
4	CP101	SITE PLAN
5	SG101	SIGNAL PLAN
6	SG102	SIGNAL CIRCUIT
7	SGS01	SIGNAL DETAILS AND SCHEDULES
8	SGS02	SIGNAL DETAILS AND SCHEDULES
9	SGS03	SIGNAL DETAILS AND SCHEDULES

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9/16/25
STATE OF UTAH

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COVER PAGE

VINEYARD CITY

VINEYARD LOOP RD & MAIN ST TRAFFIC SIGNAL

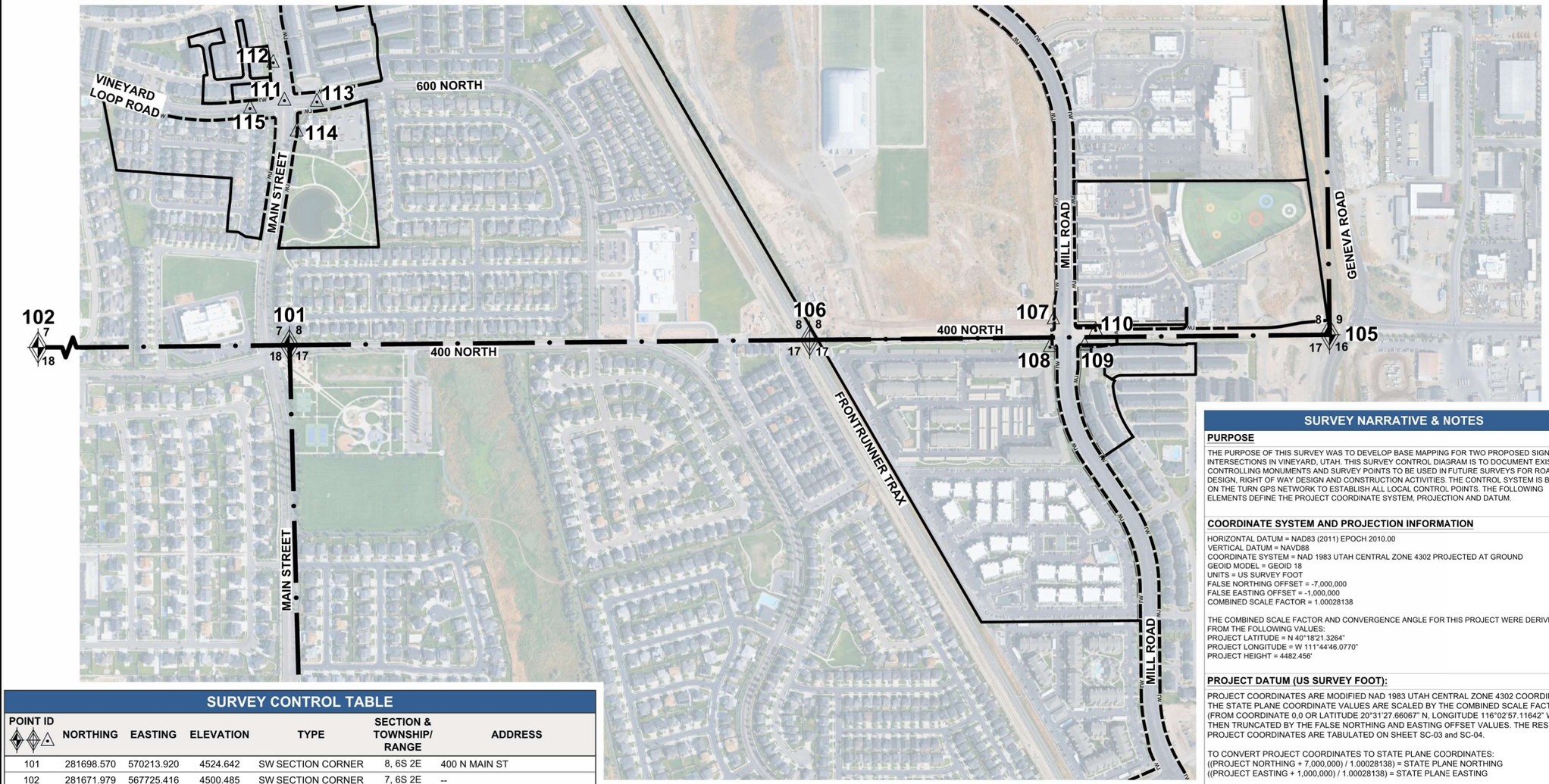
VINEYARD LOOP RD MAIN STREET, VINEYARD, UTAH

Designer KF, PE	Checker KC, PE
SHEET NO.	1 OF 9
SHEET TITLE	G001

p:_2025\25-256 - 600 n & main street traffic signal design\000_cad\005_sheets\25-256 cover page.dwg

9/15/2025

Avenue Project No.: 140



SURVEY CONTROL TABLE

POINT ID	NORTHING	EASTING	ELEVATION	TYPE	SECTION & TOWNSHIP/ RANGE	ADDRESS
101	281698.570	570213.920	4524.642	SW SECTION CORNER	8, 6S 2E	400 N MAIN ST
102	281671.979	567725.416	4500.485	SW SECTION CORNER	7, 6S 2E	--
103	284413.175	575608.228	4570.218	E 1/4 CORNER	8, 6S 2E	GENEVA RD CYN PKWY
104	287070.262	575571.726	4576.577	NE SECTION CORNER	8, 6S 2E	1660 W 1200 N
105	281753.082	575645.271	4563.814	SE SECTION CORNER	8, 6S 2E	400 N GENEVA RD
106	281726.232	572929.526	4542.596	S 1/4 CORNER	8, 6S 2E	400 N FRONTRUNNER TRAX
107	281833.364	574203.194	4551.615	CP - REBAR W/ CAP	8, 6S 2E	400 N MILL RD
108	281688.505	571483.663	4550.721	CP - SCRIBE ON SE COR VAULT	17, 6S 2E	400 N MILL RD
109	281697.843	574366.642	4551.921	CP - MAGSPIKE	17, 6S 2E	400 N MILL RD
110	281775.370	574424.604	4551.844	CP - MAGSPIKE	8, 6S 2E	400 N MILL RD
111	282977.100	570186.468	4519.397	CP - MAGSPIKE	7, 6S 2E	VINEYARD LOOP RD MILL RD
112	283175.332	570126.820	4520.016	CP - MAGSPIKE	7, 6S 2E	VINEYARD LOOP RD MAIN ST
113	282970.506	570357.514	4518.629	CP - MAGSPIKE	8, 6S 2E	VINEYARD LOOP RD MAIN ST
114	282936.401	570250.416	4519.893	CP - MAGSPIKE	8, 6S 2E	VINEYARD LOOP RD MAIN ST
115	282936.401	570003.734	4518.350	CP - MAGSPIKE	7, 6S 2E	VINEYARD LOOP RD MAIN ST

N

300 0 300 600

SCALE 1" = 600'

US FT

SURVEYOR'S CERTIFICATION - CONTROL SHEET

I, CRAIG R. YATES, DO HEREBY CERTIFY THAT I AM A PROFESSIONAL LAND SURVEYOR, HOLDING CERTIFICATE NUMBER 5398429, AS PRESCRIBED BY THE LAWS OF THE STATE OF UTAH. I FURTHER CERTIFY THAT THE CONTROL DIAGRAM REPRESENTED HEREIN, WAS PREPARED UNDER MY DIRECT SUPERVISION AND THAT THE SAME IS AN ACCURATE REPRESENTATION OF THE CONTROL SURVEY FOR THIS PROJECT.

CRAIG R. YATES
PLS NO. 5398429

2025.09.05 15:17:26 -06'00'

PLS SIGNATURE DATE

STAMP

PROFESSIONAL LAND SURVEYOR
No. 5398429
CRAIG R. YATES
STATE OF UTAH

SURVEY NARRATIVE & NOTES

PURPOSE

THE PURPOSE OF THIS SURVEY WAS TO DEVELOP BASE MAPPING FOR TWO PROPOSED SIGNALIZED INTERSECTIONS IN VINEYARD, UTAH. THIS SURVEY CONTROL DIAGRAM IS TO DOCUMENT EXISTING CONTROLLING MONUMENTS AND SURVEY POINTS TO BE USED IN FUTURE SURVEYS FOR ROADWAY DESIGN, RIGHT OF WAY DESIGN AND CONSTRUCTION ACTIVITIES. THE CONTROL SYSTEM IS BASED ON THE TURN GPS NETWORK TO ESTABLISH ALL LOCAL CONTROL POINTS. THE FOLLOWING ELEMENTS DEFINE THE PROJECT COORDINATE SYSTEM, PROJECTION AND DATUM.

COORDINATE SYSTEM AND PROJECTION INFORMATION

HORIZONTAL DATUM = NAD83 (2011) EPOCH 2010.00
VERTICAL DATUM = NAVD88
COORDINATE SYSTEM = NAD 1983 UTAH CENTRAL ZONE 4302 PROJECTED AT GROUND
GEOID MODEL = GEOID 18
UNITS = US SURVEY FOOT
FALSE NORTHING OFFSET = -7,000,000
FALSE EASTING OFFSET = -1,000,000
COMBINED SCALE FACTOR = 1.00028138

THE COMBINED SCALE FACTOR AND CONVERGENCE ANGLE FOR THIS PROJECT WERE DERIVED FROM THE FOLLOWING VALUES:
PROJECT LATITUDE = N 40°18'21.3264"
PROJECT LONGITUDE = W 111°44'46.0770"
PROJECT HEIGHT = 4482.456'

PROJECT DATUM (US SURVEY FOOT):

PROJECT COORDINATES ARE MODIFIED NAD 1983 UTAH CENTRAL ZONE 4302 COORDINATES. THE STATE PLANE COORDINATE VALUES ARE SCALED BY THE COMBINED SCALE FACTOR (FROM COORDINATE 0,0 OR LATITUDE 20°31'27.66067" N, LONGITUDE 116°02'57.11642" W) THEN TRUNCATED BY THE FALSE NORTHING AND EASTING OFFSET VALUES. THE RESULTING PROJECT COORDINATES ARE TABULATED ON SHEET SC-03 and SC-04.

TO CONVERT PROJECT COORDINATES TO STATE PLANE COORDINATES:
((PROJECT NORTHING + 7,000,000) / 1.00028138) = STATE PLANE NORTHING
((PROJECT EASTING + 1,000,000) / 1.00028138) = STATE PLANE EASTING

SURVEY NOTES

1. TRIG LEVELLING WAS PERFORMED AS PART OF THIS CONTROL SURVEY USING THE SCRIBE ON THE SOUTHEAST CORNER OF THE VAULT CONTROL POINT #108 LOCATED NEAR 400 NORTH AND MILL ROAD AS PROJECT BENCHMARK AND HAVING GPS DERIVED ELEVATION (FROM GOID 18) OF 4550.721 FEET (NVD88 DATUM) AND THE MAGSPIKE CONTROL POINT #111 LOCATED NEAR VINEYARD LOOP ROAD AS A PROJECT BENCHMARK AND HAVING A GPS DERIVED ELEVATION (FROM GEOID 18) OF 4519.397 FEET (NAVD88 DATUM).
2. THIS CONTROL SURVEY CONFORMS TO THE UDOT SURVEY AND GEOMATICS STANDARDS 2017.
3. ALL BEARINGS SHOWN, OR COMPUTED FROM COORDINATE VALUES TABULATED HEREIN, ARE GRID BEARINGS OF THE NAD 1983 UTAH CENTRAL ZONE 4302.
4. SURVEY CONTROL POINTS MEET OR EXCEED THE ACCURACY REQUIREMENTS OF UDOT HORIZONTAL PROJECT CONTROL AT 2CM (0.07') LOCAL POSITIONAL ACCURACY WITH 95% CERTAINTY.
5. CONTROL POINT MARKS ARE SUBJECT TO THE EFFECTS OF SURFACE ACTIVITY AND SEASONAL MOVEMENTS. MARKS MAY ALSO BE DISTURBED, DAMAGED OR REMOVED AFTER THE COMPLETION OF THIS SURVEY. CONTROL POINT POSITIONS SHOULD BE FIELD VERIFIED PRIOR TO SUBSEQUENT SURVEY ACTIVITIES. THIS CONTROL SURVEY WAS COMPLETED IN MAY 2025.

REVISIONS:

VINEYARD STAY CONNECTED

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SEE SURVEYOR'S CERTIFICATION

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SURVEY CONTROL SHEET

VINEYARD CITY

VINEYARD LOOP RD & MAIN ST TRAFFIC SIGNAL

VINEYARD LOOP RD MAIN STREET, VINEYARD, UTAH

Designer	KF, PE	Checker	KC, PE
SHEET NO.	2 OF 9		
SHEET TITLE	CS100		

p:_2025\25-256 - 600 n & main street traffic signal design\000_cad\005_sheets\25-256 cs100 survey control sheet.dwg

9/5/2025

Avenue Project No. 25-140

PRESERVE AT WATERS EDGE CONDO THE, PLAT C-2 SUBDIVISION

OPEN SPACE
PARCEL ID: 45:615:0082

Bus Stop

MAIN ST 6
VINEYARD LOOP RD (600 N) 6

5 YEILD

STOP 5
TURNING VEHICLES TO

First Digital

12" Water

6" Gas

4" Gas

VINEYARD LOOP ROAD (600 NORTH)

STOP 5
TURNING VEHICLES TO

6 MAIN ST
6 VINEYARD LOOP RD (600 N)

MAIN STREET

Bus Stop

5 YEILD

WATERS EDGE HOME OWNERS ASSOCIATION
PARCEL ID: 47:433:0001

SPRINGS AT WATERS EDGE THE, PLAT B SUBDIVISION

N

SCALE 20 0 20 40
1" = 40' US FT

REMOVAL PLAN KEYED NOTES

1	REMOVE CONCRETE FLATWORK
2	REMOVE STREET LIGHT AND PROTECT IN PLACE JUNCTION BOX. OBLITERATE POLE FOUNDATION 12 INCHES BELOW FINISH GRADE.
3	REMOVE STRIPING AS REQUIRED - SEE SHEET CP101
4	REMOVE RRFB ASSEMBLY AND POST - PROTECT EXISTING BASE
5	REMOVE & DISPOSE EXISTING POST AND BASE. RETURN SIGN TO VINEYARD CITY.
6	REMOVE EXISTING STREET SIGNS ON LIGHT POLE. RETURN SIGN TO VINEYARD CITY.

SHEET NOTES

1. THE ENGINEER HAS MADE AN EXTENSIVE EFFORT TO LOCATE ALL UTILITY LINES. UTILITIES SHOWN ON PLANS ARE FROM RECORD MAPS PROVIDED BY OTHERS AND OBSERVATIONS IN THE FIELD. CONTRACTOR TO VERIFY HORIZONTAL AND VERTICAL LOCATION OF ALL EXISTING UTILITIES PRIOR TO BEGINNING WORK.
2. PROTECT IN PLACE ALL EXISTING UTILITIES UNLESS OTHERWISE NOTED.
3. RESTORE LANDSCAPING ON ALL DISTURBED OR REGRADED AREAS. MOVE/REPLACE SPRINKLERS AND PIPING WITHIN DISTURBED OR REGRADED AREAS AS REQUIRED.
4. REMOVE ALL EXISTING STRIPING IN LOCATIONS WHERE ASPHALT IS TO REMAIN, AS SHOWN IN RED ON THESE PLANS. STRIPING WITHIN AREAS OF ASPHALT REMOVAL WILL BE REMOVED AS PART OF THE ASPHALT REMOVAL. STRIPING WITHIN AREAS OF NEW STRIPING CAN BE PAINTED OVER TOP.

REVISIONS:

VINEYARD
STAY CONNECTED

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PROFESSIONAL ENGINEER
No. 10484815
KEVIN J. CROSHAW
REGISTERED PROFESSIONAL ENGINEER
9/16/25
STATE OF UTAH

Stamp

EXISTING CONDITIONS & DEMOLITION PLAN

VINEYARD CITY

VINEYARD LOOP RD & MAIN ST TRAFFIC SIGNAL

VINEYARD LOOP RD MAIN STREET, VINEYARD, UTAH

Designer KF, PE	Checker KC, PE
SHEET NO.	3 OF 9
SHEET TITLE	CS101

p:_2025\25-256 - 600 n & main street traffic signal design\000_cad\005_sheets\25-256 cs101 existing conditions.dwg

9/15/2025

Avenue Project No. 25-140

PRESERVE AT WATERS EDGE CONDO THE, PLAT C-2 SUBDIVISION

OPEN SPACE
PARCEL ID: 45:615:0082

VINEYARD LOOP ROAD (600 NORTH)

13' LANE

12' LANE

11' LANE

15' LANE

N: 282999.7
E: 570143.7

N: 283004.3
E: 570192.1

N: 282996.7
E: 570222.8

N: 282991.5
E: 570242.1

N: 282978.5
E: 570139.4

N: 282954.5
E: 570130.0

N: 282953.3
E: 570245.4

N: 282982.3
E: 570263.0

N: 282987.0
E: 570317.8

N: 282964.5
E: 570264.7

N: 282970.1
E: 570319.9

N: 282938.6
E: 570057.4

N: 282943.9
E: 570110.9

N: 282925.3
E: 570112.6

N: 282920.6
E: 570058.9

N: 282915.9
E: 570133.5

N: 282905.1
E: 570182.8

N: 282911.1
E: 570233.5

N: 282886.0
E: 570191.3

N: 282829.3
E: 570190.8

PM

48' SL

79' CW

85' CW

10'

38' SL

7' CW

51' SL

10'±

4" SWL

4" DYL

8" SWL

MATCH EXISTING

MAIN STREET

SPRINGS AT WATERS EDGE THE, PLAT B SUBDIVISION

WATERS EDGE HOME OWNERS ASSOCIATION
PARCEL ID: 47:433:0001

STRIPING KEY

SWL	SOLID WHITE LINE
DYL	DOUBLE YELLOW LINE
XX' CW	XX' 12" CROSSWALK LINE
XX' SL	XX' 12" STOP LINE
PM	PAVEMENT MESSAGE

NOTES:
1. ALL PAVEMENT STRIPING ARE TO BE PAINT & ALL PAVEMENT MESSAGES ARE TO BE THERMOPLASTIC UNLESS OTHERWISE NOTED.

SITE PLAN KEYED NOTES

1	ASPHALT PAVEMENT RESTORATION PER APWA PLAN 255

N

SCALE 20 0 20 40 US FT
1" = 40'

SHEET NOTES

1. PROTECT IN PLACE ALL EXISTING UTILITIES UNLESS OTHERWISE NOTED.
2. PLACE STOP BAR LINE A MINIMUM OF 5' BEHIND CROSSWALK LINE.
3. CONTRACTOR TO RESTORE ALL DISTURBED LANDSCAPING AND SPRINKLERS AS REQUIRED.

REVISIONS:

VINEYARD
STAY CONNECTED

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PROFESSIONAL ENGINEER
No. 10484815
KEVIN J. CROSHAW
REGISTERED
9/16/25
STATE OF UTAH

Stamp

SITE PLAN

VINEYARD CITY

VINEYARD LOOP RD & MAIN ST TRAFFIC SIGNAL

VINEYARD LOOP RD MAIN STREET, VINEYARD, UTAH

Designer KF, PE	Checker KC, PE
SHEET NO.	4 OF 9
SHEET TITLE	CP101

p:_2025\25-256 - 600 n & main street traffic signal design\000_cad\005_sheets\25-256 cp101 site plan.dwg

9/15/2025

Avenue Project No. 25-140

SIGNAL POLE SCHEDULE

POLE ID	NORTHING	EASTING	MAST ARM LENGTH (FT)	LUMINAIRE MOUNTING HEIGHT (FT)	COMMENTS AND REMARKS
☒	282922.65	570275.90	--	--	TRAFFIC SIGNAL CABINET
◇	282916.71	570268.81	--	--	UNDERGROUND SERVICE PEDESTAL
P1	282984.65	570122.39	40	25	SIGNAL/LUMINAIRE POLE
P2	282978.99	570124.88	--	--	5.5' TRAFFIC POLE
P3	282991.82	570136.51	--	--	5.5' TRAFFIC POLE
P4	283008.80	570234.70	55	25	SIGNAL/LUMINAIRE POLE
P5	283009.56	270223.77	--	--	5.5' TRAFFIC POLE
P6	282999.65	570235.23	--	--	5.5' TRAFFIC POLE
P7	282921.32	570265.69	45	25	SIGNAL/LUMINAIRE POLE
P8	282932.85	570253.23	--	--	11' TRAFFIC POLE
P9	--	--	--	--	5.5' TRAFFIC POLE ON Existing Base
P10	282896.73	570141.12	55	25	SIGNAL/LUMINAIRE POLE
P11	--	--	--	--	5.5' TRAFFIC POLE ON Existing Base
P12	282907.55	570137.06	--	--	5.5' TRAFFIC POLE

SHEET NOTES

1. PROGRAM TRAFFIC SIGNAL WITH LEADING PEDESTRIAN FOR CYCLE TIMING.
2. PROTECT IN PLACE ALL EXISTING UTILITIES UNLESS OTHERWISE NOTED.
3. SEE SHEETS SGS01 & SGS02 FOR MORE INFORMATION.
4. ALL SIGNAL STEEL EQUIPMENT TO BE POWDER COATED COLOR BLACK.
5. INSTALL STATE FURNISHED SIGNAL HEADS, BACKPLATES, AND BRACKETS ON MAST ARM.
6. INSTALL CONTRACTOR FURNISHED MAST ARM SIGN. MOUNT SIGN PER UDOT STD DWG SL 7. SEE SHEET SGS02 FOR SIGN INFORMATION.

APPROXIMATE LOCATION OF EXISTING CONDUIT INSTALLED IN SUMMER 2025. CONTRACTOR MAY USE FOR CROSSING WIRING THROUGH MAIN STREET ON THIS PROJECT. COORDINATE WITH VINEYARD CITY FOR ACTUAL LOCATION AND DETAILS FOR USE.

VINEYARD LOOP ROAD (600 NORTH)
PUBLIC - 25 MPH

MAIN STREET
PUBLIC - 35 MPH

POWER SOURCE 1

MAST ARM/POLE SIGN SCHEDULE

IDENTIFIER	POLE	SIGN	SIGN INFORMATION		STATE FURNISHED		
			SIGN SIZE (SF)	MOUNTING OPTION PER SL 7	GALAXY ASTRO-BRAC; ARM CLAMP ONLY (120" CABLE)	GALAXY ASTRO-BRAC; GUSSETTED TUBE ONLY (96" CABLE)	SIGN CLAMP ONLY
A	P1	"LEFT TURN YIELD ON FLASHING" R10-21EX - 30"X42"	8.25	A	0	0	0
B	P1	STREET "Vineyard Loop Rd" - 108"X18"	13.5	C	1	1	6
A	P4	"LEFT TURN YIELD ON FLASHING" R10-21EX - 30"X42"	8.25	A	0	0	0
C	P4	STREET "Main St" - 66"X18"	8.25	A	0	0	0
A	P7	"LEFT TURN YIELD ON FLASHING" R10-21EX - 30"X42"	8.25	A	0	0	0
B	P7	STREET "Vineyard Loop Rd" - 108"X18"	13.5	C	1	1	6
A	P10	"LEFT TURN YIELD ON FLASHING" R10-21EX - 30"X42"	8.25	A	0	0	0
C	P10	STREET "Main St" - 66"X18"	8.25	A	0	0	0
TOTAL			76.5	--	2	2	12

SIGNAL KEYED NOTES

1. INSTALL 3" PVC CONDUIT FROM POWER SOURCE TO UNDERGROUND SERVICE PEDESTAL WITH 90 DEGREE, 36" LONG SWEEPS. INSTALL 3" CONDUIT PER SERVING POWER COMPANY REQUIREMENTS. CONDUCTORS TO BE INSTALLED BY POWER COMPANY. CONTACT POWER COMPANY FOR POWER SOURCE/HOOKUP INFORMATION, AND TO COORDINATE INSPECTION OF CONDUIT PRIOR TO BACKFILLING TRENCH. GIVE 30 DAY NOTICE BEFORE BEGINNING OF CONSTRUCTION TO ORDER NEW SERVICE, INCLUDING 100 AMP CONNECTION.
2. INSTALL DUAL METER UNDERGROUND SERVICE PEDESTAL AND METER BASE ON CONCRETE PAD PER UDOT STD DWG SL 9. 120 VOLT SIGNAL CONTROLLER POWER SUPPLY: 2 SINGLE-CONDUCTOR COPPER CABLE TYPE RHH-USE-RHW XLP WIRE WITH NO. 6 AWG BARE COPPER GROUND WIRE IN 2 INCH CONDUIT.
3. TYPE C JUNCTION BOX PER UDOT STD DWG SL 10.
4. TYPE B JUNCTION BOX PER UDOT STD DWG SL 10.
5. INSTALL STATE FURNISHED SIGNAL POLE AND MAST ARM FOUNDATION. SEE UDOT STD DWG SL 2 FOR FOUNDATION REQUIREMENTS.
6. INSTALL STATE FURNISHED TRAFFIC POLE. SEE UDOT STD DWG SL 3 FOR FOUNDATION REQUIREMENTS.
7. INSTALL CONTRACTOR FURNISHED PED HEAD AND MOUNT EQUIPMENT PER UDOT STD DWG SL 16.
8. INSTALL STATE FURNISHED SIGNAL CABINET AND FOUNDATION.
9. INSTALL CITY FURNISHED LUMINAIRE EXTENSION WITH DECORATIVE DOUBLE STREET LIGHT. COORDINATE WITH WADE LONG AT BLACK AND MCDONALD FOR INFORMATION.
10. INSTALL STATE FURNISHED ACCESSIBLE PEDESTRIAN PUSH BUTTON ASSEMBLY WITH AUDIBLE AND SIGN PER UDOT STD DWG SL 16.
11. INSTALL STATE FURNISHED VIBRATION MITIGATOR ON THE END OF THE MAST ARM.
12. INSTALL 5' PED POLE ON EXISTING FOUNDATION.
13. INSTALL STATE FURNISHED CCTV CAMERA ASSEMBLY.
14. INSTALL STATE FURNISHED LIDAR SENSOR ON POLE BELOW MAST ARM.
15. CONNECT NEW CONDUIT TO EXISTING FIBER JUNCTION BOX. PERFORM FIBER SPLICE IN EXISTING JUNCTION BOX. COORDINATE WITH VINEYARD CITY AND UDOT FOR SPLICE DETAILS.
16. ONE 2-INCH CONDUIT
17. 6 STRANDED FIBER OPTIC DROP CABLE TERMINATED IN A FIBER DISTRIBUTION UNIT (FDU).

N
SCALE 1" = 40' (20 0 20 40 US FT)

REVISIONS:

VINEYARD STAY CONNECTED

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PROFESSIONAL ENGINEER
No. 10484815
KEVIN J. CROSHAW
9/16/25
STATE OF UTAH

Stamp

SIGNAL PLAN

VINEYARD CITY

VINEYARD LOOP RD & MAIN ST TRAFFIC SIGNAL

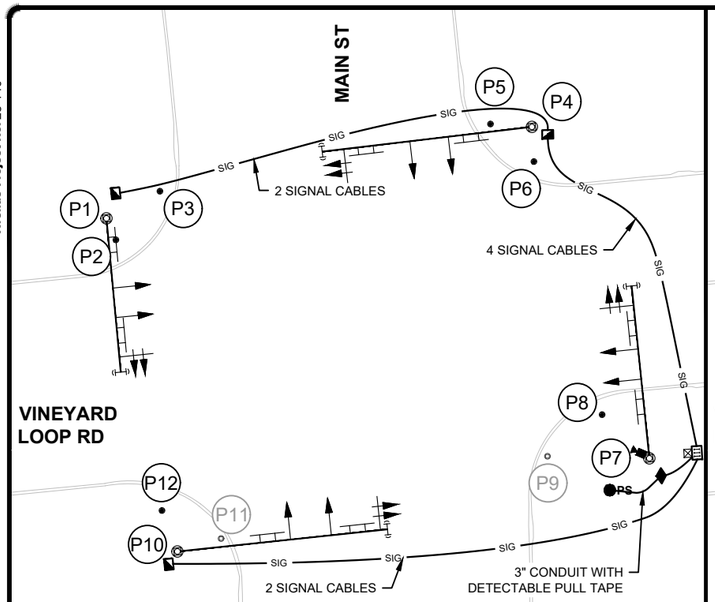
VINEYARD LOOP RD MAIN STREET, VINEYARD, UTAH

Designer KF, PE	Checker MGG, PE
SHEET NO.	5 OF 9
SHEET TITLE	SG101

p:_2025\25-256 - 600 n & main street traffic signal design\000_cad\005_sheets\25-256 sg101 signal plan.dwg

9/10/2025

Avenue Project No. 25-140

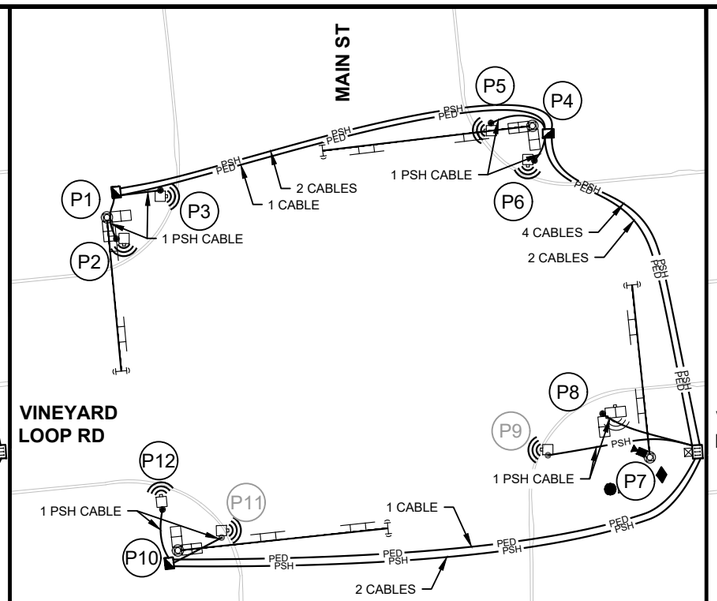


SIGNAL CIRCUIT

7-CONDUCTOR 14 AWG STRANDED CABLE, IMSA 20-1 WITH 6 AWG BARE SOLID COPPER GROUND WIRE IN 2" SIGNAL CONDUIT.

POWER CIRCUIT (USP TO SIGNAL CABINET)

TWO NO. 10 (MINIMUM) SINGLE CONDUCTOR STRANDED COPPER CABLE TYPE RHH-US2-RHW2 XLP OR APPROVED EQUIVALENT WITH NO. 6 AWG BARE SOLID COPPER GROUND WIRE IN 2-INCH CONDUIT.

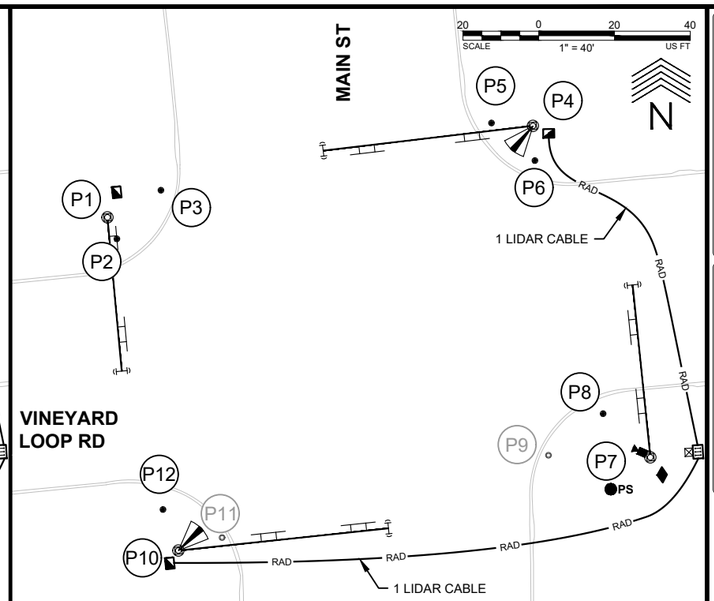


PUSH BUTTON CIRCUIT

4 CONDUCTOR 14 AWG STRANDED CABLE, IMSA 20-1 IN 2" CONDUIT.

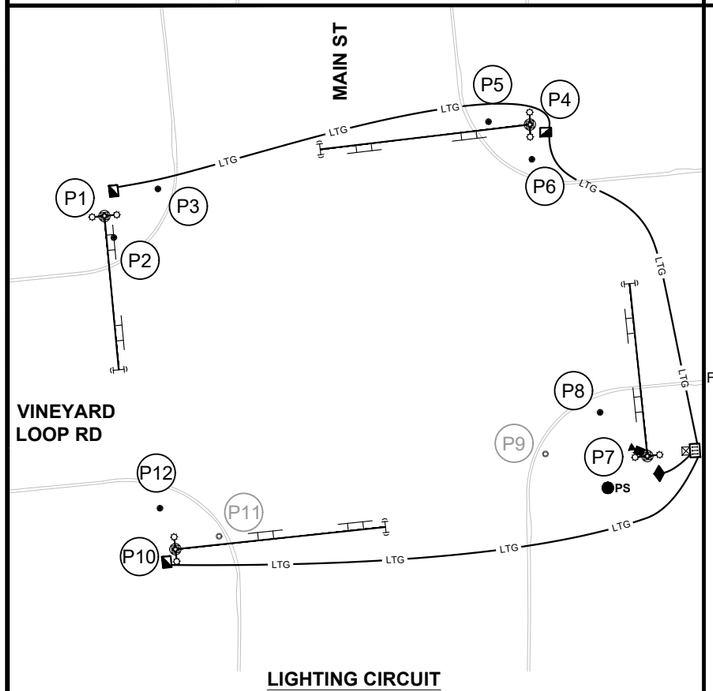
PEDESTRIAN SIGNAL CIRCUIT

7 CONDUCTOR 14 AWG STRANDED CABLE, IMSA 20-1 IN SAME CONDUIT AS EXISTING SIGNAL CIRCUIT.
*PROVIDE 2-INCH CONDUIT WITH 6 AWG BARE SOLID COPPER GROUND WIRE WHERE NO SIGNAL CIRCUIT IS NOT PRESENT.



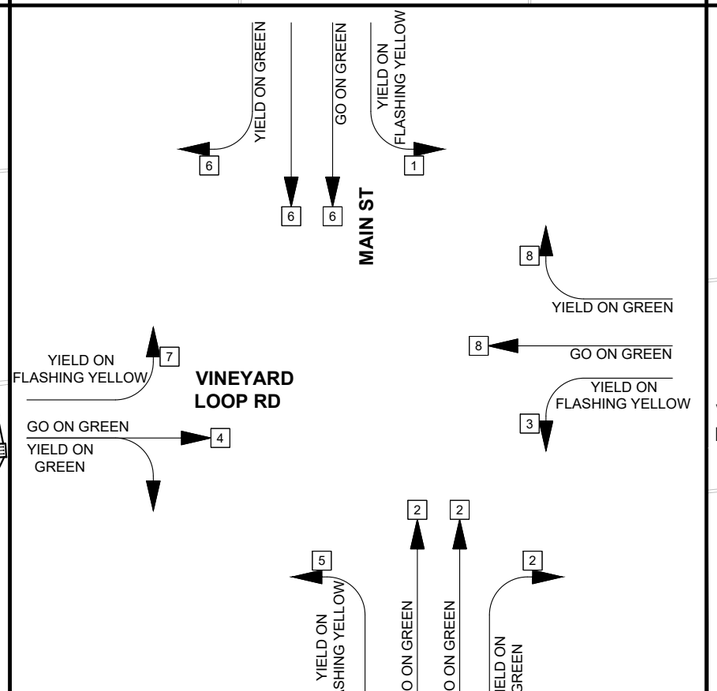
STOP BAR LIDAR DETECTION CIRCUIT

CONTRACTOR FURNISHED CAT 6 CABLE IN 2 INCH CONDUIT.

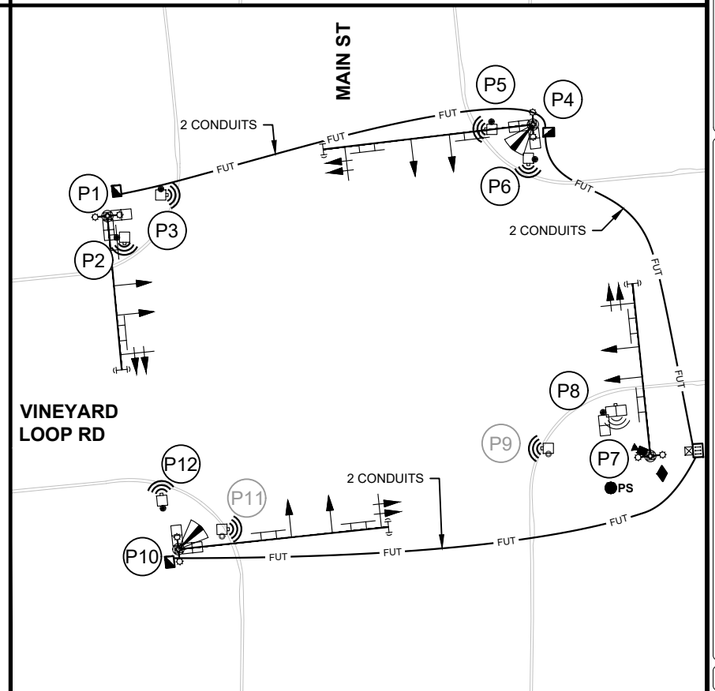


LIGHTING CIRCUIT

2 NO. 10 SINGLE CONDUCTOR STRANDED COPPER CABLE TYPE RHH-USE2-RHW2 XLP WIRES WITH BLUE INSULATION, WITH NO. 6 AWG BARE SOLID COPPER GROUND WIRE IN 2" CONDUIT.



PHASING DIAGRAM



FUTURE USE CONDUIT

2" CONDUITS WITH DETECTABLE PULL TAPE.

REVISIONS:

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PROFESSIONAL ENGINEER
No. 10484815
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9/16/25
STATE OF UTAH

Stamp

SIGNAL CIRCUIT

VINEYARD CITY

VINEYARD LOOP RD & MAIN ST TRAFFIC SIGNAL

VINEYARD LOOP RD MAIN STREET, VINEYARD, UTAH

Designer KF, PE	Checker MGG, PE
SHEET NO.	6 OF 9
SHEET TITLE	SG102

p:_2025\25-256 - 600 n & main street traffic signal design\000_cad\005_sheets\25-256 sg101 signal plan.dwg

9/10/2025

THE CONTRACTOR SHALL CAREFULLY READ ALL OF THE NOTES AND SPECIFICATIONS. THE CONTRACTOR SHALL BE SATISFIED AS TO THEIR TRUE MEANING AND INTENT AND SHALL BE RESPONSIBLE FOR COMPLYING WITH EACH.

GENERAL NOTES:

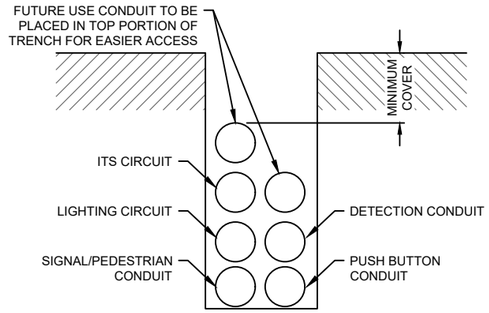
1) ALL IMPROVEMENTS SHALL BE CONSTRUCTED IN STRICT ACCORDANCE WITH ALL JURISDICTIONAL AUTHORITIES.
2) CONTRACTOR SHALL COMPLY WITH THE STANDARDS INDICATED ABOVE AND WITHIN THE CONSTRUCTION DOCUMENTS. THE CONTRACTOR SHALL NOTIFY ALL AGENCIES, OWNERS, ENGINEERS, AND UTILITY COMPANIES 5 DAYS PRIOR TO A PRE-CONSTRUCTION MEETING.
3) IT IS INTENDED THAT THESE PLANS AND SPECIFICATIONS REQUIRE ALL LABOR AND MATERIALS NECESSARY AND PROPER FOR THE WORK CONTEMPLATED AND THAT THE WORK BE COMPLETED IN ACCORDANCE WITH THEIR TRUE INTENT AND PURPOSE. THE CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY REGARDING ANY DISCREPANCIES OR AMBIGUITIES WHICH MAY EXIST IN THE PLANS OR SPECIFICATIONS. THE ENGINEER'S INTERPRETATION THEREOF SHALL BE CONCLUSIVE.
4) WHERE THE PLANS OR SPECIFICATIONS DESCRIBE PORTIONS OF THE WORK IN GENERAL TERMS BUT NOT IN COMPLETE DETAIL, IT IS UNDERSTOOD THAT ONLY THE BEST GENERAL PRACTICE IS TO PREVAIL AND THAT ONLY MATERIALS AND WORKMANSHIP OF THE FIRST QUALITY ARE TO BE USED.
5) THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL PERMITS AND LICENSES REQUIRED FOR THE CONSTRUCTION AND COMPLETION OF THE PROJECT, AND SHALL PERFORM ALL WORK IN ACCORDANCE WITH THE REQUIREMENTS AND CONDITIONS OF ALL PERMITS AND APPROVALS APPLICABLE TO THIS PROJECT. THE CONTRACTOR SHALL ENSURE THAT THE NECESSARY RIGHTS-OF-WAY, EASEMENTS, AND/OR PERMITS ARE SECURED PRIOR TO CONSTRUCTION.
6) THE CONTRACTOR SHALL PROVIDE ALL LIGHTS, BARRICADES, SIGNS, FLAGMEN OR OTHER DEVICES NECESSARY FOR PUBLIC SAFETY.
7) THE CONTRACTOR AGREES THAT:
   A) THEY SHALL BE RESPONSIBLE TO CLEAN THE JOB SITE AT THE END OF EACH DAY.
   B) THEY SHALL BE RESPONSIBLE TO REMOVE AND DISPOSE OF ALL TRASH, SCRAP AND UNUSED MATERIAL AT THEIR OWN EXPENSE IN A TIMELY MANNER.
   C) THEY SHALL BE RESPONSIBLE TO MAINTAIN THE SITE IN A NEAT, SAFE AND ORDERLY MANNER AT ALL TIMES.
   D) THEY SHALL BE RESPONSIBLE TO KEEP MATERIALS, EQUIPMENT, AND TRASH OUT OF THE WAY OF OTHER CONTRACTORS SO AS NOT TO DELAY THE JOB. FAILURE TO DO SO WILL RESULT IN A DEDUCTION FOR THE COST OF CLEAN UP FROM THE FINAL PAYMENT.
   E) THEY SHALL BE RESPONSIBLE FOR THEIR OWN SAFETY, TRAFFIC CONTROL, PERMITS, RETESTING AND RE-INSPECTIONS AT THEIR OWN EXPENSE.
8) THE CONTRACTOR SHALL ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOBSITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THIS PROJECT, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY. THIS REQUIREMENT SHALL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS. THE CONTRACTOR SHALL DEFEND, INDEMNIFY AND HOLD THE OWNER AND ENGINEER HARMLESS FROM ANY AND ALL LIABILITY, REAL OR ALLEGED, IN CONNECTION WITH THE PERFORMANCE OF WORK ON THIS PROJECT, EXCEPTING FOR LIABILITY ARISING FROM THE SOLE AND GROSS NEGLIGENCE OF THE OWNER OR THE ENGINEER.
9) FOR ALL WORK WITHIN PUBLIC RIGHTS-OF-WAYS OR EASEMENTS, THE CONTRACTOR SHALL PRESERVE THE INTEGRITY AND LOCATION OF ANY AND ALL PUBLIC UTILITIES AND PROVIDE THE NECESSARY CONSTRUCTION TRAFFIC CONTROL. CONTRACTOR SHALL, THROUGH THE ENCROACHMENT PERMIT PROCESS, VERIFY WITH THE NECESSARY REGULATORY AGENCIES, THE NEED FOR ANY TRAFFIC ROUTING PLAN. IF PLAN IS REQUIRED, CONTRACTOR SHALL PROVIDE PLAN AND RECEIVE PROPER APPROVALS PRIOR TO BEGINNING CONSTRUCTION.
10) IF EXISTING FEATURES NEED TO BE DISTURBED AND/OR REMOVED FOR THE PROPER PLACEMENT OF IMPROVEMENTS TO BE CONSTRUCTED BY THESE PLANS, THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING EXISTING FEATURES FROM DAMAGE. COST OF REPLACING OR REPAIRING EXISTING FEATURES SHALL BE INCLUDED IN THE BID PRICE FOR ITEMS REQUIRING REMOVAL AND/OR REPLACEMENT.
11) TRAFFIC CONTROL IS TO CONFORM TO THE CURRENT MUTCD AND UDOT STANDARDS.
12) CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE TO ADJACENT SURFACE IMPROVEMENTS.

GENERAL UTILITY NOTES

1) THE LOCATIONS OF UNDERGROUND FACILITIES SHOWN ON THESE PLANS ARE BASED ON FIELD SURVEYS AND LOCAL UTILITY COMPANY RECORDS. IT SHALL BE THE CONTRACTORS FULL RESPONSIBILITY TO CONTACT THE VARIOUS UTILITY COMPANIES TO LOCATE THEIR FACILITIES PRIOR TO PROCEEDING WITH CONSTRUCTION. NO ADDITIONAL COMPENSATION SHALL BE PAID TO THE CONTRACTOR FOR DAMAGE AND REPAIR TO THESE FACILITIES CAUSED BY CONTRACTORS WORK FORCE.
2) CONTRACTOR SHALL LAYOUT AND POTHOLE FOR ALL POTENTIAL CONFLICTS WITH UTILITY LINES ON OR OFF SITE AS REQUIRED PRIOR TO ANY CONSTRUCTION.
3) VERIFY DEPTHS OF UTILITIES IN THE FIELD BY POT HOLING A MINIMUM OF 300 FEET AHEAD OF PIPELINE CONSTRUCTION TO AVOID CONFLICTS WITH DESIGNED PIPELINE GRADE AND ALIGNMENT. IF A CONFLICT ARISES RESULTING FROM THE CONTRACTOR'S NEGLIGENCE TO POTHOLE UTILITIES THE CONTRACTOR WILL BE REQUIRED TO RESOLVE THE CONFLICT WITHOUT ADDITIONAL COST OR CLAIM TO THE OWNER OR ENGINEER.
4) ALL DIMENSIONS, GRADES, AND UTILITY DESIGNS SHOWN ON THE PLANS SHALL BE VERIFIED BY THE CONTRACTOR PRIOR TO CONSTRUCTION. NOTIFY THE ENGINEER IF ANY DISCREPANCIES EXIST, PRIOR TO PROCEEDING WITH CONSTRUCTION FOR NECESSARY PLAN OR GRADE CHANGES. NO EXTRA COMPENSATION SHALL BE PAID TO THE CONTRACTOR FOR WORK HAVING TO BE REDONE DUE TO THE DIMENSIONS OR GRADES SHOWN INCORRECTLY ON THESE PLANS, IF SUCH NOTIFICATION HAS NOT BEEN GIVEN.

SIGNAL PLAN LEGEND

EXISTING	PROPOSED	
be	BE	POWER SOURCE CIRCUIT CONDUIT
sig	SIG	SIGNAL CIRCUIT CONDUIT
ped	PED	PEDESTRIAN SIGNAL CIRCUIT CONDUIT
psh	PSH	PEDESTRIAN PUSH BUTTON CIRCUIT CONDUIT
rad	RAD	RADAR DETECTION CIRCUIT CONDUIT
ltg	LTG	LIGHTING CIRCUIT CONDUIT
	FUT	FUTURE USE CONDUIT
cdt	CDT	UNDERGROUND CONDUIT BANK
	ITS	ITS CONDUIT
P1	P1	SIGNAL POLE IDENTIFICATION
		MAST ARM SIGNAL POLE
		SIGNAL POLE LUMINAIRE EXTENSION WITH ARM
		MAST ARM MOUNTED SIGN
PS	PS	POWER SOURCE
		TRAFFIC SIGNAL POLE
		TYPE 0 - 1 SECTION SIGNAL HEAD ASSEMBLY
		TYPE I - 3 SECTION SIGNAL HEAD ASSEMBLY
		TYPE II - 3 SECTION SIGNAL HEAD ASSEMBLY
		TYPE III - 3 SECTION (ALL ARROWS) SIGNAL HEAD ASSEMBLY
		TYPE IV - 4 SECTION SIGNAL HEAD ASSEMBLY
		TYPE V - 5 SECTION SIGNAL HEAD ASSEMBLY
		TYPE VI - 4 SECTION (ALL ARROWS) SIGNAL HEAD ASSEMBLY
		TYPE VII - 4 SECTION SIGNAL HEAD ASSEMBLY
		PEDESTRIAN HYBRID BEACON - 3 SECTION SIGNAL HEAD ASSEMBLY
		VIBRATION MITIGATOR
		TRAFFIC SIGNAL CONTROLLER CABINET
II-PC	II-PC	TYPE II ITS JUNCTION BOX
		TYPE B JUNCTION BOX
III	III	TYPE C JUNCTION BOX
		PEDESTRIAN SIGNAL HEAD WITH PUSH BUTTON
		AUDIBLE PEDESTRIAN SIGNAL HEAD WITH PUSH BUTTON
		PEDESTRIAN SIGNAL HEAD
		PEDESTRIAN PUSH BUTTON
		UNDERGROUND SERVICE PEDESTAL (USP)
		PREEMPTION CONTROL SYSTEM DETECTOR
		CCTV CAMERA
		RADAR DETECTION, DILEMMA ZONE
		LIDAR DECTION



NOTES:
1. REFER TO UDOT SL SERIES STANDARD DRAWINGS FOR MINIMUM CONDUIT DEPTH REQUIREMENTS.
2. MINIMUM OF 6 CONDUITS ARE REQUIRED FOR EACH ROAD CROSSING LOCATION.

1 / SGS01 **TRENCHING AND BORING DETAIL**
NOT TO SCALE

NOTES:
1) CONTACT CITY TO SCHEDULE AND COORDINATE ON THE FOLLOWING ITEMS:
   a. **SALVAGED ITEMS:** PROVIDE 2 DAYS NOTICE. ENSURE ALL SALVAGED ITEMS HAVE ALL PARTS AND ASSOCIATED HARDWARE.
   b. **SIGNAL INSPECTION:** 8 DAYS PRIOR TO TURN-ON CONTACT CITY TO REQUEST AN IN-PROGRESS SIGNAL INSPECTION.
   c. **SIGNAL TURN-ON:** PROVIDE 5 DAYS NOTICE. COMPLETE CITY TURN-ON CHECKLIST PRIOR TO CALLING SIGNAL CREW.
2) CONTRACTOR IS RESPONSIBLE TO DISPOSE OF REMOVAL ITEMS AND ASSUME RESPONSIBILITY THEREAFTER. REUSE MATERIALS ONLY AS SPECIFIED OR AS APPROVED BY THE ENGINEER.
3) REFER TO UDOT STD DWG SL SERIES FOR DETAILS.

LIMITATIONS OF OPERATIONS:
A. TRAFFIC LIMITATIONS
   1) SHIFTS ARE ALLOWED FROM 10:00 AM TO 3:00 PM.
   2) SHOULDER CLOSURES ARE ALLOWED ANYTIME.
   3) PROVIDE ADA ACCESSIBLE ROUTES THROUGH ARE AROUND THE WORK ZONE AT ALL TIMES. PROVIDE SIGNAGE FOR ALL ALTERNATE ROUTES.
B. NO WORK WILL BE ALLOWED ON CATEGORY II HOLIDAYS WHICH WILL EXTEND AS FOLLOWS:
   1) THANKSGIVING DAY - FROM 3 PM WEDNESDAY TO 5 AM MONDAY.
   2) CHRISTMAS - FROM 3 PM ON DECEMBER 24TH TO 5 AM ON DECEMBER 28TH.
   3) NEW YEARS DAY - FROM 3 PM DECEMBER 31ST TO 5 AM JANUARY 4TH.
C. OBTAIN COUNTY PERMIT FOR ANY GOVERNMENT SURVEY MONUMENT WITHIN THIRTY FEET OF WORK, PER UDOT SPECIFICATION 00820M. FIND 00820M ON UDOT'S SPECIAL PROVISIONS WEBSITE.

REVISIONS:

VINEYARD STAY CONNECTED

CALL BEFORE YOU DIG. IT'S FREE AND IT'S THE LAW. BLUE STAKES OF UTAH 1-800-662-4111 Dig Safely.

avenue CONSULTANTS
Avenue Consultants, Inc
588 W 400 S, Suite 250
Lindon, UT 84042
www.avenueconsultants.com

PROFESSIONAL ENGINEER
No. 10484815
KEVIN J. CROSHAW
9/16/25
STATE OF UTAH
Stamp

SIGNAL DETAILS AND SCHEDULES

VINEYARD CITY

VINEYARD LOOP RD & MAIN ST TRAFFIC SIGNAL

VINEYARD LOOP RD MAIN STREET, VINEYARD, UTAH

Designer KF, PE	Checker MGG, PE
SHEET NO.	7 OF 9
SHEET TITLE	SGS01

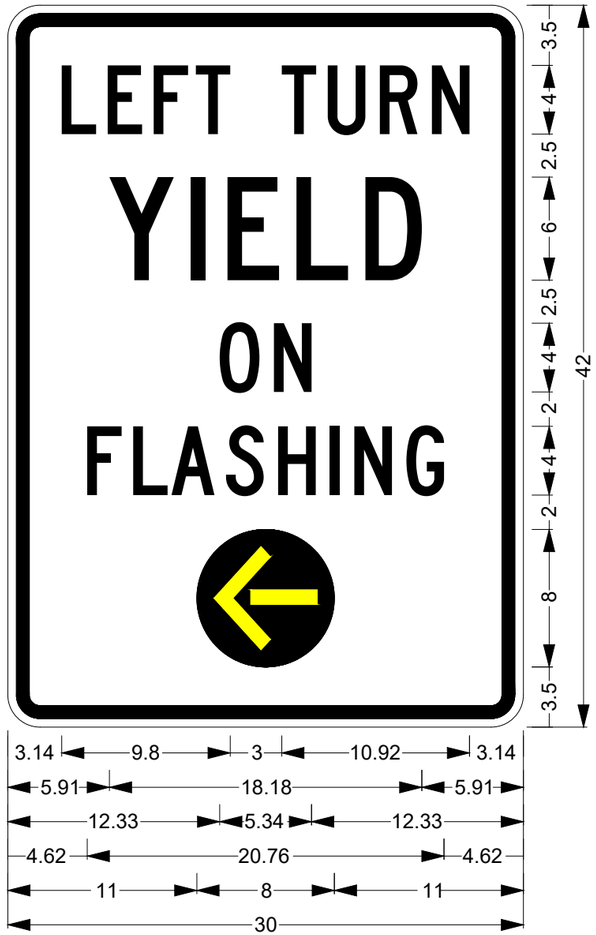
Avenue Project No. 25-140

p:_2025\25-256 - 600 n & main street traffic signal design\000_cad\005_sheets\25-256 cover page.dwg

9/15/2025

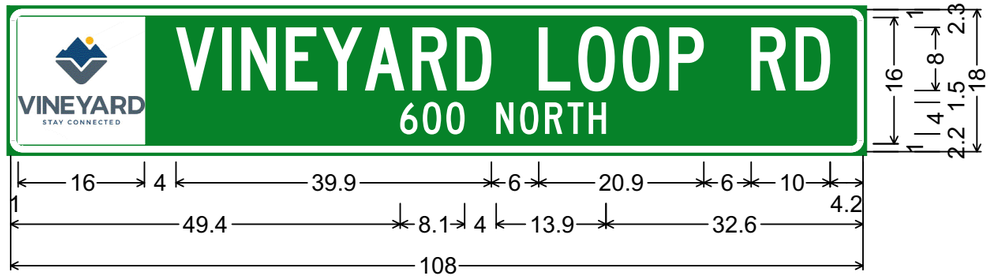
Avenue Project No. 25-140

A



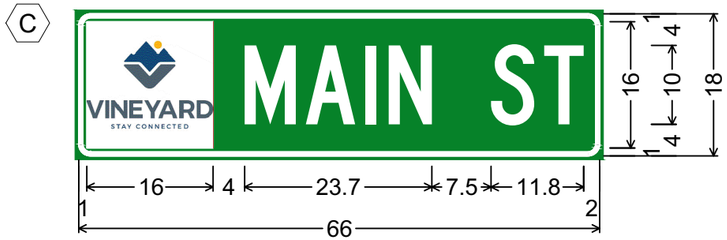
Identifier : RS10-21ex LEFT TURN YIELD ON FLASHING Yellow Arrow SymboL Sign;
1.88" Radius, 0.75" Border, 0.50" Indent, Black on White;
[LEFT TURN] C; [YIELD] C; [ON] C; [FLASHING] C;
Rounded Rectangle 4.00" Radius

B



1.5" Radius, 0.6" Border, White on Green;
"VINEYARD LOOP RD", C 75% spacing; "600 NORTH", C;

C



1.5" Radius, 0.5" Border, White on Green;
"MAIN ST", C 75% spacing;

REVISIONS:

VINEYARD
STAY CONNECTED

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PROFESSIONAL ENGINEER
No. 10484815
KEVIN J. CROSHAW
9/16/25
STATE OF UTAH
Stamp

SIGNAL DETAILS AND SCHEDULES

VINEYARD CITY

VINEYARD LOOP RD & MAIN ST
TRAFFIC SIGNAL

VINEYARD LOOP RD MAIN STREET, VINEYARD, UTAH

Designer KF, PE	Checker MGG, PE
SHEET NO.	8 OF 9
SHEET TITLE	SGS02

p:_2025\25-256 - 600 n & main street traffic signal design\000_cad\005_sheets\25-256 cover page.dwg

9/15/2025

Avenue Project No. 25-140

STATE FURNISHED MATERIALS - SIGNAL

| | SIGNAL SCHEDULE | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | DETECTION SCHEDULE | | | | | | | | | | | | | | | | | | |

CONTRACT DOCUMENTS AND SPECIFICATIONS FOR

VINEYARD CITY
VINEYARD LOOP ROAD TRAFFIC SIGNAL
AT MAIN STREET

December 2025

Prepared by:

Kevin Croshaw, P.E.
Avenue Consultants

Signed by
Naseem Ghandour, P.E.
Public Works Director/City Engineer

VINEYARD
STAY CONNECTED

125 South Main Street,

Vineyard City, Utah 84059

VINEYARD TRAFFIC SIGNALS TABLE

OF CONTENTS

Except where superseded by Vineyard City Standard Specifications, the current APWA STANDARD PLANS AND SPECIFICATIONS apply. Below is a partial list of frequently referenced specifications. Where specifically noted, 2026 UDOT Standard Specifications apply (listed below)

DIVISIONS
DIVISION 1- GENERAL REQUIREMENTS

DIVISION 2 – EXISTING CONDITIONS
- 24 41 13 SELECTIVE SITE DEMOLITION..... APWA STANDARD SPECIFICATIONS
- 02 41 14 PAVEMENT REMOVAL ..... APWA STANDARD SPECIFICATIONS

DIVISION 03 – CONCRETE
- 0311 00 CONCRETE FORMING ..... APWA STANDARD SPECIFICATIONS
- 03 20 00 CONCRETE REINFORCEING..... APWA STANDARD SPECIFICATIONS
- 03 30 04 CONCRETE ..... APWA STANDARD SPECIFICATIONS
- 03 30 05 CONCRETE TESTING..... APWA STANDARD SPECIFICATIONS
- 03 30 10 CONCRETE PLACEMENT ..... APWA STANDARD SPECIFICATIONS
- 03 35 00 CONCRETE FINISHING ..... APWA STANDARD SPECIFICATIONS
- 03 39 00 CONCRETE CURING..... APWA STANDARD SPECIFICATIONS

DIVISION 31 – EARTHWORK
- 31 23 16 EXCAVATION ..... APWA STANDARD SPECIFICATIONS
- 31 23 23 BACKFILLING FOR STRUCTURES..... APWA STANDARD SPECIFICATIONS
- 3123 16 COMPACTION..... APWA STANDARD SPECIFICATIONS

DIVISION 32 – EXTERIOR IMPROVEMENTS
- 32 11 23 AGGREGATE BASE COURSES..... APWA STANDARD SPECIFICATIONS
- 32 11 24 PULVERIZED PAVEMENT BASE COURSE ..... APWA STANDARD SPECIFICATIONS
- 32 12 03 ASPHALT BINDER..... APWA STANDARD SPECIFICATIONS
- 32 12 05 BITUMINOUS CONCRETE ..... APWA STANDARD SPECIFICATIONS
- 32 12 06 RUBBERIZED ASPHALT CONCRETE ..... APWA STANDARD SPECIFICATIONS
- 32 12 13.13 TACK COAT..... APWA STANDARD SPECIFICATIONS
- 32 12 13.19 PRIME COAT ..... APWA STANDARD SPECIFICATIONS
- 32 12 16.13 PLANT MIX BITUMINOUS PAVING..... APWA STANDARD SPECIFICATIONS
- 32 16 13 DRIVEWAY, SIDEWALK, CURB, GUTTER ..... APWA STANDARD SPECIFICATIONS
- 32 16 14 CURB CUT ASSEMBLY ..... APWA STANDARD SPECIFICATIONS
- 3217 23 PAVEMENT MARKINGS ..... APWA STANDARD SPECIFICATIONS

DIVISION 33 – UTILITIES
- 33 41 00 DRAINAGE SYSTEMS..... APWA STANDARD SPECIFICATIONS

APPLICABLE 2026 UDOT STANDARD SPECIFICATIONS
SECTION 02721 UNTREATED BASE COURSE
SECTION 02741 HOT MIX ASPHALT
SECTION 02743 HOT MIX ASPHALT BIKE AND PEDESTRIAN PATHS
SECTION 02745 ASPHALT MATERIALS
SECTION 02892 TRAFFIC SIGNAL

NOTICE OF TO USE UTAH STATE CONTRACT

Vineyard City intends to procure construction services for the **Vineyard Loop Road Traffic Signal at Main Street** project by issuing a work order under an existing **Utah Statewide Contract** for traffic signal and roadway improvements, in accordance with Utah Code and the Utah Procurement Code.

The City will select and authorize a contractor **from the current pool of contractors awarded under the applicable Utah State Contract** to perform the work described below, consistent with the terms and pricing of that State Contract.

Project Description

The work generally consists of installing a new traffic signal at the intersection of **Vineyard Loop Road (600 North) and Main Street**, including:

- Signal poles, mast arms, foundations, and cabinet
- Conduit, junction boxes, wiring, and detection
- Signal heads, APS push buttons, and pedestrian indications
- Associated roadway, striping, lighting, and minor restoration as shown in the Contract Documents

Electronic copies of the plans and specifications will be made available to the State Contract contractors upon request directly to Vineyard City. Documents are provided for coordination, pricing confirmation under the State Contract, and construction.

Questions from State Contract contractors regarding the scope of work shall be submitted directly to the City's Project Manager as directed in the City's notice.

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VINEYARD CITY

By Naseem Ghandour, P.E.

City Engineer

INFORMATION FOR TASK ORDERS USING STATE CONTRACT

1. BASIS OF WORK

All work will be performed under the terms and pricing of the Utah Statewide Contract, supplemented by the project-specific plans, specifications, and conditions issued by Vineyard City.
Where conflicts occur, the Utah State Contract governs unless the City's Work Order or specifications require a higher standard of construction.

The Contractor shall review all documents, visit the site, and fully inform themselves of all conditions prior to submitting pricing confirmation or beginning work.

2. INTERPRETATION OF PLANS AND DOCUMENTS

Any Contractor requiring clarification regarding:

- Plans
- Specifications
- Conflicts, discrepancies, or omissions
- Special conditions or requirements

shall submit written questions to the City Engineer.
Only written addenda or written clarification issued by Vineyard City or its Engineer shall be considered binding. The City is not responsible for oral instructions or interpretations.

3. EXECUTION OF CONTRACT / WORK ORDER

Following selection under the Utah State Contract, Vineyard City will issue:

1. A Notice of Award, followed by
2. A Work Order / Task Order under the State Contract terms.

The Contractor shall execute and return the Work Order within 10 calendar days of receipt.
Failure to execute the Work Order may result in the City selecting another State Contract contractor.

4. ASSIGNMENT OF CONTRACT

The Contractor shall not assign, transfer, or subcontract the Work Order, or any portion thereof, without prior written approval from:

- Vineyard City, and
- The Contractor's Surety (if applicable under the State Contract).

Unauthorized assignment or subcontracting is cause for termination of the Work Order.

5. SPECIAL NOTICE

The Contractor must inform themselves fully regarding:

- Construction conditions
- Site access and constraints
- Traffic operations
- Utility conflicts and coordination
- Seasonal/operational limitations

The Contractor shall schedule and execute the work so as not to interfere unnecessarily with any adjacent construction activities, City operations, or utility work.

6. PERMITS AND LICENSES (FULL LANGUAGE REQUESTED)

The Contractor shall procure all permits and licenses, pay all charges, fees, and taxes, and give all notices necessary and incidental to the due and lawful prosecution of the work.
This includes, but is not limited to:

- Traffic control permits
- Encroachment permits (if applicable to UDOT ROW)

- Utility crossing/locate coordination
- Environmental, air quality, dust control, and stormwater compliance
- Any temporary power or temporary water needed for the Work

All fees for permits issued directly by Vineyard City will be waived for this project.
However, the Contractor remains responsible for:

- Completing all City-required forms
- Scheduling and passing all City inspections
- Complying with all local ordinances and standards

The Contractor shall maintain all required State of Utah contractor licenses applicable to the work throughout the duration of the project.

7. CONSTRUCTION SCHEDULING

The City intends to complete this project during the spring of 2026.
The Contractor shall:

- Submit a construction schedule within the timeframe specified in the Work Order
- Coordinate with utilities and other stakeholders
- Maintain safe traffic control under MUTCD and City standards
- Maintain adequate workforce and equipment to meet the schedule

The City reserves the right to require schedule updates or corrective measures if progress is insufficient.

8. TIME OF COMPLETION

The Contractor shall:

- Begin work no later than the third day after receipt of the Notice to Proceed, and
- Achieve substantial completion not later than May 30, 2026, unless modified by written change order.

The Contractor shall prosecute the work diligently with adequate labor, materials, and equipment to ensure completion within the time required.

9. NONPERFORMANCE OF WORK TASKS BY THE CONTRACTOR

If the Contractor:

- Fails to perform required work,
- Neglects to correct defective work, or
- Fails to repair or restore disturbed public rights-of-way in a timely or acceptable manner,

the City may issue written notice directing corrective action.
If acceptable action is not taken within three (3) days, the City may:

- Cause the work to be performed by others, and
- Deduct the cost from payments due to the Contractor.

This remedy is in addition to any rights provided under the Utah State Contract.

10. PRE-AWARD MEETING

Before issuing a Notice to Proceed, the City may require a pre-award or pre-construction meeting with the Contractor. Topics may include:

- Review of project plans, specifications, schedule, and work sequencing
- Traffic control and public safety requirements
- Submittal schedule and material procurement
- Utility coordination
- Site access, staging, and storage areas
- Communication protocols between the Contractor and City

Attendance by the Project Superintendent is mandatory.

11. LIQUIDATED DAMAGES

Liquidated damages for failure to meet the required completion date shall be $150 per calendar day, or as otherwise specified in the City's Work Order and consistent with the State Contract.

INSTRUCTIONS FOR WORK ORDER PRICING
(UTAH STATE CONTRACT)

1. GENERAL

The Contractor shall prepare and submit Work Order pricing in accordance with the Utah Statewide Contract under which this project is being awarded. Pricing shall be based on:

- State Contract unit prices
- Project-specific quantities shown in the plans and Engineer's Estimate
- All requirements of the project Plans, Specifications, and these Documents

Submission of Work Order pricing under the State Contract constitutes confirmation that the Contractor has:

- Reviewed the Plans and Specifications
- Visited the site
- Verified existing conditions
- Understood all requirements necessary to complete the work
- Confirmed that State Contract pricing has been correctly applied

All work shall be completed in a good, neat, safe, and fully operational manner as required by the project documents.

2. PAYMENT AND SCOPE OF WORK

Payment for completed work—based on accepted quantities and the State Contract unit prices—shall be full compensation for:

- All labor, materials, and equipment
- All devices, components, and appurtenances
- All installation, testing, and commissioning
- All overhead, profit, and incidental costs
- Supervision, temporary facilities, and mobilization/demobilization
- Insurance, taxes, permits (except City fee waivers), and compliance

Each item, fixture, or piece of equipment indicated in the Plans or Specifications shall be furnished and installed complete with all required components for proper operation of the system.

Any costs not specifically identified but necessary to deliver a complete and functional system are considered incidental and included in the State Contract unit prices.

3. PATENTS, LICENSE FEES, AND PROPRIETARY REQUIREMENTS

All patent fees, licensing fees, royalties, or rights to use proprietary equipment or processes shall be included in the Contractor's pricing.

If any such fees apply, the Contractor shall provide an itemized list of:

- The type of fee
- The amount
- The supplier or licensor

This list shall be submitted to the Engineer upon request.

4. MATERIALS AND MANUFACTURERS

Where the Specifications or Plans identify specific manufacturers, products, or models, these are provided to establish a minimum standard of quality, durability, appearance, and performance.

Contractor Responsibilities

- Furnish items meeting or exceeding specified standards
- Identify proposed manufacturers where requested
- Submit additional documentation if required by the Engineer

If the Contractor wishes to propose an alternate manufacturer not listed in the Specifications, the Contractor shall submit product data to the Engineer for review.

Alternate products must:

- Meet or exceed all specification requirements

- Match design intent and operational characteristics
- Be available within the project schedule
- Be approved in writing prior to installation

If an alternate product fails to meet requirements, the Contractor shall furnish compliant materials at no additional cost to the City.

5. SUBMITTALS AND ADDITIONAL INFORMATION

The Owner may require additional information regarding materials or equipment proposed for specific bid items.

If requested, the Contractor shall submit:

- Manufacturer data sheets
- Shop drawings
- Technical certifications
- Performance data
- Installation requirements
- Warranty information

All required data must be submitted promptly so the Engineer may evaluate the suitability of materials before the Work Order is finalized or before procurement occurs.

6. DESIGNATED AND NON-DESIGNATED ITEMS

If a specific item requires manufacturer designation and the Contractor does not provide one, Vineyard City may designate a manufacturer from those listed in the Specifications.

No adjustment to State Contract pricing will be considered for such designation.

Where an item is referenced by trade name or manufacturer solely to establish standards of quality, the Contractor may submit a written request for substitution following award of the Work Order.

Submittals must include:

- Detailed comparison of proposed substitution vs. specified item
- Certified quotations for both items (designated and proposed)
- Delivery timelines
- Material availability and compatibility

All accepted substitutions will be bound by the Specifications.

7. INTERPRETATION OF DOCUMENTS

If the Contractor finds discrepancies, omissions, or is uncertain regarding any part of the Plans, Specifications, or Contract Documents, the Contractor shall submit a written request for interpretation to the Engineer.

Only written responses issued by the Engineer or Vineyard City are binding.

Oral or informal interpretations shall not be relied upon.

8. FORM OF SUBMISSION UNDER STATE CONTRACT

Because this project is awarded using the Utah Statewide Contract, no public proposal, sealed bid, or competitive bid submission is required.

Instead, the Contractor shall submit:

- A Work Order Pricing Confirmation
- Any required manufacturer designations
- Required submittals
- Schedule and sequencing plan
- Any requested supporting documentation
-

Electronic submission to the Vineyard City Project Manager is acceptable, or as directed by the City.

TASK ORDER

VINEYARD CITY
VINEYARD LOOP ROAD TRAFFIC SIGNAL AT MAIN STREET

December 10, 2025

Vineyard City
125 South Main Street
Vineyard, Utah 84059

In accordance with Vineyard City's decision to issue a Work Order under the Utah Statewide Contract 239598 for traffic signal and roadway construction, the undersigned **Oak Hollow Electric Company** (Contractor), acknowledges and accepts the award for the **Vineyard Loop Road Traffic Signal at Main Street** project. The Contractor agrees to perform all work required for the construction of the project in full compliance with the Utah Statewide Contract and the project Plans, Specifications, and Contract Documents prepared for Vineyard City. The Contractor shall furnish all labor, equipment, and contractor-supplied materials necessary to complete the work, and shall install, assemble, and integrate the state-furnished materials provided by Vineyard City in accordance with all applicable standards and requirements. The Contractor acknowledges that state-furnished materials include, but are not limited to, traffic signal poles, mast arms, cabinets, signal heads, APS assemblies, detection equipment, and other components identified by Vineyard City, and agrees to receive, protect, store, and incorporate those materials into the project as required.

By executing this Work Order Acceptance, the Contractor affirms that it has examined the project site, reviewed all Plans, Specifications, special provisions, and supplemental documents issued by Vineyard City, and has fully acquainted itself with existing field conditions that may affect the work. The Contractor acknowledges that Work Order pricing is based on established Utah State Contract unit prices and approved contract mechanisms, and that such pricing includes all incidentals, overhead, transportation, equipment, and other costs necessary to deliver a complete and functional installation. Submission of this acceptance constitutes confirmation that no additional compensation will be requested for conditions that could have been identified through reasonable site review or examination of project documents.

The Contractor agrees to complete the project on or before **May 30, 2026**, unless this completion date is modified by a written change order issued by Vineyard City. The Contractor further represents that the individual signing below is properly authorized to bind the company under the terms of the Utah State Contract, that the Contractor holds all required licenses and qualifications necessary to perform the work, and that no Vineyard City elected official or employee holds a prohibited interest in this Work Order.

Upon receiving the Work Order from Vineyard City, the Contractor agrees to execute and return all required documents within the timeframe specified by the City, to furnish any requested bonds permitted under the State Contract, and to commence work upon receipt of a Notice to Proceed. The Contractor also agrees to maintain sufficient labor, equipment, and resources to diligently pursue and complete the work in accordance with the approved schedule, project requirements, and State Contract obligations. Failure to return the executed Work Order or provide required documentation may result in Vineyard City issuing the Work Order to another contractor under the Utah State Contract.

TASK ORDER

VINEYARD CITY
VINEYARD LOOP ROAD TRAFFIC SIGNAL AT MAIN STREET

BID SCHEDULE

All applicable sales taxes, State, and/or Federal, and any other special taxes, patent rights, or royalties are included in the price quoted in this Bid. Bid quantities are based on design drawings. Quantities will be billed based on actual quantities.

OAK HOLLOW ELECTRIC COMPANY

				Estimate Total	$149,740.27

Procurement Estimate for VINEYARD LOOP ROAD TRAFFIC SIGNAL AT MAIN STREET - Vineyard UT - 2025-54-201

Itemized Price List

	DESCRIPTION	Unit	M&P	Unit Price	Estimate Qty	Estimate Subtotal
Mobilization						
3	Mobilization for Installation, Upgrade, or Repair - Tooele, Summit, Wasatch, Utah Counties	Lump		$900.00	1	$900.00
12	Deliver or pick up steel materials at Intermountain Galvanizing, 1085 West 400 North, Lindon, Utah	Lump		$1,128.00	1	$1,128.00
Traffic Control (TC)			10% max of project value for <$50k, 8% max for $50k to $100k, 6% max for > $100K. Excludes UHP price value			
15	Set Up TC Shoulder Closure	Each		$180.00	44	$7,920.00
Removal						
27	Remove Concrete Sidewalk	Sq Ft		$5.50	100	$550.00
	Remove sign less than 20SF	Each		$280.00	4	$1,120.00
	Remove overhead device RRFB's	Each		$173.00	9	$1,557.00
29	Remove Concrete	Foot	This item includes all cutting, jacking, equipment, labor, and transport/disposal and fees. (For example, raised median B3, B4, B5, M2, etc.)	$24.00	100	$2,400.00
32	Remove Asphalt Pavement	Sq Yd		$31.00		$0.00
36	Remove Luminaire Extension, Arm - Salvage/Remove	Each		$188.00	4	$752.00
38	Remove Highway Luminaire Pole Foundation - Top 24"	Each		$363.00	4	$1,452.00
Roadway						
56	Untreated Base Course	Ton		$54.75	5	$273.75
65	Concrete Sidewalk	Sq Ft	Includes untreated base course.	$18.30	100	$1,830.00
75	Landscape Grading	Sq Yd		$4.00	360	$1,440.00
76	Topsoil	Ton		$19.20	30	$576.00
77	Turf Sod	Sq Ft		$6.00	200	$1,200.00
	HMA - 1/2 inch	Ton		$230.00	15	$3,450.00
78	Irrigation - Sch 40 1-1/2" PVC Pipe w/ Fittings	Foot		$4.55		$0.00
79	Irrigation - Sch 40 3/4" PVC Pipe w/ Fittings	Foot		$4.55		$0.00
80	Irrigation - Sprinkler Head w/ Riser	Each		$49.00		$0.00
Underground						
81	Pothole for Utilities	Each	This item may not be billed in conjunction with foundation excavation. Potholing for such is to be included in the foundation price.	$270.00	12	$3,240.00
83	Mast Arm Signal Pole Foundation - 3' x 12' - by Vacuum Truck	Each		$5,254.00	4	$21,016.00
87	Mast Arm Signal Pole Foundation in Ground Water or Sloughing Conditions	Each	In addition to Mast Arm Signal Pole Foundation items, for each foundation installed with these soil conditions.	$910.00		$0.00
88	Mast Arm Signal Pole Foundation in Rocky Soil Conditions	Each		$1,142.00		$0.00
93	Traffic Signal/Ped Pole Foundation - 2' x 3'	Each		$450.00	8	$3,600.00
95	Size 6 Cabinet Foundation - Precast	Each		$1,552.00	1	$1,552.00
97	2" Conduit - PVC	Foot		$4.27	220	$939.40
98	2" Conduit - SDR11 HDPE	Foot		$2.42	2900	$7,018.00
103	Conduit trenched in Native Soil, 18" cover (Excluding conduit cost)	Foot		$7.10	200	$1,420.00
110	5 - 6 conduits bored (Excluding conduit cost)	Foot		$30.12	365	$10,993.80
112	Additional Cost for Rocky Soil Conditions for Conduits Bored	Foot	In addition to Conduits Bored items, for every foot of conduit bored with rocky soil conditions	$7.00		$0.00
114	Type B Junction Box	Each		$1,690.00	3	$5,070.00
116	Type C Junction Box	Each		$2,181.00	1	$2,181.00
Wire/Electrical						
120	IMSA 20-1, 4 wire, AWG 14 gage	Foot		$1.72	1125	$1,935.00
121	IMSA 20-1, 7 wire, AWG 14 gage	Foot		$2.21	2350	$5,193.50
129	RHH-USE2-RHW2, 10 gage	Foot		$1.66	1300	$2,158.00
131	Bare Copper Ground Wire, No. 6	Foot		$1.63	1200	$1,956.00
132	Stranded Insulated Ground Wire, AWG 12 gage	Foot		$1.46	50	$73.00
133	Power Source, Dual Meter Underground Service Pedestal with Base	Each	Includes installation of foundation, concrete pad and coordination with Region signal crew and Utility Coordinator for inspection and cut over with local serving power company.	$5,990.00	1	$5,990.00
ITS						
140	Gamechanger Cable or equivalent - Contractor Furnished	Foot		$2.91	400	$1,164.00
141	6 Strand Pre-terminated Drop Cable - Contractor Furnished (300 ft or less)	Each		$1,020.00	1	$1,020.00
144	Type B Splice Case	Each		$1,740.00	1	$1,740.00
145	Fusion Splice	Each	Provide testing documentation per UDOT spec	$250.00	4	$1,000.00
146	CCTV Camera Cable - Contractor Furnished	Foot		$1.91	150	$286.50
147	CCTV Camera & Mount - State Furnished	Each	These items include cabinet wiring and RDPE setup for a fully functional CCTV.	$490.00	1	$490.00
Signal						
150	Mast Arm Signal Pole (for all arm lengths) - State Furnished	Each		$440.00	4	$1,760.00
152	30 - 55 ft Mast Arm - State Furnished	Each		$681.00	4	$2,724.00
156	5.5', 11' or 15' Traffic Signal/Ped Pole - State Furnished	Each		$180.00	8	$1,440.00
157	Size 6 Cabinet - State Furnished	Each	Includes removal of the old cabinet, transport and salvage to UDOT. Includes all wiring and labor to bring the signal back online.	$717.00	1	$717.00
164	Signal Head - State Furnished	Each	This item includes assembly of bracket and signal head (attaching visors and back plate to housing and installing LED modules) and installation.	$386.00	12	$4,632.00
175	Pedestrian Signal Clamshell Assembly	Each	Fully operational assembly - includes LED countdown module. Includes removal of existing assembly if present.	$530.00	8	$4,240.00
180	Audible Pedestrian Signal/Push Button/Sign Assembly - State Furnished	Each	This item includes removal/salvaging (if required) of existing assembly if present. Includes transport/disposal.	$198.00	8	$1,584.00
184	Mast Arm Mounted Sign (Sign Only)	Sq Ft	This item is intended for use with Mast Arm Mounted Sign Bracket.	$45.35	76.5	$3,469.28
186	Mast Arm Mounted Sign Bracket - State Furnished	Each	Mounting bracket as shown on Option B of standard drawing SL 3D. Includes 1 state furnished clamp kit, 2 state furnished sign clamps, and field-cutting state furnished tube. Includes z-bar.	$94.00	8	$752.00
190	LiDAR detector - State Furnished	Each	Includes installation of the mount, connection to the processor, splice box, pole-mount box (if applicable), installation of processor, and aiming.	$490.00	2	$980.00
191	Vibration Mitigator - State Furnished	Each	This item includes installation of device and mounting bracket on the end of the mast arm. No wiring or assembly is necessary.	$147.00	4	$588.00
Lighting						
208	Single or Dual 10' Arm or 15' Arm, or Vertical Extension for Luminaire - State Furnished	Each		$351.00	4	$1,404.00
213	LED Luminaire - State Furnished	Each	Includes Contractor-furnished wire in pole and fuse kits, removal of existing luminaire if present, and transport.	$204.00	8	$1,632.00
Pavement Marking/Signing						
216	Pavement marking Removal and Placement	Actual Cost +15%	Includes pavement marking removal (paint and thermoplastic) as outlined in project plans. Includes pavement marking (paint and thermoplastic) as outlined the project plans. Submit invoice from sub-contractor for payment.	$17,233.04	1	$17,233.04
Miscellaneous						
228					0	$0.00
231						$0.00

TASK ORDER

VINEYARD CITY
VINEYARD LOOP ROAD TRAFFIC SIGNAL AT MAIN STREET

TOTAL OF ALL SCHEDULES $ 215,328.88

TOTAL OF ALL SCHEDULES (IN WORD FORM) $

One Hundred Forty-Nine Thousand Seven Hundred Forty Dollars 27/100 Cents

Quantities will reflect the actual amounts installed (whether less or more) and work completed. Unit pricing shall be based on the State Contract pricing. City authorization is required prior to completing work above or not included in the bid schedule.

The undersigned hereby declares that he has visited the site and has carefully examined the Contract Documents, consisting of one volume, relating to the work covered by the task order documents, and the bid schedule reflects the work outlined in those documents.

Respectfully submitted,

_____

_____
Contractor

By: _____
Title

MEASUREMENT AND PAYMENT for Bid Schedule

GENERAL

The method of measurement and payment for the various items comprising the completed work follows: Payment for the items shall be compensation in full for the furnishing of all overhead, labor, material, tools, equipment, and appurtenances necessary to complete the work in a good, neat, and satisfactory manner as indicated on the Plans or as specified, with all connections, APWA required materials testing performed by an independent third party testing laboratory (paid for by the contractor), painting, cleanup, and related work completed. Each item, fixture, piece of equipment, etc., shall be complete with all necessary connections and appurtenances for the satisfactory use and/or operation of said item. No additional payment, including work done by the contractor for his convenience, shall be made for work related to each item unless specifically noted or specified. Measurement shall be in place in the completed work with no allowance for waste.

1. Item #1 – Mobilization and Demobilization
    a. APWA Standard Specification Reference: Section 01 71 13.
    Do not exceed 10% of the total contract dollar amount.
    b. Measurement: Lump Sum.
    c. Payment Covers: Cost of mobilization, demobilization, installation of temporary facilities, modifying and maintaining project sponsorship signs, site pre-construction video (digital recording is acceptable), and all necessary permits from applicable Vineyard City and bringing all necessary construction equipment to the site, andutility coordination.
    d. Includes preparation and obtaining approval for SWPPP plans meeting City MS4 requirements, application for, and obtaining SWPPP permit (including the NOI and all fees), and all surface and subsurface temporary controls and removal thereof upon completion of the project, and SWPPP inspections. Includes clearing and grubbing, erosion control, sediment control, watering and dust control, control and cleanup of offsite tracking of dirt and other construction debris.
    e. Includes obtaining City Land Disturbance Permit, and City Right-of-Way Permit. TheCity will waive the permit fees for these permits.
    f. Payment will be made on a percentage basis as follows:

Cumulative Percent of Original* Contract Amount Earned	Percent of Amount Bid for Mobilization to be Paid
First Estimate	30
20	25
60	25
90	10
Final 10 percent held until completion of punch list items, and final site clean-up has been performed.	10

    *Original contract is defined as the dollar value of all awarded bids at the time notice to proceed is issued.
    g. First mobilization payment will not be released until a copy of the pre-construction video recording is received by the engineer.

2. Item #2 – Construction Survey Staking
    a. Vineyard City Standard Specification Reference: Chapter 2.270, Chapter 3.055, APWA Standard Specification Reference: Section 01 71 23
    b. Measurement: Lump Sum.
    c. Payment Covers: All costs for labor, materials, equipment, and appurtenances required to conduct construction surveying and staking as required within the limits of construction as shown on the project plans. Payment will be made on a prorated percentage basis for actual work completed as a percent of the original contract amount. The final 10 percent will be held until all as-built documents and plans are received.
    d. Preparation and submittal of 1 set of mylar as-built plans, 3 sets of 11 x 17 paper plans, plus electronic versions in PDF and the most recent AutoCAD formats. As-builts will include XYZ coordinates to 0.01-foot accuracy for any deviations from plan lines and grades.
3. Item #3 – Traffic Control
    a. Utah Manual on Uniform Traffic Control Devices, Part 6
    b. Measurement: Lump Sum.
    c. Payment Covers: Costs associated with all materials, labor, equipment, rental costs, barricades, flagging, signs, temporary striping, detours, and any incidental to safely control traffic in accordance with the most recent version of the Manual of Uniform Traffic Control Devices (MUTCD). This item also includes pedestrian traffic control to maintain sidewalk and residence access, and ensure pedestrian safety, and additional signing as needed to maintain business access throughout the project as required by the contract documents.
    d. Price includes all costs to have traffic control plans prepared and stamped by a professional engineer licensed in the State of Utah and approved by the owner and engineer. No additional payment will be made to revise plans to comply with the MUTCD.
    e. Payment is prorated by the total dollar amount of work completed at the time the partial estimate is processed as a percentage of the original contract amount.
4. Item #4 – Remove & Dispose Concrete Median
    a. Measurement: Square Foot
    b. Payment Covers: All costs for labor, equipment, expendable supplies, coordination, and services required.
    c. Includes removing and disposing concrete waste, debris, and dust within the vicinity of the work.
    d. Depth not measured
    e. Includes sawcut and grinding to correct sawcut errors
    f. All incidental work required to remove and dispose concrete median.
5. Item #5 – Remove Street Light & Obliterate Foundation
    a. Measurement: Each
    b. Payment Covers: All costs for labor, equipment, expendable supplies, coordination, and services required
    c. Includes removing and disposing/salvaging street light equipment, obliterating existing foundation to a minimum 12”, concrete waste, debris, and dust within the vicinity of the work.

d. All incidental work required to remove street light and obliterate foundation.

6. Item #6 – Remove Striping as Required
    a. Measurement: LS
    b. Payment Covers: All costs for labor, equipment, expendable supplies, coordination, and services required
    c. Includes removing existing roadway striping as coordinated with Vineyard City staff
    d. All incidental work required to remove roadway striping.

7. Item #7 – Remove RRFB System
    a. Measurement: Each
    b. Payment Covers: All costs for labor, equipment, expendable supplies, coordination, and services required.
    c. Includes removing RRFB poles, foundations to a minimum 12", salvaging signs to City.
    d. Includes removing and disposing concrete waste, debris, and dust within the vicinity of the work.
    e. All incidental work required to remove RRFB System.

8. Item #8 – Remove & Dispose Existing Post and Base
    a. Measurement: Each
    b. Payment Covers: All costs for labor, equipment, expendable supplies, coordination, and services required to remove and dispose existing post and base
    c. Includes all labor, coordination required to remove and dispose post and base.
    d. Includes removal of existing foundation (as required) to a minimum 12" depth
    e. All incidental work required to relocate existing junction box.

9. Item #9 – Remove Existing Street Signs on Light Pole
    a. Measurement: Each
    b. Payment Covers: All costs for labor, equipment, expendable supplies, coordination, and services required to remove and salvage existing street signs
    c. Includes removal of all signs per plans within the project limits and all associated hardware and to be salvaged to Vineyard City
    d. All incidental work required to remove existing street signs on light pole.

10. Item #11 – Asphalt Pavement per APWA Plan 255
    a. Measurement: Square Foot
    b. Payment Covers: All costs for labor, equipment, expendable supplies, coordination, and services required to construct concrete flatwork.
    c. Includes all labor, shipping and import costs, equipment, expendable supplies, coordination and services to complete asphalt pavement.
    d. All incidental work required to complete asphalt pavement.

11. Item #11 – Landscape Restoration
    a. Vineyard City Standard Specification Reference: Chapter 5 and 11
    b. Measurement: Square Foot.
    c. Payment Covers: All costs for labor, materials, equipment, and appurtenances required to salvage, stockpile, and store existing landscape materials, and restore turf sod, bark mulch, and gravel landscaping matching existing improvements and to be

compatible with newly constructed features within the limits of construction.

d. Price includes sprinkler system modification where needed to be compatible with the newly constructed features.
e. Match existing sprinkler head and valve Brand and Type. Contractor may elect to furnish new materials at no additional cost.
f. All incidental work required to complete landscape restoration.

12. Item #12 – Pavement Markings - Paint
    a. Measurement: Linear Foot
    b. Payment Covers: All costs for labor, materials, equipment, and appurtenances required to install paint pavement markings.
    c. Includes cleanup of spillage or splotch paint locations. If paint/thermoplastic is damaged/smeared from vehicle traffic or other reasons before drying/settling, removal and replacement is required.
    d. All incidental work required to complete paint pavement markings.

13. Item #13 – Pavement Markings - Thermoplastic
    a. Measurement: Each
    b. Payment Covers: All costs for labor, materials, equipment, and appurtenances required to install thermoplastic pavement messages.
    c. Includes cleanup of spillage or splotch paint locations. If paint/thermoplastic is damaged/smeared from vehicle traffic or other reasons before drying/settling, removal and replacement is required.
    d. All incidental work required to complete Thermoplastic Pavement Markings.

14. Item #14 – Traffic Signal System at VINEYARD LOOP RD & MAIN STREET
    a. UDOT Standard Specification Section 02892, UDOT SL Series Standard Drawings
    b. Measurement: Lump Sum.
    c. Payment Covers: All costs for labor, materials, equipment, and appurtenances required to install all owner furnished signal materials, and to furnish and install all remaining required elements as shown on the plans for a fully functional signal in accordance with UDOT Standard Specifications, and as contained herein.
    d. Price includes protecting existing utility facilities, performing exploratory excavation (potholing) to identify utility conflicts, and coordinating with the conflicting utility for needed relocations.
    e. Price includes coordination with the owner's designated agent for programming the traffic controller, and obtaining final acceptance for all elements of the traffic control system.
    f. Price includes coordination with Rocky Mountain Power and Vineyard City for the power source. The contractor will furnish and install an underground service pedestal capable of providing un-metered power for the intersection luminaires, and metered power for the signalized intersection. Rocky Mountain Crews will make the physical connection to energize the power source.
    g. Price includes pickup of all City furnished signal materials from the UDOT Central Warehouse and delivery to the project.

LIST OF SUBCONTRACTORS

The Bidder shall list below the names and location of place of business of each subcontractor who will perform work or labor or who will render service to the prime contractor in or about the construction of the Work or improvement, or a subcontractor duly licensed who, under subcontract to the prime Contractor, specially fabricates and installs a portion of the Work or improvement according to detailed drawings contained in the Contract Documents, in an amount in excess of one-half of one percent of the prime Contractor's total bid, or $10,000, whichever is greater. After the opening of bids, no changes or substitutions will be allowed except as otherwise provided by law. The listing of more than one subcontractor for each item of Work to be performed with the words "and/or" will not be permitted. Does the subcontractor have insurance? Write "yes" or "no" under the column for "Subcontractor Insurance".

Work to be Performed	Contractor License Number	Percent of Total Contract	Subcontractor's Name, Address, and Contact Person	Sub-contractor Insurance
1.				
2.				
3.				
4.				

VINEYARD CITY CONSTRUCTION AGREEMENT

THIS AGREEMENT is made and entered into as of this 10th day of DECEMBER, 2025, by and between VINEYARD CITY, Utah, a Utah municipal corporation (hereinafter "the City"), and OAK HOLLOW ELECTRIC COMPANY (hereinafter "Contractor").

PURPOSE: For the project known as the Vineyard Loop Road Traffic Signal at Main Street (hereinafter "Project"), which consists of the following:

NOW, **THEREFORE**, in consideration of the mutual promises contained herein, and the payments to the Contractor by the City the parties hereby agree as follows:

SECTION 1. SCOPE OF WORK. Contractor shall furnish all labor, materials and equipment to complete the Project, consisting of the work described in the Information for Bidders as the Basic Bid, and the following additive alternates: NONE, as specifically set out in the contract specifications, which is made a part hereof by reference, herein called the "Project."

The Project will be bound by the specifications referenced herein, according to the Advertisement for Bid, the Information for Bidders, the General Project Requirements and Specifications provided by City, the Bid of the Contractor, Bid Bond, Drawings, Notice of Award and Notice to Proceed, collectively referred to as the Contract Documents, all of which are incorporated herein by reference. To the extent that this Agreement conflicts in any way with a proposed form agreement which may have been submitted as part of the bid specifications, this Agreement shall control.

If any of the work performed by Contractor in any phase of the Project does not meet City standards as outlined in the bid documents and specifications, then Contractor shall immediately repair or correct the work at no additional cost to City.

15. **SUBCONTRACTORS**. No part of this contract shall be subcontracted by the Contractor without prior written approval by City through the Project Manager/Engineer. The Contractor shall be fully responsible to the City for the acts and omissions of its Subcontractors and of persons either directly or indirectly employed by them, as it is for the acts and omissions of persons directly employed by it.

The Contractor shall, within ten (10) days of a submittal of request for final payment, include an affidavit showing satisfactory evidence that all claims of subcontractors, laborers, and materialmen who supplied services or materials to the Project have been fully paid, discharged, or waived. The Contractor shall submit lien waivers for each pay release.

If the City reasonably believes that Contractor has failed to pay Subcontractors, materialmen, or laborers for work on the Project within a reasonable time of when payment is due, then City may, after having notified the Contractor, either pay unpaid bills or withhold from the release of Contractor's payment bond for this Project, a sum of money deemed reasonably sufficient to pay any and all such lawful claims until satisfactory evidence is furnished that all liabilities have been fully discharged and a ten percent (10%) fee for administering such claims.

16. **STANDARDS OF WORKMANSHIP**. Contractor shall demonstrate workmanship equal to or better than current industry standards for this Project. Where City specifications exist (for example: asphalt, concrete, irrigation, sprinkling system, and landscaping), they shall provide the benchmark for determination of acceptability.

17. **INSPECTION AND TESTING**. All materials and equipment used in the construction shall be subject to inspection by the Project Manager/Engineer. If laws, ordinances, rules, or regulations of any public authority having jurisdiction require any work to specifically be inspected, tested, or approved by someone other than the Project Manager/Engineer, the Contractor shall give the Project Manager/Engineer timely notice of readiness. Inspections, tests or approvals by the City or appropriate authorities will not relieve the Contractor from obligations to perform the work in accordance with the requirements of the Contract Documents and/or provisions. The Project Manager/Engineer and other designated persons will at all times have access to the work. All work shall ultimately be inspected for final acceptance by the Project Manager/Engineer within a reasonable time upon receipt of notice from the Contractor that work is complete and ready for final inspection.

During construction, the work will be inspected and observed by the Project Manager/Engineer or his designated representative. All work that is deficient or does not meet specifications shall be removed and replaced with proper material at Contractor's expense.

18. **WARRANTY**. Contractor warrants that all materials and supplies used in the construction of the Project shall be new, except as otherwise agreed to in writing by the City's Representative. All materials, equipment, parts and labor and any necessary corrections to the Project shall be guaranteed for a period of one (1) year following the date of substantial completion of the Project under the terms of the performance bond.

SECTION 2. PERFORMANCE AND PAYMENT BONDS. Contractor shall furnish to the City a payment and performance bond satisfactory to the City guaranteeing Contractor's payment and performance, in the amount, for each separately, of one hundred percent (100%) of the Contract Amount.

SECTION 3. INSURANCE. Unless otherwise specified in the bid documents, the Contractor shall procure and maintain for the duration of the Agreement, insurance against claims for injuries to persons or damage to property which may arise from or in connection with the performance of the work hereunder by the Contractor, their agents, representatives, employees, or subcontractors.

The Contractor shall provide a Certificate of Insurance evidencing:

A. Automobile Liability insurance with limits no less than five hundred thousand dollars ($500,000) combined single limit per accident for bodily injury and property damage.

B. Commercial General Liability insurance written on an occurrence basis with limits no less than one million dollars ($1,000,000) combined single limit per occurrence and two million dollars ($2,000,000) aggregate for personal injury, bodily injury and property damage. Coverage shall include but not be limited to blanket contractual; products/completed operations; broad form property damage; explosion, collapse and underground (XCU) if specifically requested; and employer's liability.

C. Professional Liability (Errors and Omissions) insurance written on an occurrence basis with limits no less than one half million dollars ($500,000) combined single limit per occurrence.

D. Workers Compensation insurance written on an occurrence basis with limits no less than one half million dollars ($500,000) combined single limit per occurrence.

The City shall be named as an additional insured on the insurance policy and a copy of the endorsement naming the City as an additional insured shall be attached to the Certificate of Insurance. The City reserves the right to request certified copies of any required policies.

The Contractor's insurance shall contain a clause stating that coverage shall apply separately to each insured against whom claim is made or suit is brought, except with respect to the limits of the insurer's liability.

SECTION 4. CONTRACT AMOUNT, ACCEPTANCE OF WHOLE, ADDITIONS. City shall pay Contractor the total sum of **$ 147,292.14** for all work and materials expended to complete this Project, which shall include the cost of all bonds, insurance, and all charges, fees, permits (including water and sewer fees, unless waived), expenses or assessments of whatever kind or character that are or may be necessary to complete this Project, including any additive alternates listed within the Scope of Work described in Section 1.

This Project, including the additive alternates awarded in Section 1, if any, is awarded in whole to the Contractor; the City will accept the Project in whole. However, nothing contained herein shall prevent the City from reducing the work to be done under this Agreement pursuant to Section 8 herein, nor shall anything herein be construed to require that Contractor be awarded any of the additive alternates bid by the Contractor or change order(s). The City retains the right to award any of the additive alternates or change order(s), or any part of them, to other contractors at any time, except those awarded to the Contractor in Section 1.

SECTION 5. PERMITS AND FEES. As set out in Section 4 above, the Contract Amount includes the price of all normally applicable fees and permits. The City may, at its discretion, arrange for the waiver of certain fees, permits and expenses.

SECTION 6. TERMS OF PAYMENT. The City shall pay for services provided hereunder according to and in an amount not to exceed that detailed in the payment bid schedule and only upon Contractor's request on forms approved by and submitted to the Project Manager. The City shall make payment within thirty (30) days thereafter. Requests for a more rapid payment may be considered if a discount is offered for early payment. At no time shall the aggregate amount of money paid to the Contractor in proportion to the Contract Amount be greater than the proportion of the work performed at that point to the total Project work. No payment shall be made for any service rendered by the Contractor except for services set forth and identified in this Agreement. The City reserves the right to withhold payment in whole or part from the Contractor for non-compliance with the provisions of the Contract Documents.

A. RETAINAGE. The City may, in its sole discretion; (1) retain five percent (5%) of the value of all work done and materials or equipment supplied as part security for the fulfillment of the Agreement by the Contractor; or (2) retain the final payment of up to five percent (5%) of the total project amount. As work nears completion and solely at the City's discretion, the City may reduce the retainage to an amount more in line with the work remaining. The City reserves the right to retain all amounts previously withheld or due, including any liquidated damages, until all services specified herein are complete. Any money withheld pursuant to this section shall be placed in an interest-bearing account, and the interest shall also be payable to the Contractor upon final payment.

Before final payment is made, the Contractor must submit evidence satisfactory to the City that all

payrolls, material bills, subcontracts, and all outstanding indebtedness in connection with the Project have been paid for.

The City may withhold a reasonable amount of the payment bond sufficient to cover any outstanding indebtedness or monies owed or claimed by any person who supplied work or materials to the Project plus ten percent (10%) of such indebtedness as the City's cost of administering such claims until Contractor supplies a release satisfactory to the City, signed by all persons who have supplied labor or materials to the Project or, at the City's option if no claim is made, until 105 days after the date on which any person performed the last of the labor or supplied the last of the material for the Project and upon written request from the Contractor. The Contractor shall supply to the Project Manager/Engineer within a reasonable time after his request a signed statement verifying all the suppliers, subcontractors and other persons who have supplied labor or materials to the Project.

B. FINAL PAYMENT. Acceptance by the Contractor of the final payment from the City shall release the City of all claims, demands and liability of the Contractor, its officers, agents, employees, and subcontractors, whether communicated or not by the Contractor, except with respect to those matters referred to in writing delivered to the Contractor and approved in writing by the Project Manager.

SECTION 7. COMPLETION TIME. The work on this Project shall commence within ten days of receipt of the Notice to Proceed and shall be completed by **MAY 30, 2026**. Work stoppage due to inclement weather conditions and other factors must be approved in writing by the Project Manager. Inclement weather shall not otherwise constitute cause for delay. Unless otherwise agreed by the City by Change Order, no damages shall become due to Contractor for City-caused delay. A Change Order for delay will generally be accepted for delay so excessive and unreasonable that it is beyond the scope of the Contract or delay attributed to direct, active or willful interference by the City. The Change Order must be based upon actual damages sustained by the Contractor which are directly attributed to the delay.

In the event that Contractor fails to complete all of the work required herein within the time limit set out above, then for each partial or complete day during which the work remains uncompleted thereafter, the Contractor agrees to pay the City Liquidated damages as specified in the Information for Bidders of the specifications. The parties agree that the daily liquidated damages provided for herein are reasonable and fair and are not a penalty. TIME IS OF THE ESSENCE IN THIS AGREEMENT.

SECTION 8. ADDITIONAL WORK/CHANGE ORDERS. The City may enlarge or reduce the work to be performed by Contractor hereunder by written notification to Contractor, including changes to the plans and specifications. The City shall pay Contractor for any additional work so requested and shall reduce the payment to the Contractor for any reduction in labor, materials, overhead and profit margin resulting from the reduction in the work. Except as the City shall so notify the Contractor in writing, it is understood and agreed by the parties hereto that no money will be paid to the Contractor for any new or additional labor or materials furnished unless a written modification is agreed to in a document signed by both parties.

The value of any work covered by a change order or of any claim for increase or decrease in the contract price shall be determined by one or more of the following methods in order of precedence listed below:

A. An agreed lump sum: or in the event the parties cannot agree; then

B. The unit rate for the work bid by the Contractor, if applicable, or in the event there was no such rate bid; then

C. The actual cost for: (1) labor; (2) materials; (3) supplies; (4) equipment; (5) direct overhead (not to

exceed 5% of the sum total of Items 1-3, unless approved by the City); and (6) other services necessary and approved by the City to complete the work. In the event of a net increase in the Contract Amount for a change order, the City shall allow a payment to the Contractor of an additional ten percent (10%) of the actual cost of the work, not including direct overhead or bond costs, to cover the cost of general overhead and profit. The Contractor may also charge the City for actual cost of the net increase in bond costs because of the overall change to the Contract Amount. The City specifically reserves the right to request documentation, including but not limited to payroll stubs, bond bills, and invoices, to validate the Contractor's calculations.

SECTION 9. DISPUTES. Except as otherwise provided in this Agreement, every dispute concerning a question of fact arising under this Agreement which is not settled by Agreement between the parties shall be decided by the City. The decision of the City shall be final and conclusive unless, within thirty (30) days from the date of receipt of such decision, the Contractor shall mail or otherwise furnish the City a written signed appeal addressed to the Project Manager/Engineer. In connection with any appeal proceeding under this clause, the Contractor will be afforded an opportunity to be heard and to offer evidence in support of its appeal. Pending final decision of a dispute hereunder, the Contractor will proceed diligently with the performance of the contract and in accordance with the City's decision. The decision of the City shall be final and conclusive but shall not be arbitrary or unreasonable. Although this Contract has been drafted by the City, the Contractor expressly agrees that any ambiguity herein shall be resolved in favor of the City.

SECTION 10. DEFAULT, REMEDY AND TERMINATION. The City may terminate this agreement upon the occurrence of one or more of the following events:

A. If Contractor or any Subcontractor should substantially violate any of the provisions of this contract;

B. If Contractor substantially fails to perform any part of this Agreement;

C. If Contractor repeatedly fails or becomes unable to perform the services under this Agreement as required herein, or substantially fails to provide services under this Agreement for a period of seventy-two (72) hours;

D. If Contractor (1) shall become insolvent in a bankruptcy sense; (2) shall be generally not paying its debts as they become due, or within a reasonable time thereafter; (3) shall suffer, voluntarily or involuntarily, the entry of an order by any court or governmental authority authorizing the appointment of or appointing of a custodian (as that term is defined in 11 U.S.C. §101[10]), receiver, trustee, or other officer with similar powers with respect to it or any portion of its property which remains and is not dismissed for a period of ninety (90) days; (4) shall suffer, voluntarily or involuntarily, with or without judicial or governmental authorization, any such custodian, receiver, trustee, or other officer with similar powers to take possession of any part of its property which third party remains in possession for an excess of ninety (90) days; (5) shall suffer, voluntarily or involuntarily, the filing of a petition respecting an assignment for the benefit of creditors which is not dismissed for a period of ninety (90) days; (6) shall be dissolved; (7) shall become the subject of any proceeding, suit, or action at law or in equity under or relating to any bankruptcy, reorganization or arrangement of debt, insolvency, readjustment of debt, receivership, liquidation, or dissolution law or statute or amendments thereto to be commenced by or against it or against any of its property which remains un-dismissed for a period of ninety (90) days; (8) shall voluntarily suspend substantially all of its business operations; (9) shall be merged with, acquired by, or otherwise absorbed by any individual, corporation, or other business entity or organization of any kind except for any individual corporation or other business entity or organization which is controlled by, controlling, or under common control with the Contractor; or (10) shall take action for the purpose of any of the foregoing,

After serving ten (10) days written notice on the Contractor and its surety of its intention to terminate the services of Contractor, and if within ten (10) days after serving such notice, the violation is not corrected to City's reasonable satisfaction, the City then may take over the work and prosecute it to completion by contract or by any other method it may deem advisable at the expense of the Contractor. The Contractor and the bonding company shall be liable to the City for any reasonable cost occasioned by the City in excess of the amount agreed for the service herein.

The Contractor shall be entitled to a hearing before a City hearing officer upon the issue of termination if it submits a written request therefore within seven (7) days of the service of the notice of the City's intent to terminate. The Contractor shall be entitled to be heard at such hearing on the issue of termination. The Contractor shall not bring an action against the City, its officers, agents or employees arising out of or relating to the termination of this Agreement before the decision is issued by the City's hearing officer(s).

Waiver of any default shall not be deemed to be a waiver of any subsequent default. Waiver of any provision of this Agreement shall not be construed to be modification of the terms of this Agreement, unless stated to be such in writing, signed by the City's authorized representative.

The Contractor shall continue the performance of this agreement to the extent not terminated under the provisions of this section.

The rights and remedies of the City provided in this clause shall not be exclusive and are in addition to any other rights and remedies provided by law or under this agreement.

SECTION 11. HOLD HARMLESS INDEMNIFICATION. The Contractor clearly and unequivocally agrees to indemnify and to hold the City and its agents, employees, and officers, harmless from and shall process and to defend at its own expense any and all claims, demands, suits, at law or equity, actions, penalties, losses, damages, or costs, of whatsoever kind or nature, brought against the City arising out of, in connection with, or incident to the execution of this Agreement and/or the Contractor's performance or failure to perform any aspect of this Agreement; provided, however, that if such claims are caused by or result from the concurrent negligence of the City, its agents, employees, and officers, this indemnity provision shall be valid and enforceable only to the extent of the negligence of the Contractor or others; and provided further, that nothing herein shall require the Contractor to hold harmless or defend the City, its agents, employees and/or officers from any claims arising from the sole negligence of the City, its agents, employees, and/or officers. The Contractor expressly agrees that the indemnification provided herein constitutes the contractor's waiver of immunity under Utah Code Section 34A-2-105 for the purposes of this Agreement. This waiver has been mutually negotiated by the parties. The provisions of this section shall survive the expiration or termination of this Agreement. No liability shall attach to the City by reason of entering into this Agreement except as expressly provided herein.

SECTION 12. CONTROLLING LAW. These general conditions shall be construed in accordance with and enforced under the laws of the State of Utah. Any action of law, suit in equity, or judicial proceeding for the enforcement of the Agreement, or any provisions thereof, shall be instituted and maintained only in any of the courts of competent jurisdiction in Utah County, Utah.

SECTION 13. ASSIGNMENT. The Contractor shall not assign nor transfer any interest in this agreement without the prior written consent of the City, provided however, that claims for compensation due or to become due the Contractor from the City under this agreement may be assigned to a bank, trust company, or other financial institution without such approval. Written notice of any such assignment shall be promptly furnished to City.

SECTION 14. SAFETY AND TRAFFIC CONTROL. Contractor shall take all reasonable precautions to protect the safety of pedestrians, school children, motorists, and others who may use or come near to the Project site, including but not limited to compliance with the Manual of Uniform Traffic Control Devices.

SECTION 15. SAFETY AND PROTECTION OF THE WORK. Contractor shall be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the project work. Contractor shall provide reasonable protection to prevent damage, injury or loss to employees on the Project work and all other persons who may be affected thereby, materials and equipment, whether on or off the site, and other property at the work site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures and utilities not designated for removal, relocation or replacement in the course of construction. In addition, the Contractor shall give all notices and comply with all applicable laws, ordinances, rules, regulations, and lawful orders of any public authority bearing on the safety of persons or property or their protection from damage, injury or loss.

The Contractor shall erect and maintain, as required by the existing conditions and progress of the work, all reasonable safeguards for safety and protection, including posting danger signs and other warnings against hazards, setting safety regulations, and notifying owners and user of adjacent utilities.

The Contractor shall promptly remedy all damage or loss to any property referred to in this Section caused in whole or in part by the Contractor, any subcontractor, sub-subcontractor or anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable and for which the Contractor is responsible, except for acts or omissions by the City or anyone directly or indirectly employed by it, or by anyone for whose acts it may be liable, and not attributable to the fault or negligence of the Contractor. Contractor shall remove from the site all cuttings, debris, equipment and unused material.

SECTION 16. UNENFORCEABLE CONTRACT, WAIVERS. In the event that any provision of this contract shall be ruled invalid and unenforceable, the remaining provisions shall be valid and binding upon the parties. One or more waivers by either party of any provision, term or covenant shall not be construed by the other party as a waiver of a subsequent breach of the same provision by the other party.

SECTION 17. ENTIRE AGREEMENT. This contract represents the entire integrated agreement between City and Contractor and supersedes all prior negotiations, representations, or agreements, either written or oral. This agreement may be amended only by written modification signed by both parties.

SECTION 18. COMMENCEMENT OF WORK. Contractor will commence work as required by the specifications within ten calendar days after receiving the NOTICE TO PROCEED.

SECTION 19. UTILITIES. The right is reserved to the owners of public utilities and franchises to enter upon the street or work site for the purpose of making repairs or changes of their property that may become necessary by the work. The City shall also have the privilege of entering upon the street or work site for the purpose of repairing culverts, storm drains, water system repairs or adjustments and all other necessary City work.

The Contractor takes the whole risk, responsibility, and expense with respect to the location of utilities, and in working with utility owners about locating, moving, repairing, and modifying utilities. All utility locations shown on the plans and specifications are approximate and are marked on the plans, if at all, only for convenience. The City makes no representation about the location of any such utilities, and Contractor is encouraged to contact utility companies and owners about the location of all utilities that may be impacted by or impact the Project work.

SECTION 20. HOURS AND DAYS OF WORK. All work performed by the Contractor, its subcontractors, materialmen, agents and employees shall be performed during work hours of 7:00 a.m. to 7:00 p.m. Monday through Saturday unless otherwise specified. When work is prohibited, no exterior construction, excavation or delivery of supplies and concrete are allowed.

SECTION 21. OBEY LAWS. Contractor shall obey all laws, ordinances and regulations of the United States, the State of Utah, and City in performing this Agreement.

SECTION 22. NONDISCRIMINATION.

A. The City is an equal opportunity employer.

B. In the performance of this Agreement, the Contractor will not discriminate against any employee or applicant for employment on the grounds of race, creed, color, national origin, sex, marital status, age or the presence of any sensory, mental or physical handicap; provided that the prohibition against discrimination in employment because of handicap shall not apply if the particular disability prevents the proper performance of the particular worker involved. The Contractor shall ensure that applicants are employed, and that employees are treated during employment without discrimination because of their race, creed, color, national origin, sex, marital status, age or the presence of any sensory, mental or physical handicap. Such action shall include, but not be limited to employment, upgrading, demotion or transfers, recruitment or recruitment advertising, layoff or termination, rates of pay or other forms of compensation, and programs for training including apprenticeships. The Contractor shall take such action with respect to this Agreement as may be required to ensure full compliance with local, state and federal laws prohibiting discrimination in employment.

C. The Contractor will not discriminate against any recipient of any services or benefits provided for in this Agreement on the grounds of race, creed, color, national origin, sex, marital status, age or the presence of any sensory, mental or physical handicap.

D. If any assignment or subcontracting has been authorized by the City, said assignment or subcontract shall include appropriate safeguards against discrimination. The Contractor shall take such action as may be required to ensure full compliance with the provisions in the immediately preceding paragraphs herein.

SECTION 23. THIRD PARTY RIGHTS. Nothing herein is intended to confer rights of any kind in any third party. No member, officer, or employee of the City shall have any interest, direct or indirect, in this Agreement or the proceeds thereof.

SECTION 24. PROJECT MANAGER/ENGINEER. The Project Manager/ Engineer for this Project is Christopher T. Trusty, City Engineer, or such other person designated by the City to the Contractor orally or in writing.

SECTION 25. PARTIES' REPRESENTATIVES. For purposes of notice required or desired by the parties, or communication involving the services under this Agreement, such notice or communication shall be deemed to have been given when personally delivered or mailed, or sent by electrical transmission certified mail, postage pre-paid, to the parties at the following addresses:

Contractor: _____

Attention: _____

Address: _____

City, State, ZIP: _____

or such other person designated in writing by the Contractor's chief administrative officer, at the Contractor's address set out first above;

City: Project Manager/Engineer, at the address set out first above for the City, or when given to such other person as either of the above representatives shall designate in writing. The designation of any address may be changed by notice given in the same manner as provided in this paragraph.

SECTION 26. SEVERABILITY. Should any part of this Agreement for any reason be declared invalid, such decision shall not affect the validity of any remaining provisions, which remaining provisions shall remain in force and effect as if this Agreement had been executed with the invalid portion thereof eliminated, and it is hereby declared the intention of the parties that they would have executed the remaining portion of this Agreement without including any such part, parts, or portions which may, for any reason, be hereafter declared invalid. If any provision of this Agreement is held invalid or unenforceable with respect to particular circumstances, such provision shall nevertheless remain in full force and effect in all other circumstances.

SECTION 27. DISPUTE RESOLUTION. The parties agree to attempt in good faith to resolve all disputes arising between them first through expedited mediation (not to exceed seven business days from the receipt by a party of a notice of request for mediation) and, if mediation is not successful, through negotiated settlement or court action. In the event that the actions of one party will cause or are causing the other immediate irreparable injury requiring temporary injunctive relief and the acting party is unwilling to suspend its planned or existing activity to allow for expedited mediation, the aggrieved party may file suit and seek such temporary injunctive relief in a court with jurisdiction over the subject matter of the dispute. Dispute resolution under this section shall be initiated by service by one party upon the other of a written notice and request to mediate, identifying the subject matter of the dispute and the nature of the relief sought. Unless otherwise agreed in writing at the time of mediation, mediation shall be conducted through and under the mediation rules of the American Arbitration Association.

The parties agree to submit all disputes not resolved by mediation to binding arbitration under the construction industry arbitration rules of the American Arbitration Association and the Utah Uniform Arbitration Act.

IN WITNESS WHEREOF, the parties have entered into this agreement on the day and year set out at the top of this Agreement.

VINEYARD CITY

_____

_____

Title

CONTRACTOR

_____

Company Name

_____

Signature

_____

Printed Name

_____

Title

_____

Utah Contractor License Number

ATTACHMENTS

NOTICE TO PROCEED

VINEYARD CITY
VINEYARD LOOP ROAD TRAFFIC SIGNAL AT MAIN STREET

DATE: / /2025_____

TO:_____
_____
_____

You are hereby notified to commence work in accordance with the Contract dated_____, and you are to complete the work within by (05/30/2026).
Bid Schedule.

The date of final completion is therefore (05/30/2026)

By: _____

Title: City Engineer

ACCEPTANCE OF NOTICE

Receipt of the above NOTICE to
PROCEED is hereby acknowledged by
_____,
this the_____day of_____20____.

By: _____

Title: _____

CONTRACTOR'S APPLICATION FOR PAYMENT

To: _____

From: _____

_____

Project:_____
Payment Request No.: _____
Period:_____through _____

1. Contract Time	_____	Calendar Days
2. Time Elapsed	_____	Calendar Days
3. Remainder	_____	Calendar Days
4. Work Completed	_____	Percent
5. Time Elapsed Percent	_____	Percent

6. Original Contract Amount		$_____
7. Approved Change Order No's	_____	$_____
8. Adjusted Contract Amount		$_____

	Previous Period	This Period
9. Total Value to Date	9a_____	9b _____
10. Total Retainage to Date	10a_____	10b_____
11. Value This Request	11a_____	11b_____
12. Retainage This Request	12a_____	12b_____
13. Reduction of Retainage	13a_____	13b_____

14. NET PAYMENT AMOUNT TO CONTRACTOR _____

We certify the above is a true statement of work done.

CONTRACTOR - _____

BY:_____

TITLE:_____

DATE: _____

OWNER – VINEYARD CITY

BY:_____	BY:_____
TITLE:_____	TITLE:_____
DATE:_____	DATE: _____

(Instructions on Next Page)

PAYMENT REQUEST INSTRUCTIONS

ITEM

2. Elapsed Calendar Days from Date of Notice to Proceed.

3. Item 1 Minus Item 2

4. Divide Item 9b by Item 8 and Multiply by 100

5. Divide Item 2 by Item 1 and Multiply by 100

9a. Item 9b from Previous Payment Request

10a. Item 10b from Previous Payment Request

11a. Item 11b from Previous Payment Request

12a. Item 12b from Previous Payment Request

13a. Item 13b from Previous Payment Request

9b. Total Value of Work Completed to Date of this Request (Attach Payment Breakdown).

10b. 10% of Item 9b Unless Percent Reduction is Allowed by Owner.

11b. Item 9b Minus Item 9a.

12b. Item 10b Minus Item 10a.

13b. Amount Authorized by Owner.

14. Item 11b Minus Item 12b Plus Item 13b.

CHANGE ORDER

ORDER NO. _____

DATE _____

CONTRACT FOR: VINEYARD LOOP ROAD TRAFFIC SIGNAL AT MAIN STREET

OWNER: Vineyard City

TO: _____
(Contractor)

You are hereby requested to comply with the following changes from the Contract Documents, Plans and Specifications:

Description of Changes (Supplemental Plans & Specifications Attached)	Item	Decrease Contract Price	Increase Contract Price

_____

JUSTIFICATION: _____

_____

The amount of the Contract Price will be (_____) by the sum of: ($_____).

The Contract Price including this and previous Change Orders will be:

_____ ($_____).

This document will become a modification to the Contract and all provision will apply hereto.

Requested _____ _____
(Contractor) (Date)

Recommended _____ _____
(Engineer) (Date)

Approved _____ _____
(Owner) (Date)

AFFIDAVIT OF PAYMENT

VINEYARD CITY

To All Whom it May Concern:

WHEREAS, the undersigned Contractor has furnished labor and materials under a contract dated for the project named VINEYARD LOOP ROAD TRAFFIC SIGNAL AT MAIN STREET of which Vineyard City is the Owner.

NOW, THEREFORE, this_____day of_____, 20___, the undersigned Contractor hereby certifies that, except as listed below, he has paid in full or has otherwise satisfied all obligations for all materials and equipment furnished, for all work, labor, and services performed, and for all known indebtedness and claims against the Contractor for damages arising in any manner in connection with the performance of the Contract referenced above for which the Owner or his property might in any way be held responsible.

EXCEPTIONS: (If none, write "none". If required by the Owner, the Contractor shall furnish bond satisfactory to the Owner for each Exception.)

_____

Contractor (Name of sole ownership, corporation or partnership)

Affix corporate
seal here

_____

(Signature of Authorized Representative)

Title: _____

CONSENT OF SURETY FOR FINAL PAYMENT

VINEYARD CITY

Project Name: VINEYARD LOOP ROAD TRAFFIC SIGNAL AT MAIN STREET

Location: Vineyard City

Type of Contract:_____

Amount of Contract _____

In accordance with the provisions of the above-named contract between the Owner and the Contractor, the following named surety:

_____

_____

_____

On the Payment Bond of the following named Contractor:

_____

_____

_____

Hereby approves of final payment to the Contractor, and further agrees that said final payment to the Contractor shall not relieve the Surety Company named herein of any of its obligations to the following named Owner (as set forth in said Surety Company's bond):

_____

_____

_____

IN WITNESS WHEREOF, the Surety Company has hereunto set its hand and seal this _____Day of_____, 20___.

_____
(Name of Surety Company)

_____
(Signature of Authorized Representative)

_____
(Name of Authorized Representative)

Title: _____

-

VINEYARD
STAY CONNECTED

VINEYARD CITY COUNCIL STAFF REPORT

Meeting Date: December 10, 2025
Agenda Item: Bid Award Lift Station 2 Upgrade project to Corrio Construction ($610,078) (Resolution 2025-66)
Department: Public Works
Presenter: Naseem Ghandour

Background/Discussion:
Lift Station 2 is one of the City's primary wastewater conveyance facilities and requires mechanical and electrical upgrades to maintain reliability, improve pumping efficiency, and meet current operational standards.

Vineyard City solicited competitive bids for the Lift Station No. 2 Upgrades Project through the Utah Public Procurement Place (U3P) using the Bonfire system. The work includes pump replacement, VFD (variable frequency drive) motors, new flow meters, new piping and valves, electrical improvements, ventilation upgrades, sensor replacement, and construction of new concrete pedestals. These items are outlined in the Advertisement for Bids and the Contract Documents.

Bids were opened online on October 14, 2025, and closed on November 6, 2025, consistent with the City's procurement requirements.

Procurement Process
• The project was advertised on the State of Utah's U3P procurement portal (Bonfire).
• Five bids were submitted before the deadline.
• All bidders met the minimum qualification requirements.
• Corrio Construction provided the lowest responsive and responsible bid.
• The Agreement for Construction includes the scope, timeline, retainage, and liquidated damages provisions.

Bid Results
Bids for the Lift Station No. 2 Upgrades Project were publicly opened on November 17, 2025. Vineyard City received five responsive bids, summarized below:

Bidder	Bid Amount
Corrio Constructoin, Inc	$530,502 (Low Bid)
VanCon, Inc	$573,000
COP Construction	$615,600
FX Construction	$622,640
GOT DIRT Construction	$704,165.78

All bidders met the qualifications outlined in the Invitation for Bids. Corrio Construction submitted the lowest responsive, responsible bid and meets the requirements of the Contract Documents.

The Contract Establishes
1. 180 calendar days to reach Substantial Completion.
2. 210 calendar days to reach Final Completion.
3. Liquidated damages of $500/day for late Substantial Completion and $250/day for late Final Completion.

Fiscal Impact:
The project is funded through the City's sewer enterprise fund and capital project allocations. The project is in the approved FY2025-2026 Sewer Fund.
$610,078 (Bid price plus 15% contingency)

Recommendation:
Staff recommends that the City Council award the Lift Station No. 2 Upgrades Construction Contract to Corrio Construction and authorize the City Manager to sign the agreement.

Sample Motion:
"I move to approve Resolution 2025-66, to award the Lift Station No. 2 Upgrades Construction Contract to Corrio Construction, Inc. in the amount of $530,502.00 plus 15% Contingency, and authorize the City Manager to sign the Agreement and all associated documents necessary to complete the project."

Attachments:
1. RES 2025-66 Bid Award for Lift Station 2 Upgrade
2. Vineyard Lift Station 2 Agreement - Corrio
3. Advertisement For Bid
4. IFB Vineyard LS No 2 Specs and Drawings

RESOLUTION 2025-66

A RESOLUTION OF THE VINEYARD CITY COUNCIL AWARDING THE BID TO UPGRADE LIFT STATION NUMBER 2.

WHEREAS, Vineyard City previously issued a Request for Proposals for upgrade construction on lift station number 2;

WHEREAS, following a competitive procurement process, notice to bidders has been duly given as required by law; and

WHEREAS, after consideration of all bids filed it was determined that Corrio Construction Inc. is the best qualified bidder to provide for the construction of the lift station upgrades.

NOW THEREFORE BE IT RESOLVED BY THE GOVERNING BODY OF VINEYARD AS FOLLOWS:

Section 1. The bid be awarded to Corrio Construction for upgrades to lift station number 2.

Section 2. The contract amount will be funded through the City's approved Capital Projects and Sewer Enterprise Fund budget for 2025-2026, for an amount not to exceed $610,078.00.

Section 3. That city staff are hereby authorized and directed to execute the contract as is herein referred, and allow the City Manager to sign said contract.

Section 4. This resolution shall take effect upon passing.

Passed and dated this 10th day of December 2025.

Attest:

_____
Mayor Julie Fullmer

_____
Deputy Recorder Tony Lara

VINEYARD SEAL UTAH

SECTION 00 52 00
AGREEMENT

This Agreement is by and between **City of Vineyard** ("Owner") and **Corrio Construction, Inc.** ("Contractor").

Terms used in this Agreement have the meanings stated in the General Conditions and the Supplementary Conditions.

Owner and Contractor hereby agree as follows:

ARTICLE 1—WORK

1.01 **CONTRACTOR SHALL COMPLETE ALL WORK AS SPECIFIED OR INDICATED IN THE CONTRACT DOCUMENTS. THE WORK IS GENERALLY DESCRIBED AS FOLLOWS:**

The Work includes the removal of two (2) existing dry-pit chopper pumps and VFDs, furnishing and installing four (4) new dry-pit chopper pumps and VFDs, two (2) new concrete pedestals, two new mag flow meters, new valves and ductile iron piping and fittings, replacement of an existing plug valve, pipe supports, pipeline coating, removal of existing wet well mixer, removal and replacement of existing wet ultrasonic level sensor with new radar level sensor, replacement of existing exhaust fan, electrical modifications, and replacement of main control panel/RTU back panel.

ARTICLE 2—THE PROJECT

2.01 The Project, of which the Work under the Contract Documents is a part, is generally described as follows: **City of Vineyard – Lift Station #2 Upgrades**

ARTICLE 3—ENGINEER

3.01 The Owner has retained Hansen, Allen & Luce, Inc. ("Engineer") to act as Owner's representative, assume all duties and responsibilities of Engineer, and have the rights and authority assigned to Engineer in the Contract.

3.02 The part of the Project that pertains to the Work has been designed by Engineer.

ARTICLE 4—CONTRACT TIMES

4.01 *Time is of the Essence*

A. All time limits for Milestones, if any, Substantial Completion, and completion and readiness for final payment as stated in the Contract Documents are of the essence of the Contract.

4.02 *Contract Times: Number of Days*

A. The Work will be substantially complete within 180 calendar days from the Notice to Proceed and completed and ready for final payment within 210 calendar days in accordance with Paragraph 15.06 of the General Conditions.

4.03 *Liquidated Damages*

A. Contractor and Owner recognize that time is of the essence as stated in Paragraph 4.01 above and that Owner will suffer financial and other losses if the Work is not completed and Milestones not achieved within the Contract Times, as duly modified. The parties also recognize the delays, expense, and difficulties involved in proving, in a legal or arbitration proceeding, the actual loss suffered by Owner if the Work is not completed on time. Accordingly, instead of requiring any such proof, Owner and Contractor agree that as liquidated damages for delay (but not as a penalty):

1. *Substantial Completion:* Contractor shall pay Owner $500.00 for each day that expires after the time (as duly adjusted pursuant to the Contract) specified above for Substantial Completion, until the Work is substantially complete.

2. *Completion of Remaining Work:* After Substantial Completion, if Contractor shall neglect, refuse, or fail to complete the remaining Work within the Contract Times (as duly adjusted pursuant to the Contract) for completion and readiness for final payment, Contractor shall pay Owner $250.00 for each day that expires after such time until the Work is completed and ready for final payment.

3. Liquidated damages for failing to timely attain Milestones, Substantial Completion, and final completion are not additive, and will not be imposed concurrently.

B. If Owner recovers liquidated damages for a delay in completion by Contractor, then such liquidated damages are Owner's sole and exclusive remedy for such delay, and Owner is precluded from recovering any other damages, whether actual, direct, excess, or consequential, for such delay, except for special damages (if any) specified in this Agreement.

ARTICLE 5—CONTRACT PRICE

5.01 Owner shall pay Contractor for completion of the Work in accordance with the Contract Documents, the amounts that follow, subject to adjustment under the Contract:

A. For all Work, at the prices stated in Contractor's Bid, attached hereto as an exhibit.

All specific cash allowances are included in the above price in accordance with Paragraph 13.02 of the General Conditions.

ARTICLE 6—PAYMENT PROCEDURES

6.01 *Submittal and Processing of Payments*

A. Contractor shall submit Applications for Payment in accordance with Article 15 of the General Conditions. Applications for Payment will be processed by Engineer as provided in the General Conditions.

6.02 *Progress Payments; Retainage*

A. Owner shall make progress payments on the basis of Contractor's Applications for Payment on or about the 1st day of each month during performance of the Work as provided in Paragraph 6.02.A.1 below, provided that such Applications for Payment have been submitted in a timely manner and otherwise meet the requirements of the Contract. All such payments will be measured by the Schedule of Values established as provided in the General Conditions

(and in the case of Unit Price Work based on the number of units completed) or, in the event there is no Schedule of Values, as provided elsewhere in the Contract.

1. Prior to Substantial Completion, progress payments will be made in an amount equal to the percentage indicated below but, in each case, less the aggregate of payments previously made and less such amounts as Owner may withhold, including but not limited to liquidated damages, in accordance with the Contract.

    a. 95 percent of the value of the Work completed (with the balance being retainage).

        1) If 50 percent or more of the Work has been completed, as determined by Engineer, and if the character and progress of the Work have been satisfactory to Owner and Engineer, then as long as the character and progress of the Work remain satisfactory to Owner and Engineer, there will be no additional retainage; and

    b. 95 percent of cost of materials and equipment not incorporated in the Work (with the balance being retainage).

B. Upon Substantial Completion, Owner shall pay an amount sufficient to increase total payments to Contractor to 97.5 percent of the Work completed, less such amounts set off by Owner pursuant to Paragraph 15.01.E of the General Conditions, and less 100 percent of Engineer's estimate of the value of Work to be completed or corrected as shown on the punch list of items to be completed or corrected prior to final payment.

6.03 *Final Payment*

A. Upon final completion and acceptance of the Work, Owner shall pay the remainder of the Contract Price in accordance with Paragraph 15.06 of the General Conditions.

6.04 *Consent of Surety*

A. Owner will not make final payment, or return or release retainage at Substantial Completion or any other time, unless Contractor submits written consent of the surety to such payment, return, or release.

6.05 *Interest*

A. All amounts not paid when due will bear a maximum interest rate of up to or equal to Owner's maximum interest rate, but in no case greater than 4 percent per annum.

ARTICLE 7—CONTRACT DOCUMENTS

7.01 *Contents*

A. The Contract Documents consist of all of the following:

1. This Agreement.
2. Bonds:
    a. Performance bond (together with power of attorney).
    b. Payment bond (together with power of attorney).
3. General Conditions.
4. Supplementary Conditions.

5. Specifications as listed in the table of contents of the project manual (copy of list attached).
6. Drawings (not attached but incorporated by reference) consisting of **16** sheets with each sheet bearing the following general title: **Lift Station #2 Upgrades**
7. Drawings listed on the attached sheet index.
8. Addenda (Number 1, inclusive).
9. Exhibits to this Agreement (enumerated as follows):
    a. Exhibit A – Certificate of Insurance
10. The following which may be delivered or issued on or after the Effective Date of the Contract and are not attached hereto:
    a. Notice to Proceed.
    b. Work Change Directives.
    c. Change Orders.
    d. Field Orders.
    e. Warranty Bond, if any.

B. The Contract Documents listed in Paragraph 7.01.A are attached to this Agreement (except as expressly noted otherwise above).

C. There are no Contract Documents other than those listed above in this Article 7.

D. The Contract Documents may only be amended, modified, or supplemented as provided in the Contract.

ARTICLE 8—REPRESENTATIONS, CERTIFICATIONS, AND STIPULATIONS

8.01 *Contractor's Representations*

A. In order to induce Owner to enter into this Contract, Contractor makes the following representations:

1. Contractor has examined and carefully studied the Contract Documents, including Addenda.
2. Contractor has visited the Site, conducted a thorough visual examination of the Site and adjacent areas, and become familiar with the general, local, and Site conditions that may affect cost, progress, and performance of the Work.
3. Contractor is familiar with all Laws and Regulations that may affect cost, progress, and performance of the Work.
4. Contractor has carefully studied the reports of explorations and tests of subsurface conditions at or adjacent to the Site and the drawings of physical conditions relating to existing surface or subsurface structures at the Site that have been identified in the Supplementary Conditions, with respect to the Technical Data in such reports and drawings.

5. Contractor has carefully studied the reports and drawings relating to Hazardous Environmental Conditions, if any, at or adjacent to the Site that have been identified in the Supplementary Conditions, with respect to Technical Data in such reports and drawings.

6. Contractor has considered the information known to Contractor itself; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Contract Documents; and the Technical Data identified in the Supplementary Conditions or by definition, with respect to the effect of such information, observations, and Technical Data on (a) the cost, progress, and performance of the Work; (b) the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor; and (c) Contractor's safety precautions and programs.

7. Based on the information and observations referred to in the preceding paragraph, Contractor agrees that no further examinations, investigations, explorations, tests, studies, or data are necessary for the performance of the Work at the Contract Price, within the Contract Times, and in accordance with the other terms and conditions of the Contract.

8. Contractor is aware of the general nature of work to be performed by Owner and others at the Site that relates to the Work as indicated in the Contract Documents.

9. Contractor has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Contractor has discovered in the Contract Documents, and of discrepancies between Site conditions and the Contract Documents, and the written resolution thereof by Engineer is acceptable to Contractor.

10. The Contract Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.

11. Contractor's entry into this Contract constitutes an incontrovertible representation by Contractor that without exception all prices in the Agreement are premised upon performing and furnishing the Work required by the Contract Documents.

8.02 *Contractor's Certifications*

A. Contractor certifies that it has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for or in executing the Contract. For the purposes of this Paragraph 8.02:

1. "corrupt practice" means the offering, giving, receiving, or soliciting of anything of value likely to influence the action of a public official in the bidding process or in the Contract execution;

2. "fraudulent practice" means an intentional misrepresentation of facts made (a) to influence the bidding process or the execution of the Contract to the detriment of Owner, (b) to establish Bid or Contract prices at artificial non-competitive levels, or (c) to deprive Owner of the benefits of free and open competition;

3. "collusive practice" means a scheme or arrangement between two or more Bidders, with or without the knowledge of Owner, a purpose of which is to establish Bid prices at artificial, non-competitive levels; and

4. “coercive practice” means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the bidding process or affect the execution of the Contract.

8.03 *Standard General Conditions*

A. Owner stipulates that if the General Conditions that are made a part of this Contract are EJCDC® C-700, Standard General Conditions for the Construction Contract (2018), published by the Engineers Joint Contract Documents Committee, and if Owner is the party that has furnished said General Conditions, then Owner has plainly shown all modifications to the standard wording of such published document to the Contractor, through a process such as highlighting or “track changes” (redline/strikeout), or in the Supplementary Conditions.

IN WITNESS WHEREOF, Owner and Contractor have signed this Agreement.

This Agreement will be effective on _____ (which is the Effective Date of the Contract).

Owner: Vineyard City	Contractor: Corrio Construction, Inc
(typed or printed name of organization)	*(typed or printed name of organization)*
By: _____ *(individual's signature)*	By: _____ *(individual's signature)*
Date: _____ *(date signed)*	Date: 12/8/25 *(date signed)*
Name: _____ *(typed or printed)*	Name: Brian White *(typed or printed)*
Title: _____ *(typed or printed)*	Title: Vice President *(typed or printed)*
	*(If **[Type of Entity]** is a corporation, a partnership, or a joint venture, attach evidence of authority to sign.)*
Attest: _____ *(individual's signature)*	Attest: _____ *(individual's signature)*
Title: _____ *(typed or printed)*	Title: President *(typed or printed)*
Address for giving notices:	Address for giving notices:
125 S. Main Street	PO Box 712319
Vineyard, UT 84059	Salt Lake City, UT 84171
Designated Representative:	Designated Representative:
Name: _____ *(typed or printed)*	Name: Brett Eggett *(typed or printed)*
Title: _____ *(typed or printed)*	Title: Project Manager *(typed or printed)*
Address:	Address:
	PO Box 712319
	Salt Lake City, UT 84171
Phone: _____	Phone: (801) 864-1224
Email: _____	Email: brett@corrioconstruction.com
*(If **[Type of Entity]** is a corporation, attach evidence of authority to sign. If **[Type of Entity]** is a public body, attach evidence of authority to sign and resolution or other documents authorizing execution of this Agreement.)*	License No.: 9404254-5501 *(where applicable)*
	State: Utah

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SECTION 00 11 13
ADVERTISEMENT FOR BIDS

Notice is hereby given that the CITY OF VINEYARD (OWNER), will accept bids for the construction of the LIFT STATION #2 UPGRADES (Project) according to the Contract Drawings and Specifications prepared by HANSEN, ALLEN & LUCE, INC. (ENGINEER), and described in general as:

> **The Work includes the removal of two (2) existing dry-pit chopper pumps and VFDs, furnishing and installing four (4) new dry-pit chopper pumps and VFDs, two (2) new concrete pedestals, two new mag flow meters, new valves and ductile iron piping and fittings, replacement of an existing plug valve, pipe supports, pipeline coating, removal of existing wet well mixer, removal and replacement of existing wet ultrasonic level sensor with new radar level sensor, replacement of existing exhaust fan, electrical modifications, and replacement of main control panel/RTU back panel.**

Electronic Bids for the Project will be received until 2:00 p.m. by OWNER online via Utah Public Procurement Place (U3P) on November 4, 2025. As soon thereafter as possible, Bids will be opened and read by OWNER in their office located at 125 South Main Street, Vineyard, UT 84058.

All electronic submittals are to be submitted on the U3P using the states e-procurement platform Bonfire (formerly Sciquest) at:

> **https://utah.bonfirehub.com/opportunities**

Bids received after the time established for receiving bids will not be considered.

OWNER reserves the right to reject any or all bids and to determine which bid is, in OWNER's judgment, the lowest responsive responsible bid of a bidder or group of bidders. OWNER also reserves the right to waive any informality in any bid and to delete certain items listed in the bid as set forth therein.

Bidding Documents may be obtained on or after October 10, 2025. Complete sets of Contract Documents may be examined and obtained from the State of Utah's Public Procurement website (https://purchasing.utah.gov/for-vendors/). No paper copies of the Contract Documents will be available for purchase from OWNER.

Bid security in the amount of 5% of the base bid will be required to accompany bids.

Prospective Bidders are required to attend a Pre-Bid Conference which will be held at the City of Vineyard Public Works Office located at 282 West 1600 North, Vineyard, UT 84058 at 10:00 a.m. on October 12, 2025. The object of the conference is to acquaint Bidders with the site conditions, specifications, and to answer any questions which Bidders may have concerning the project.

All communication related to the Project shall be made through the U3P site prior to 5:00 pm on October 29,2025.

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VINEYARD
STAY CONNECTED

LIFT STATION #2 UPGRADES PROJECT

ISSUED FOR BID DOCUMENTS

OCTOBER 2025

HANSEN ALLEN & LUCE inc
ENGINEERS

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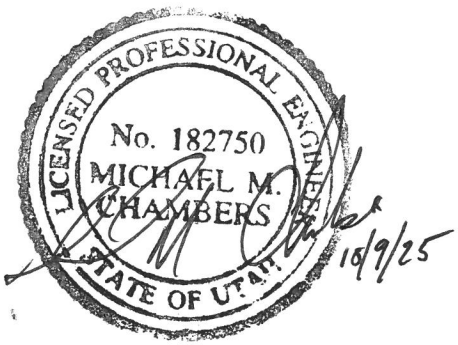
VINEYARD

LIFT STATION #2 UPGRADES

OCTOBER - 2025

PROJECT MANUAL



Project Engineer

HANSEN, ALLEN, & LUCE, INC.
Consultants/Engineers
859 West South Jordan Parkway – Ste 200
South Jordan, Utah 84095
(801) 566-5599

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SECTION 00 01 10
TABLE OF CONTENTS

SECTION		PAGE(S)
00 01 01	Inside Cover	00 01 01 - 1 to 1
00 01 10	Table of Contents	00 01 10 - 1 to 3

PART 1 - BIDDING REQUIREMENTS

00 11 13	Advertisement for Bids	00 11 13 - 1 to 1
00 21 13	Instructions to Bidders	00 21 13 - 1 to 9
00 41 00	Bid Form	00 41 00 - 1 to 5
00 43 13	Bid Bond	00 43 13 - 1 to 2
00 45 13	Contractor's Qualifications and Experience	00 45 13 - 1 to 12
00 45 30	List of Subcontractors and Suppliers	00 45 30 - 1 to 1

PART 2 - CONTRACT FORMS

00 51 00	Notice of Award	00 51 00 - 1 to 1
00 52 00	Agreement	00 52 00 - 1 to 7
00 55 00	Notice to Proceed	00 55 00 - 1 to 1
00 61 00	Performance Bond	00 61 00 - 1 to 4
00 61 50	Payment Bond	00 62 50 - 1 to 4
00 62 00	Contractor’s Application for Payment	00 62 00 - 1 to 4
00 62 50	Certification of Substantial Completion	00 62 50 - 1 to 1
00 62 60	Notice of Acceptability of Work	00 62 60 - 1 to 2

PART 3 - CONTRACT CONDITIONS

00 72 00	General Conditions Cover	00 72 00 - 1 to 1
00 72 00	General Conditions Table of Contents	00 72 00 - i to iv
00 72 00	General Conditions	00 72 00 - 1 to 72
00 80 00	Supplementary Conditions	00 80 00 - 1 to 10
00 94 10	Change Order	00 94 10 - 1 to 1
00 94 20	Field Order	00 94 20 - 1 to 1

PART 4 - TECHNICAL SPECIFICATIONS

DIVISION 1 - GENERAL REQUIREMENTS

01 11 00	Summary of Work	01 11 00 - 1 to 2
01 22 00	Measurement and Payment	01 22 00 - 1 to 3
01 30 00	Administrative Requirements	01 30 00 - 1 to 2
01 33 00	Submittal Procedures	01 33 00 - 1 to 7
01 42 13	Abbreviations	01 42 13 - 1 to 2
01 42 19	Reference Standards	01 42 19 - 1 to 2
01 45 00	Quality Control and Materials Testing	01 45 00 - 1 to 5
01 45 23	Testing Agency Services	01 45 23 - 1 to 3
01 50 00	Temporary Construction Utilities and Environmental Controls	01 50 00 - 1 to 4

01 60 00 Product Requirements ..... 01 60 00 - 1 to 3
01 71 13 Mobilization ..... 01 71 13 - 1 to 2
01 75 16 Startup and Testing ..... 01 75 16 - 1 to 3
01 78 50 Project Closeout ..... 01 78 50 - 1 to 9

DIVISION 02 – EXISTING CONDITIONS

02 41 00 Demolition ..... 02 41 00 - 1 to 1

DIVISION 03 - CONCRETE

03 10 00 Concrete Forming and Accessories ..... 03 10 00 - 1 to 4
03 20 00 Concrete Reinforcement ..... 03 20 00 - 1 to 4
03 30 00 Cast-In-Place Concrete ..... 03 30 00 - 1 to 17
03 60 00 Grout ..... 03 60 00 - 1 to 8

DIVISION 04 – NOT USED

DIVISION 05 – METALS

05 45 00 Mechanical Metal Supports (Pipe Supports) ..... 05 45 00 - 1 to 5
05 50 00 Miscellaneous Specialties ..... 05 50 00 - 1 to 4

DIVISION 06 through 09 – NOT USED

DIVISION 09 - FINISHES

09 90 00 Painting and Finishes ..... 09 90 00 - 1 to 14

DIVISIONS 10 through 21 - NOT USED

DIVISION 22 – PLUMBING

22 13 29.12 Dry Pit Chopper Pump ..... 22 13 29.12 - 1 to 6

DIVISIONS 23 through 25 - NOT USED

DIVISION 26 - ELECTRICAL

26 05 00 Electrical General Requirements ..... 26 05 00 - 1 to 3
26 05 05 Electrical Equipment ..... 26 05 05 - 1 to 5
26 05 13 Conductors and Cables ..... 26 05 13 - 1 to 5
26 05 26 Grounding and Bonding for Electrical Systems ..... 26 05 26 - 1 to 3
26 05 33 Raceway ..... 26 05 33 - 1 to 5
26 05 34 Electrical Boxes and Fittings ..... 26 05 34 - 1 to 2
26 29 23 Variable Frequency Drives ..... 26 29 23 - 1 to 12

DIVISIONS 27 through 32 - NOT USED

DIVISION 33 - UTILITIES

33 05 05 Ductile Iron Pipe ..... 33 05 05 - 1 to 8
33 05 26 Utility Identification ..... 33 05 26 - 1 to 3
33 12 00 Mechanical Appurtenances ..... 33 12 00 - 1 to 4
33 13 00 Pipeline Testing ..... 33 13 00 - 1 to 2

DIVISIONS 34 through 39 – NOT USED

DIVISIONS 40 PROCESS INTEGRATION

40 91 23 Miscellaneous Properties Measurement Devices ..... 40 91 23 - 1 to 4

DIVISIONS 41 through 50 – NOT USED

PART 5 – DRAWINGS

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PART 1
BIDDING REQUIREMENTS

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Bid security in the amount of 5% of the base bid will be required to accompany bids.

Prospective Bidders are required to attend a Pre-Bid Conference which will be held at the City of Vineyard Public Works Office located at 282 West 1600 North, Vineyard, UT 84058 at 10:00 a.m. on October 12, 2025. The object of the conference is to acquaint Bidders with the site conditions, specifications, and to answer any questions which Bidders may have concerning the project.

All communication related to the Project shall be made through the U3P site prior to 5:00 pm on October 29,2025.

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SECTION 00 21 13
INSTRUCTIONS TO BIDDERS

ARTICLE 1 – DEFINED TERMS

1.01 Terms used in these Instructions to Bidders have the meanings indicated in the General Conditions and Supplementary Conditions. Additional terms used in these Instructions to Bidders have the meanings indicated below:

A. *Issuing Office* – The office from which the Bidding Documents are to be issued.

ARTICLE 2 – COPIES OF BIDDING DOCUMENTS

2.01 Complete sets of the Bidding Documents may be obtained from the ENGINEER as stated in the advertisement for bid.

2.02 Complete sets of Bidding Documents shall be used in preparing Bids; neither OWNER nor ENGINEER assumes any responsibility for errors or misinterpretations resulting from the use of incomplete sets of Bidding Documents.

2.03 OWNER and Engineer, in making copies of Bidding Documents available on the above terms, do so only for the purpose of obtaining Bids for the Work and do not authorize or confer a license for any other use.

ARTICLE 3 – QUALIFICATIONS OF BIDDERS

3.01 Bidder is to submit the following information with its Bid to demonstrate Bidder's qualifications to perform the Work:

A. Written evidence establishing its qualifications such as financial data, previous similar experience, and present commitments.

B. A written statement that Bidder is authorized to do business in the state where the Project is located, or a written certification that Bidder will obtain such authority prior to the Effective Date of the Contract.

C. Bidder's state CONTRACTOR license number, if applicable.

D. Subcontractor and Supplier qualification information.

E. Other required information regarding qualifications.

3.02 A Bidder's failure to submit required qualification information within the times indicated may disqualify Bidder from receiving an award of the Contract.

3.03 No requirement in this Article 3 to submit information will prejudice the right of OWNER to seek additional pertinent information regarding Bidder's qualifications.

ARTICLE 4 – SITE AND OTHER AREAS; EXISTING SITE CONDITIONS; EXAMINATION OF SITE; OWNER'S SAFETY PROGRAM; OTHER WORK AT THE SITE

4.01 *Site and Other Areas*

A. The Site is identified in the Bidding Documents. By definition, the Site includes rights-of-way, easements, and other lands furnished by OWNER for the use of the CONTRACTOR. Any additional lands required for temporary construction facilities, construction equipment, or storage of materials and equipment, and any access needed for such additional lands, are to be obtained and paid for by CONTRACTOR.

4.02 *Existing Site Conditions*

A. Subsurface and Physical Conditions; Hazardous Environmental Conditions

1. The Supplementary Conditions identify:

a. those reports known to OWNER of explorations and tests of subsurface conditions at or adjacent to the Site.

b. those drawings known to OWNER of physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities).

c. reports and drawings known to OWNER relating to Hazardous Environmental Conditions that have been identified at or adjacent to the Site.

d. Technical Data contained in such reports and drawings.

2. OWNER will make copies of reports and drawings referenced above available to any Bidder on request. These reports and drawings are not part of the Contract Documents, but the Technical Data contained therein upon whose accuracy Bidder is entitled to rely, as provided in the General Conditions, has been identified and established in the Supplementary Conditions. Bidder is responsible for any interpretation or conclusion Bidder draws from any Technical Data or any other data, interpretations, opinions, or information contained in such reports or shown or indicated in such drawings.

3. If the Supplementary Conditions do not identify Technical Data, the default definition of Technical Data set forth in Article 1 of the General Conditions will apply.

B. Underground Facilities: Information and data shown or indicated in the Bidding Documents with respect to existing Underground Facilities at or contiguous to the Site are set forth in the Contract Documents and are based upon information and data furnished to OWNER and ENGINEER by OWNERs of such Underground Facilities, including OWNER, or others.

C. Adequacy of Data: Provisions concerning responsibilities for the adequacy of data furnished to prospective Bidders with respect to subsurface conditions, other physical conditions, and Underground Facilities, and possible changes in the Bidding Documents due to differing or unanticipated subsurface or physical conditions appear in Paragraphs 5.03, 5.04, and 5.05 of the General Conditions. Provisions concerning responsibilities for the adequacy of data furnished to prospective Bidders with respect to a Hazardous Environmental Condition at the Site, if any, and possible changes in the Contract Documents due to any Hazardous Environmental Condition uncovered or revealed at the Site which was not shown or indicated in the Contract Drawings or Specifications or identified in the Contract Documents to be within the scope of the Work, appear in Paragraph 5.06 of the General Conditions.

4.03 *Site Visit and Testing by Bidders*

A. Bidder is not required to conduct any subsurface testing, or exhaustive investigations of Site conditions.

B. On request, and to the extent OWNER has control over the Site, and schedule permitting, OWNER will provide Bidder access to the Site to conduct such additional examinations, investigations, explorations, tests, and studies as Bidder deems necessary for preparing and submitting a successful Bid. OWNER will not have any obligation to grant such access if doing so is not practical because of existing operations, security or safety concerns, or restraints on OWNER's authority regarding the Site.

C. Bidder shall comply with all applicable Laws and Regulations regarding excavation and location of utilities, obtain all permits, and comply with all terms and conditions established by OWNER or by property OWNERs or other entities controlling the Site with respect to schedule, access, existing operations, security, liability insurance, and applicable safety programs.

D. Bidder shall fill all holes and clean up and restore the Site to its former condition upon completion of such explorations, investigations, tests, and studies.

4.04 *OWNER's Safety Program*

A. Site visits and work at the Site may be governed by an OWNER safety program. As the General Conditions indicate, if an OWNER safety program exists, it will be noted in the Supplementary Conditions.

4.05 *Other Work at the Site*

A. Reference is made to Article 8 of the Supplementary Conditions for the identification of the general nature of other work of which OWNER is aware (if any) that is to be performed at the Site by OWNER or others (such as utilities and other prime CONTRACTORs) and relates to the Work contemplated by these Bidding Documents. If OWNER is party to a written contract for such other work, then on request, OWNER will provide to each Bidder access to examine such contracts (other than portions thereof related to price and other confidential matters), if any.

ARTICLE 5 – BIDDER'S REPRESENTATIONS

5.01 It is the responsibility of each Bidder before submitting a Bid to:

A. examine and carefully study the Bidding Documents, and any data and reference items identified in the Bidding Documents;

B. visit the Site, conduct a thorough, alert visual examination of the Site and adjacent areas, and become familiar with and satisfy itself as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work;

C. become familiar with and satisfy itself as to all Laws and Regulations that may affect cost, progress, and performance of the Work;

D. carefully study all: (1) reports of explorations and tests of subsurface conditions at or adjacent to the Site and all drawings of physical conditions relating to existing surface or subsurface structures at the Site that have been identified in the Supplementary Conditions, especially with respect to Technical Data in such reports and drawings, and (2) reports and drawings relating to Hazardous Environmental Conditions, if any, at or adjacent to the Site that have been identified in the Supplementary Conditions, especially with respect to Technical Data in such reports and drawings;

E. consider the information known to Bidder itself; information commonly known to CONTRACTORS doing business in the locality of the Site; information and observations obtained from visits to the Site; the Bidding Documents; and the Site-related reports and drawings identified in the Bidding Documents, with respect to the effect of such information, observations, and documents on (1) the cost, progress, and performance of the Work; (2) the means, methods, techniques, sequences, and procedures of construction to be employed by Bidder; and (3) Bidder's safety precautions and programs;

F. agree, based on the information and observations referred to in the preceding paragraph, that at the time of submitting its Bid no further examinations, investigations, explorations, tests, studies, or data are necessary for the

determination of its Bid for performance of the Work at the price bid and within the times required, and in accordance with the other terms and conditions of the Bidding Documents;

G. become aware of the general nature of the work to be performed by OWNER and others at the Site that relates to the Work as indicated in the Bidding Documents;

H. promptly give ENGINEER written notice of all conflicts, errors, ambiguities, or discrepancies that Bidder discovers in the Bidding Documents and confirm that the written resolution thereof by ENGINEER is acceptable to Bidder;

I. determine that the Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for the performance and furnishing of the Work; and

J. agree that the submission of a Bid will constitute an incontrovertible representation by Bidder that Bidder has complied with every requirement of this Article, that without exception the Bid and all prices in the Bid are premised upon performing and furnishing the Work required by the Bidding Documents.

ARTICLE 6 – PRE-BID CONFERENCE

6.01 A pre-Bid conference will be held at the time and location stated in the invitation or advertisement for bids. The pre-Bid conference is mandatory. Representatives of OWNER and ENGINEER will be present to discuss the Project. Bidders are encouraged to attend and participate in the conference. ENGINEER will transmit to all prospective Bidders of record such Addenda as ENGINEER considers necessary in response to questions arising at the conference. Oral statements may not be relied upon and will not be binding or legally effective.

ARTICLE 7 – INTERPRETATIONS AND ADDENDA

7.01 All questions about the meaning or intent of the Bidding Documents are to be submitted to ENGINEER in writing. Interpretations or clarifications considered necessary by ENGINEER in response to such questions will be issued by Addenda delivered to all parties recorded as having received the Bidding Documents. Questions received less than seven days prior to the date for opening of Bids may not be answered. Only questions answered by Addenda will be binding. Oral and other interpretations or clarifications will be without legal effect.

7.02 Addenda may be issued to clarify, correct, supplement, or change the Bidding Documents.

ARTICLE 8 – BID SECURITY

8.01 A Bid must be accompanied by Bid security made payable to OWNER in an amount of 5 percent of Bidder's maximum Bid price (determined by adding the base bid and all alternates) and in the form of a certified check, bank money order, or a Bid bond (on the form included in the Bidding Documents) issued by a surety meeting the requirements of Paragraphs 6.01 and 6.02 of the General Conditions.

8.02 The Bid security of the apparent Successful Bidder will be retained until OWNER awards the contract to such Bidder, and such Bidder has executed the Contract Documents, furnished the required contract security, and met the other conditions of the Notice of Award, whereupon the Bid security will be released. If the Successful Bidder fails to execute and deliver the Contract Documents and furnish the required contract security within 15 days after the Notice of Award, OWNER may consider Bidder to be in default,

annul the Notice of Award, and the Bid security of that Bidder will be forfeited. Such forfeiture shall be OWNER's exclusive remedy if Bidder defaults.

8.03 The Bid security of other Bidders that OWNER believes to have a reasonable chance of receiving the award may be retained by OWNER until the earlier of seven days after the Effective Date of the Contract or 61 days after the Bid opening, whereupon Bid security furnished by such Bidders will be released.

8.04 Bid security of other Bidders that OWNER believes do not have a reasonable chance of receiving the award will be released within seven days after the Bid opening.

ARTICLE 9 – CONTRACT TIMES

9.01 The number of days within which, or the dates by which, the Work is to be substantially completed and ready for final payment are set forth in the Agreement.

ARTICLE 10 – LIQUIDATED DAMAGES

10.01 Provisions for liquidated damages, if any, for failure to timely attain Substantial Completion or completion of the Work in readiness for final payment, are set forth in the Agreement.

ARTICLE 11 – SUBSTITUTE AND "OR-EQUAL" ITEMS

11.01 The Contract for the Work, as awarded, will be on the basis of materials and equipment specified or described in the Bidding Documents without consideration during the bidding and Contract award process of possible substitute or "or-equal" items. In cases in which the Contract allows the CONTRACTOR to request that ENGINEER authorize the use of a substitute or "or-equal" item of material or equipment, application for such acceptance may not be made to and will not be considered by ENGINEER until after the Effective Date of the Contract.

11.02 All prices that Bidder sets forth in its Bid shall be based on the presumption that the CONTRACTOR will furnish the materials and equipment specified or described in the Bidding Documents, as supplemented by Addenda. Any assumptions regarding the possibility of post-Bid approvals of "or-equal" or substitution requests are made at Bidder's sole risk.

ARTICLE 12 – SUBCONTRACTORS, SUPPLIERS, AND OTHERS

12.01 A Bidder shall be prepared to retain specific Subcontractors, Suppliers, or other individuals or entities for the performance of the Work if required by the Bidding Documents (most commonly in the Specifications) to do so. If a prospective Bidder objects to retaining any such Subcontractor, Supplier, or other individual or entity, and the concern is not relieved by an Addendum, then the prospective Bidder should refrain from submitting a Bid.

12.02 Subsequent to the submittal of the Bid, OWNER may not require the Successful Bidder or CONTRACTOR to retain any Subcontractor, Supplier, or other individual or entity against which CONTRACTOR has reasonable objection.

12.03 The apparent Successful Bidder, and any other Bidder so requested, shall within five days after Bid opening, submit to OWNER a list of the Subcontractors or Suppliers proposed for the following portions of the Work: pumps and motors, electrical sub-contractor, electrical equipment supplier, meters, and booster pump control valves.

If requested by OWNER, such list shall be accompanied by an experience statement with pertinent information regarding similar projects and other evidence of qualification for each such Subcontractor, Supplier, or other individual or entity. If OWNER or ENGINEER, after

due investigation, has reasonable objection to any proposed Subcontractor, Supplier, individual, or entity, OWNER may, before the Notice of Award is given, request apparent Successful Bidder to submit an acceptable substitute, in which case apparent Successful Bidder shall submit a substitute, Bidder's Bid price will be increased (or decreased) by the difference in cost occasioned by such substitution, and OWNER may consider such price adjustment in evaluating Bids and making the Contract award.

12.04 If apparent Successful Bidder declines to make any such substitution, OWNER may award the Contract to the next lowest Bidder that proposes to use acceptable Subcontractors, Suppliers, or other individuals or entities. Declining to make requested substitutions will not constitute grounds for forfeiture of the Bid security of any Bidder. Any Subcontractor, Supplier, individual, or entity so listed and against which OWNER or ENGINEER makes no written objection prior to the giving of the Notice of Award will be deemed acceptable to OWNER and ENGINEER subject to subsequent revocation of such acceptance as provided in Paragraph 7.06 of the General Conditions.

ARTICLE 13 – PREPARATION OF BID

13.01 The Bid Form is included with the Bidding Documents.

A. All blanks on the Bid Form shall be completed in ink and the Bid Form signed in ink. Erasures or alterations shall be initialed in ink by the person signing the Bid Form. A Bid price shall be indicated for each section, Bid item, alternate, adjustment unit price item, and unit price item listed therein.

B. If the Bid Form expressly indicates that submitting pricing on a specific alternate item is optional, and Bidder elects to not furnish pricing for such optional alternate item, then Bidder may enter the words "No Bid" or "Not Applicable."

13.02 A Bid by a corporation shall be executed in the corporate name by a corporate officer (whose title must appear under the signature), accompanied by evidence of authority to sign. The corporate address and state of incorporation shall be shown. The corporate seal shall be affixed and attested by the corporate secretary or an assistant corporate secretary.

13.03 A Bid by a limited liability company shall be executed in the name of the firm by a member or other authorized person and accompanied by evidence of authority to sign. The state of formation of the firm and the official address of the firm shall be shown.

13.04 A Bid by an individual shall show the Bidder's name and official address.

13.05 A Bid by a joint venture shall be executed by an authorized representative of each joint venturer in the manner indicated on the Bid Form. The official address of the joint venture shall be shown.

13.06 All names shall be printed in ink below the signatures.

13.07 The Bid shall contain an acknowledgment of receipt of all Addenda, the numbers of which shall be filled in on the Bid Form.

13.08 Postal and e-mail addresses and telephone number for communications regarding the Bid shall be shown.

13.09 The Bid shall contain evidence of Bidder's authority and qualification to do business in the state where the Project is located, or Bidder shall covenant in writing to obtain such authority and qualification prior to award of the Contract and attach such covenant to the Bid. Bidder's state contractor license number, if any, shall also be shown on the Bid Form.

ARTICLE 14 – BASIS OF BID

14.01 *Unit Price*

A. Bidders shall submit a Bid on a unit price basis for each item of Work listed in the unit price section of the Bid Form.

B. The “Bid Price” (sometimes referred to as the extended price) for each unit price Bid item will be the product of the “Estimated Quantity” (which OWNER or its representative has set forth in the Bid Form) for the item and the corresponding “Bid Unit Price” offered by the Bidder. The total of all unit price Bid items will be the sum of these “Bid Prices”; such total will be used by OWNER for Bid comparison purposes. The final quantities and Contract Price will be determined in accordance with Paragraph 13.03 of the General Conditions.

C. Discrepancies between the multiplication of units of Work and unit prices will be resolved in favor of the unit prices. Discrepancies between the indicated sum of any column of figures and the correct sum thereof will be resolved in favor of the correct sum.

14.02 *Allowances*

A. For cash allowances the Bid price shall include such amounts as the Bidder deems proper for CONTRACTOR's overhead, costs, profit, and other expenses on account of cash allowances, if any, named in the Contract Documents, in accordance with Paragraph 13.02.B of the General Conditions.

ARTICLE 15 – SUBMITTAL OF BID

15.01 The Bid Form is to be completed and submitted with all the attachments outlined in Article 7 of the Bid Form.

15.02 A Bid shall be submitted no later than the date and time prescribed and at the place indicated in the advertisement or invitation to bid and shall be enclosed in a plainly marked package with the Project title (and, if applicable, the designated portion of the Project for which the Bid is submitted), the name and address of Bidder, and shall be accompanied by the Bid security and other required documents. If a Bid is sent by mail or other delivery system, the sealed envelope containing the Bid shall be enclosed in a separate package plainly marked on the outside with the notation “BID ENCLOSED.” A mailed Bid shall be addressed to OWNER at address in Article 1.01 of Bid Form.

15.03 Bids received after the date and time prescribed for the opening of bids, or not submitted at the correct location or in the designated manner, will not be accepted and will be returned to the Bidder unopened.

ARTICLE 16 – MODIFICATION AND WITHDRAWAL OF BID

16.01 A Bid may be withdrawn by an appropriate document duly executed in the same manner that a Bid must be executed and delivered to the place where Bids are to be submitted prior to the date and time for the opening of Bids. Upon receipt of such notice, the unopened Bid will be returned to the Bidder.

16.02 If a Bidder wishes to modify its Bid prior to Bid opening, Bidder must withdraw its initial Bid in the manner specified in Paragraph 16.01 and submit a new Bid prior to the date and time for the opening of Bids.

16.03 If within 24 hours after Bids are opened any Bidder files a duly signed written notice with OWNER and promptly thereafter demonstrates to the reasonable satisfaction of OWNER

that there was a material and substantial mistake in the preparation of its Bid, that Bidder may withdraw its Bid, and the Bid security will be returned. Thereafter, if the Work is rebid, that Bidder will be disqualified from further bidding on the Work.

ARTICLE 17 – OPENING OF BIDS

17.01 Bids will be opened at the time and place indicated in the advertisement for bids and, unless obviously non-responsive, read aloud publicly. An abstract of the amounts of the base Bids and major alternates, if any, will be made available to Bidders after the opening of Bids.

ARTICLE 18 – BIDS TO REMAIN SUBJECT TO ACCEPTANCE

18.01 All Bids will remain subject to acceptance for the period of time stated in the Bid Form, but OWNER may, in its sole discretion, release any Bid and return the Bid security prior to the end of this period.

ARTICLE 19 – EVALUATION OF BIDS AND AWARD OF CONTRACT

19.01 OWNER reserves the right to reject any or all Bids, including without limitation, nonconforming, nonresponsive, unbalanced, or conditional Bids. OWNER will reject the Bid of any Bidder that OWNER finds, after reasonable inquiry and evaluation, to not be responsible. If Bidder purports to add terms or conditions to its Bid, takes exception to any provision of the Bidding Documents, or attempts to alter the contents of the Contract Documents for purposes of the Bid, then the OWNER will reject the Bid as nonresponsive; provided that OWNER also reserves the right to waive all minor informalities not involving price, time, or changes in the Work.

19.02 If OWNER awards the contract for the Work, such award shall be to the responsible Bidder submitting the lowest responsive Bid.

19.03 Evaluation of Bids

A. In evaluating Bids, OWNER will consider whether or not the Bids comply with the prescribed requirements, and such alternates, unit prices, and other data, as may be requested in the Bid Form or prior to the Notice of Award.

B. For the determination of the apparent low Bidder when unit price bids are submitted, Bids will be compared on the basis of the total of the products of the estimated quantity of each item and unit price Bid for that item, together with any lump sum items.

19.04 In evaluating whether a Bidder is responsible, OWNER will consider the qualifications of the Bidder and may consider the qualifications and experience of Subcontractors and Suppliers proposed for those portions of the Work for which the identity of Subcontractors and Suppliers must be submitted as provided in the Bidding Documents.

19.05 OWNER may conduct such investigations as OWNER deems necessary to establish the responsibility, qualifications, and financial ability of Bidders and any proposed Subcontractors or Suppliers.

ARTICLE 20 – BONDS AND INSURANCE

20.01 Article 6 of the General Conditions, as may be modified by the Supplementary Conditions, sets forth OWNER's requirements as to performance and payment bonds and insurance. When the Successful Bidder delivers the Agreement (executed by Successful Bidder) to OWNER, it shall be accompanied by required bonds and insurance documentation.

ARTICLE 21 – SIGNING OF AGREEMENT

21.01 When OWNER issues a Notice of Award to the Successful Bidder, it shall be accompanied by the unexecuted counterparts of the Agreement along with the other Contract Documents as identified in the Agreement. Within 15 days thereafter, Successful Bidder shall execute and deliver the required number of counterparts of the Agreement (and any bonds and insurance documentation required to be delivered by the Contract Documents) to OWNER. Within ten days thereafter, OWNER shall deliver one fully executed counterpart of the Agreement to Successful Bidder, together with printed and electronic copies of the Contract Documents as stated in Paragraph 2.02 of the General Conditions.

- END OF SECTION -

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SECTION 00 41 43
BID FORM

Project Identification: Lift Station #2 Upgrades

ARTICLE 1 – BID RECIPIENT

1.01 This Bid is submitted to:

City of Vineyard via U3P (formerly SciQuest)

1.02 The undersigned Bidder proposes and agrees, if this Bid is accepted, to enter into an Agreement with Owner in the form included in the Bidding Documents to perform all Work as specified or indicated in the Bidding Documents for the prices and within the times indicated in this Bid and in accordance with the other terms and conditions of the Bidding Documents.

ARTICLE 2 – BIDDER'S ACKNOWLEDGEMENTS

2.01 Bidder accepts all of the terms and conditions of the Instructions to Bidders, including without limitation those dealing with the disposition of Bid security. This Bid will remain subject to acceptance for 60 days after the Bid opening, or for such longer period of time that Bidder may agree to in writing upon request of OWNER.

ARTICLE 3 – BIDDER'S REPRESENTATIONS

3.01 In submitting this Bid, Bidder represents that:

A. Bidder has examined and carefully studied the Bidding Documents, and any data and reference items identified in the Bidding Documents, and hereby acknowledges receipt of the following Addenda:

Addendum No.	Addendum Date

B. Bidder has visited the Site, conducted a thorough, alert visual examination of the Site and adjacent areas, and become familiar with and satisfied itself as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work.

C. Bidder is familiar with and has satisfied itself as to all Laws and Regulations that may affect cost, progress, and performance of the Work.

D. Bidder has carefully studied all: (1) reports of explorations and tests of subsurface conditions at or adjacent to the Site and all drawings of physical conditions relating to existing surface or subsurface structures at the Site that have been identified in the Supplementary Conditions, especially with respect to Technical Data in such reports and drawings, and (2) reports and drawings relating to Hazardous Environmental Conditions, if any, at or adjacent to the Site that have been identified in the Supplementary Conditions, especially with respect to Technical Data in such reports and drawings.

E. Bidder has considered the information known to Bidder itself; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Bidding Documents; and any Site-related reports and drawings identified in the Bidding Documents, with respect to the effect of such information, observations, and documents on (1) the cost, progress, and performance of the Work; (2) the means, methods, techniques, sequences, and procedures of construction to be employed by Bidder; and (3) Bidder's safety precautions and programs.

F. Bidder agrees, based on the information and observations referred to in the preceding paragraph, that no further examinations, investigations, explorations, tests, studies, or data are necessary for the determination of this Bid for performance of the Work at the price bid and within the times required, and in accordance with the other terms and conditions of the Bidding Documents.

G. Bidder is aware of the general nature of work to be performed by Owner and others at the Site that relates to the Work as indicated in the Bidding Documents.

H. Bidder has given ENGINEER written notice of all conflicts, errors, ambiguities, or discrepancies that Bidder has discovered in the Bidding Documents and confirms that the written resolution thereof by ENGINEER is acceptable to Bidder.

I. The Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for the performance and furnishing of the Work.

J. The submission of this Bid constitutes an incontrovertible representation by Bidder that Bidder has complied with every requirement of this Article, and that without exception the Bid and all prices in the Bid are premised upon performing and furnishing the Work required by the Bidding Documents.

ARTICLE 4 – BIDDER'S CERTIFICATION

4.01 Bidder certifies that:

A. This Bid is genuine and not made in the interest of or on behalf of any undisclosed individual or entity and is not submitted in conformity with any collusive agreement or rules of any group, association, organization, or corporation;

B. Bidder has not directly or indirectly induced or solicited any other Bidder to submit a false or sham Bid;

C. Bidder has not solicited or induced any individual or entity to refrain from bidding; and

D. Bidder has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for the Contract. For the purposes of this Paragraph 4.01.D:

1. "corrupt practice" means the offering, giving, receiving, or soliciting of anything of value likely to influence the action of a public official in the bidding process;
2. "fraudulent practice" means an intentional misrepresentation of facts made (a) to influence the bidding process to the detriment of Owner, (b) to establish bid prices at artificial non-competitive levels, or (c) to deprive Owner of the benefits of free and open competition;
3. "collusive practice" means a scheme or arrangement between two or more Bidders, with or without the knowledge of OWNER, a purpose of which is to establish bid prices at artificial, non-competitive levels; and

4. “coercive practice” means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the bidding process or affect the execution of the Contract.

ARTICLE 5 – BASIS OF BID

5.01 Bidder will complete the Work in accordance with the Contract Documents for the following price(s):

BASE BID SCHEDULE					
Item No.	**Description**	**Unit**	**Estimated Quantity**	**Bid Unit Price**	**Bid Price**
1	Mobilization/Demobilization	LS	1		
2	Removal of Two Existing Pumps and Motors	LS	1		
3	Furnish and Install Four New Pumps and Motors	LS	1		
4	Piping System Modifications Complete	LS	1		
5	Wet Well Equipment Modifications	LS	1		
6	Electrical Systems Complete	LS	1		
7	Control Panel Modifications Complete	LS	1		
Total Base Bid				$	

Bidder acknowledges that (1) each Bid Unit Price includes an amount considered by Bidder to be adequate to cover Contractor’s overhead and profit for each separately identified item, and (2) estimated quantities are not guaranteed, and are solely for the purpose of comparison of Bids, and final payment for all unit price Bid items will be based on actual quantities, determined as provided in the Contract Documents.

ARTICLE 6 – TIME OF COMPLETION

6.01 Bidder agrees that the Work will be substantially complete and will be completed and ready for final payment in accordance with Paragraph 15.06 of the General Conditions on or before the dates or within the number of calendar days indicated in the Agreement.

6.02 Bidder accepts the provisions of the Agreement as to liquidated damages.

ARTICLE 7 – ATTACHMENTS TO THIS BID

7.01 The following documents are submitted with and made a condition of this Bid:

A. Required Bid security;

B. List of Proposed Subcontractors;

C. List of Proposed Suppliers;

D. Evidence of authority to do business in the state of the Project; or a written covenant to obtain such license within the time for acceptance of Bids;

E. Contractor’s License No.: _____

ARTICLE 8 – DEFINED TERMS

8.01 The terms used in this Bid with initial capital letters have the meanings stated in the Instructions to Bidders, the General Conditions, and the Supplementary Conditions.

ARTICLE 9 – BID SUBMITTAL

9.01 This Bid is submitted by:

If Bidder is:

An Individual

Name (typed or printed): _____

By: _____ SEAL, if required

(Individual's signature)

Doing business as:

_____

A Partnership

Partnership Name: _____

By: _____ SEAL, if required

(Signature of general partner -- attach evidence of authority to sign)

Name (typed or printed):

_____

A Corporation

Corporation Name:

_____

State or Jurisdiction of Incorporation: _____

Type (General Business, Profession, Service, Limited Liability):

_____

By: _____

(Signature -- attach evidence of authority to sign)

Name (typed or printed):

_____

Title: _____

Attest _____ CORPORATE SEAL, if required by State

(Signature of Corporate Secretary)

Date of Qualification to do business in _____ [State or other jurisdiction where Project is located] is ___/___/_____

A Joint Venture

Name of Joint Venture:

_____

SEAL, if required by State

First Joint Venture Name: _____

By: _____

(Signature of joint venture partner -- attach evidence of authority to sign)

Name (typed or printed):

_____

Title: _____

Second Joint Venture Name:

_____

SEAL, if required by State

By: _____

(Signature of joint venture partner -- attach evidence of authority to sign)

Name (typed or printed):

_____

Title: _____

(Each joint venturer must sign. The manner of signing for each individual, partnership, and corporation that is party to the venture should be in the manner indicated above.)

Bidder's Business address: _____

_____

Business Phone No. (_____)_____

Business FAX No. (_____)_____

Business E-Mail Address

_____

State Contractor License No. _____. (If applicable)

Employer's Tax ID No. _____

Phone and FAX Numbers, and Address for receipt of official communications, if different from Business contact information:

_____

_____

9.02 Bid submitted on _____, 20___.

- END OF SECTION -

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SECTION 00 43 12
BID BOND

Any singular reference to Bidder, Surety, Owner or other party shall be considered plural where applicable.

BIDDER *(Name and Address)*:

SURETY *(Name, and Address of Principal Place of Business)*:

OWNER *(Name and Address)*:
City of Vineyard
125 South Main Street
Vineyard, Utah 84058

BID
Bid Due Date:
Description: **Lift Station #2 Upgrades**

BOND
Bond Number:
Date:
Penal sum _____ $ _____
(Words) (Figures)

Surety and Bidder, intending to be legally bound hereby, subject to the terms set forth below, do each cause this Bid Bond to be duly executed by an authorized officer, agent, or representative.

BIDDER	**SURETY**
_____ (Seal)	_____ (Seal)
Bidder's Name and Corporate Seal	Surety's Name and Corporate Seal
By: _____	By: _____
Signature	Signature (Attach Power of Attorney)
_____	_____
Print Name	Print Name
_____	_____
Title	Title
Attest: _____	Attest: _____
Signature	Signature
Title	Title

Note: Addresses are to be used for giving any required notice.
Provide execution by any additional parties, such as joint venturers, if necessary.

1. Bidder and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to pay to Owner upon default of Bidder the penal sum set forth on the face of this Bond. Payment of the penal sum is the extent of Bidder's and Surety's liability. Recovery of such penal sum under the terms of this Bond shall be Owner's sole and exclusive remedy upon default of Bidder.

2. Default of Bidder shall occur upon the failure of Bidder to deliver within the time required by the Bidding Documents (or any extension thereof agreed to in writing by Owner) the executed Agreement required by the Bidding Documents and any performance and payment bonds required by the Bidding Documents.

3. This obligation shall be null and void if:

3.1 Owner accepts Bidder's Bid and Bidder delivers within the time required by the Bidding Documents (or any extension thereof agreed to in writing by Owner) the executed Agreement required by the Bidding Documents and any performance and payment bonds required by the Bidding Documents, or

3.2 All Bids are rejected by Owner, or

3.3 Owner fails to issue a Notice of Award to Bidder within the time specified in the Bidding Documents (or any extension thereof agreed to in writing by Bidder and, if applicable, consented to by Surety when required by Paragraph 5 hereof).

4. Payment under this Bond will be due and payable upon default of Bidder and within 30 calendar days after receipt by Bidder and Surety of written notice of default from Owner, which notice will be given with reasonable promptness, identifying this Bond and the Project and including a statement of the amount due.

5. Surety waives notice of any and all defenses based on or arising out of any time extension to issue Notice of Award agreed to in writing by Owner and Bidder, provided that the total time for issuing Notice of Award including extensions shall not in the aggregate exceed 120 days from the Bid due date without Surety's written consent.

6. No suit or action shall be commenced under this Bond prior to 30 calendar days after the notice of default required in Paragraph 4 above is received by Bidder and Surety and in no case later than one year after the Bid due date.

7. Any suit or action under this Bond shall be commenced only in a court of competent jurisdiction located in the state in which the Project is located.

8. Notices required hereunder shall be in writing and sent to Bidder and Surety at their respective addresses shown on the face of this Bond. Such notices may be sent by personal delivery, commercial courier, or by United States Registered or Certified Mail, return receipt requested, postage pre-paid, and shall be deemed to be effective upon receipt by the party concerned.

9. Surety shall cause to be attached to this Bond a current and effective Power of Attorney evidencing the authority of the officer, agent, or representative who executed this Bond on behalf of Surety to execute, seal, and deliver such Bond and bind the Surety thereby.

10. This Bond is intended to conform to all applicable statutory requirements. Any applicable requirement of any applicable statute that has been omitted from this Bond shall be deemed to be included herein as if set forth at length. If any provision of this Bond conflicts with any applicable statute, then the provision of said statute shall govern and the remainder of this Bond that is not in conflict therewith shall continue in full force and effect.

11. The term "Bid" as used herein includes a Bid, offer, or proposal as applicable.

- END OF SECTION -

SECTION 00 45 13
CONTRACTOR'S QUALIFICATIONS AND EXPERIENCE

ARTICLE 1—GENERAL INFORMATION

1.01 Provide contact information for the Business:

Legal Name of Business:			
Corporate Office			
Name:		Phone number:	
Title:		Email address:	
Business address of corporate office:			
Local Office			
Name:		Phone number:	
Title:		Email address:	
Business address of local office:			

1.02 Provide information on the Business's organizational structure:

Form of Business:	☐ Sole Proprietorship ☐ Partnership ☐ Corporation		
☐ Limited Liability Company ☐ Joint Venture comprised of the following companies:			
	1.		
	2.		
	3.		
Provide a separate Qualification Statement for each Joint Venturer.			
Date Business was formed:		State in which Business was formed:	
Is this Business authorized to operate in the Project location?		☐ Yes ☐ No ☐ Pending	

1.03 Identify all businesses that own Business in whole or in part (25% or greater), or that are wholly or partly (25% or greater) owned by Business:

Name of business:		Affiliation:	
Address:			
Name of business:		Affiliation:	
Address:			
Name of business:		Affiliation:	
Address:			

1.04 Provide information regarding the Business's officers, partners, and limits of authority.

Name:		Title:	
Authorized to sign contracts: ☐ Yes ☐ No		Limit of Authority:	$
Name:		Title:	
Authorized to sign contracts: ☐ Yes ☐ No		Limit of Authority:	$
Name:		Title:	
Authorized to sign contracts: ☐ Yes ☐ No		Limit of Authority:	$
Name:		Title:	

ARTICLE 2—LICENSING

2.01 Provide information regarding licensure for Business:

Name of License:			
Licensing Agency:			
License No:		Expiration Date:	
Name of License:			
Licensing Agency:			
License No:		Expiration Date:	

ARTICLE 3—DIVERSE BUSINESS CERTIFICATIONS

3.01 Provide information regarding Business's Diverse Business Certification, if any. Provide evidence of current certification.

Certification	Certifying Agency	Certification Date
☐ Disadvantaged Business Enterprise		
☐ Minority Business Enterprise		
☐ Woman-Owned Business Enterprise		
☐ Small Business Enterprise		
☐ Disabled Business Enterprise		
☐ Veteran-Owned Business Enterprise		
☐ Service-Disabled Veteran-Owned		
☐ HUBZone Business (Historically Underutilized) Business		
☐ Other		
☐ None		

ARTICLE 4—SAFETY

4.01 Provide information regarding Business's safety organization and safety performance.

Name of Business's Safety Officer:		
Safety Certifications		
Certification Name	Issuing Agency	Expiration

4.02 Provide Worker's Compensation Insurance Experience Modification Rate (EMR), Total Recordable Frequency Rate (TRFR) for incidents, and Total Number of Recorded Manhours (MH) for the last 3 years and the EMR, TRFR, and MH history for the last 3 years of any proposed Subcontractor(s) that will provide Work valued at 10% or more of the Contract Price. Provide documentation of the EMR history for Business and Subcontractor(s).

Year									
Company	EMR	TRFR	MH	EMR	TRFR	MH	EMR	TRFR	MH

ARTICLE 5—FINANCIAL

5.01 Provide information regarding the Business's financial stability. Provide the most recent audited financial statement, and if such audited financial statement is not current, also provide the most current financial statement.

Financial Institution:		
Business address:		
Date of Business's most recent financial statement:		☐ Attached
Date of Business's most recent audited financial statement:		☐ Attached
Financial indicators from the most recent financial statement		
Contractor's Current Ratio (Current Assets ÷ Current Liabilities)		
Contractor's Quick Ratio ((Cash and Cash Equivalents + Accounts Receivable + Short Term Investments) ÷ Current Liabilities)		

ARTICLE 6—SURETY INFORMATION

6.01 Provide information regarding the surety company that will issue required bonds on behalf of the Business, including but not limited to performance and payment bonds.

Surety Name:			
Surety is a corporation organized and existing under the laws of the state of:			
Is surety authorized to provide surety bonds in the Project location?		☐ Yes ☐ No	
Is surety listed in "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" published in Department Circular 570 (as amended) by the Bureau of the Fiscal Service, U.S. Department of the Treasury? ☐ Yes ☐ No			
Mailing Address (principal place of business):			
Physical Address (principal place of business):			
Phone (main):		Phone (claims):	

ARTICLE 7—INSURANCE

7.01 Provide information regarding Business's insurance company(s), including but not limited to its Commercial General Liability carrier. Provide information for each provider.

Name of insurance provider, and type of policy (CLE, auto, etc.):			
Insurance Provider		Type of Policy (Coverage Provided)	
Are providers licensed or authorized to issue policies in the Project location?			☐ Yes ☐ No
Does provider have an A.M. Best Rating of A-VII or better?			☐ Yes ☐ No
Mailing Address (principal place of business):			
Physical Address (principal place of business):			
Phone (main):		Phone (claims):	

ARTICLE 8—CONSTRUCTION EXPERIENCE

8.01 Provide information that will identify the overall size and capacity of the Business.

Average number of current full-time employees:	
Estimate of revenue for the current year:	
Estimate of revenue for the previous year:	

8.02 Provide information regarding the Business's previous contracting experience.

Years of experience with projects like the proposed project:				
As a general contractor:		As a joint venturer:		
Has Business, or a predecessor in interest, or an affiliate identified in Paragraph 1.03:				
Been disqualified as a bidder by any local, state, or federal agency within the last 5 years?				
Been barred from contracting by any local, state, or federal agency within the last 5 years?				

Been released from a bid in the past 5 years? ☐ Yes ☐ No
Defaulted on a project or failed to complete any contract awarded to it? ☐ Yes ☐ No
Refused to construct or refused to provide materials defined in the contract documents or in a change order? ☐ Yes ☐ No
Been a party to any currently pending litigation or arbitration? ☐ Yes ☐ No
Provide full details in a separate attachment if the response to any of these questions is Yes.

8.03 List all projects currently under contract in Schedule A and provide indicated information.

8.04 List a minimum of three projects completed in the last 7 years in Schedule B and provide indicated information to demonstrate the Business's experience with projects similar in type and cost of construction. Similar projects are sewer lift station with dry-pit or wet-pit submersible pumps and piping.

8.05 In Schedule C, provide information on key individuals whom Business intends to assign to the Project. Provide resumes for those individuals included in Schedule C. Key individuals include the Project Manager, Project Superintendent, Quality Manager, and Safety Manager. Resumes may be provided for Business's key leaders as well.

ARTICLE 9—REQUIRED ATTACHMENTS

9.01 Provide the following information with the Statement of Qualifications:

A. If Business is a Joint Venture, separate Qualifications Statements for each Joint Venturer, as required in Paragraph 1.02.

B. Diverse Business Certifications if required by Paragraph 3.01.

C. Certification of Business's safety performance if required by Paragraph 4.02.

D. Financial statements as required by Paragraph 5.01.

E. Attachments providing additional information as required by Paragraph 8.02.

F. Schedule A (Current Projects) as required by Paragraph 8.03.

G. Schedule B (Previous Experience with Similar Projects) as required by Paragraph 8.04.

H. Schedule C (Key Individuals) and resumes for the key individuals listed, as required by Paragraph 8.05.

I. Additional items as pertinent.

This Statement of Qualifications is offered by:

Business: _____
(typed or printed name of organization)

By: _____
(individual's signature)

Name: _____
(typed or printed)

Title: _____
(typed or printed)

Date: _____
(date signed)

(If Business is a corporation, a partnership, or a joint venture, attach evidence of authority to sign.)

Attest: _____
(individual's signature)

Name: _____
(typed or printed)

Title: _____
(typed or printed)

Address for giving notices:

_____

_____

_____

Designated Representative:

Name: _____
(typed or printed)

Title: _____
(typed or printed)

Address:

_____

_____

_____

Phone: _____

Email: _____

Schedule A—Current Projects

Name of Project Owner		Project		
General Description of Project				
Project Cost		Date Project		
Key Project	Project Manager	Project Superintendent	Safety Manager	Quality Control Manager
Name				

Reference Contact Information (listing names indicates approval to contacting the names individuals as a reference)

	Name	Title/Position	Organization	Telephone	Email
Owner					
Designer					
Construction					

Project Owner		Project		
General Description of Project				
Project Cost		Date Project		
Key Project	Project Manager	Project Superintendent	Safety Manager	Quality Control Manager
Name				

Reference Contact Information (listing names indicates approval to contacting the names individuals as a reference)

	Name	Title/Position	Organization	Telephone	Email
Owner					
Designer					
Construction					

Project Owner		Project		
General Description of Project				
Project Cost		Date Project		
Key Project	Project Manager	Project Superintendent	Safety Manager	Quality Control Manager
Name				

Reference Contact Information (listing names indicates approval to contacting the names individuals as a reference)

	Name	Title/Position	Organization	Telephone	Email
Owner					
Designer					
Construction					

Schedule B—Previous Experience with Similar Projects

Name of				
Project Owner		Project		
General Description of				
Project Cost		Date Project		
Key Project	Project Manager	Project Superintendent	Safety Manager	Quality Control Manager
Name				

Reference Contact Information (listing names indicates approval to contacting the names individuals as a reference)

	Name	Title/Position	Organization	Telephone	Email
Owner					
Designer					
Construction					

Project Owner		Project		
General Description of				
Project Cost		Date Project		
Key Project	Project Manager	Project Superintendent	Safety Manager	Quality Control Manager
Name				

Reference Contact Information (listing names indicates approval to contacting the names individuals as a reference)

	Name	Title/Position	Organization	Telephone	Email
Owner					
Designer					
Construction					

Project Owner		Project		
General Description of				
Project Cost		Date Project		
Key Project	Project Manager	Project Superintendent	Safety Manager	Quality Control Manager
Name				

Reference Contact Information (listing names indicates approval to contacting the names individuals as a reference)

	Name	Title/Position	Organization	Telephone	Email
Owner					
Designer					
Construction					

Schedule B—Previous Experience with Similar Projects

Name of				
Project Owner		Project		
General Description of				
Project Cost		Date Project		
Key Project	Project Manager	Project Superintendent	Safety Manager	Quality Control Manager
Name				

Reference Contact Information (listing names indicates approval to contacting the names individuals as a reference)

	Name	Title/Position	Organization	Telephone	Email
Owner					
Designer					
Construction					

Project Owner		Project		
General Description of				
Project Cost		Date Project		
Key Project	Project Manager	Project Superintendent	Safety Manager	Quality Control Manager
Name				

Reference Contact Information (listing names indicates approval to contacting the names individuals as a reference)

	Name	Title/Position	Organization	Telephone	Email
Owner					
Designer					
Construction					

Project Owner		Project		
General Description of				
Project Cost		Date Project		
Key Project	Project Manager	Project Superintendent	Safety Manager	Quality Control Manager
Name				

Reference Contact Information (listing names indicates approval to contacting the names individuals as a reference)

	Name	Title/Position	Organization	Telephone	Email
Owner					
Designer					
Construction					

Schedule C—Key Individuals

Project Manager			
Name of individual			
Years of experience as project manager			
Years of experience with this organization			
Number of similar projects as project manager			
Number of similar projects in other positions			
Current Project Assignments			
Name of assignment		Percent of time used for this project	Estimated project completion date
Reference Contact Information (listing names indicates approval to contact named individuals as a reference)			
Name		Name	
Title/Position		Title/Position	
Organization		Organization	
Telephone		Telephone	
Email		Email	
Project		Project	
Candidate's role on project		Candidate's role on project	
Project Superintendent			
Name of individual			
Years of experience as project superintendent			
Years of experience with this organization			
Number of similar projects as project superintendent			
Number of similar projects in other positions			
Current Project Assignments			
Name of assignment		Percent of time used for this project	Estimated project completion date
Reference Contact Information (listing names indicates approval to contact named individuals as a reference)			
Name		Name	
Title/Position		Title/Position	
Organization		Organization	
Telephone		Telephone	
Email		Email	
Project		Project	
Candidate's role on project		Candidate's role on project	

Safety Manager			
Name of individual			
Years of experience as project manager			
Years of experience with this organization			
Number of similar projects as project manager			
Number of similar projects in other positions			
Current Project Assignments			
Name of assignment		Percent of time used for this project	Estimated project completion date
Reference Contact Information (listing names indicates approval to contact named individuals as a reference)			
Name		Name	
Title/Position		Title/Position	
Organization		Organization	
Telephone		Telephone	
Email		Email	
Project		Project	
Candidate's role on project		Candidate's role on project	

Quality Control Manager			
Name of individual			
Years of experience as project superintendent			
Years of experience with this organization			
Number of similar projects as project superintendent			
Number of similar projects in other positions			
Current Project Assignments			
Name of assignment		Percent of time used for this project	Estimated project completion date
Reference Contact Information (listing names indicates approval to contact named individuals as a reference)			
Name		Name	
Title/Position		Title/Position	
Organization		Organization	
Telephone		Telephone	
Email		Email	
Project		Project	
Candidate's role on project		Candidate's role on project	

- END OF SECTION -

SECTION 00 45 30
LIST OF SUBCONTRACTORS/SUPPLIERS

The Bidder shall list below the names and business address of each subcontractor discipline and/or material supplier as listed below and of each subcontractor and/or supplier who will perform Work under this Contract in excess of five percent (0.05) of the total bid price and shall also list the portion of the work which will be done by such subcontractor. After the opening of proposals, no changes or substitutions will be allowed without the written approval of OWNER. NOTE: Attach additional sheets if required.

WORK TO BE PERFORMED	SUBCONTRACTOR'S NAME AND ADDRESS
1. Electrical Subcontractor	
2. Flow Meter	
3. Variable Frequency Drives	
4.	
5.	
6.	
7.	

- END OF DOCUMENT -

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PART 2
CONTRACT FORMS

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SECTION 00 51 00
NOTICE OF AWARD

Date of Issuance:			
Owner:	City of Vineyard	Owner's Project No.:	
Engineer:	Hansen, Allen & Luce, Inc.	Engineer's Project No.:	319.13.100
Project:	Lift Station #2 Upgrades		
Contract Name:			
Bidder:			
Bidder's Address:			

You are notified that Owner has accepted your Bid dated _____, 2025 for the above Contract, and that you are the Successful Bidder and are awarded a Contract for:

[Describe Work, alternates, or sections of Work awarded]

The Contract Price of the awarded Contract is $**[Contract Price]**. Contract Price is subject to adjustment based on the provisions of the Contract, including but not limited to those governing changes, Unit Price Work, and Work performed on a cost-plus-fee basis, as applicable.

[Number of copies sent] unexecuted counterparts of the Agreement accompany this Notice of Award, and one copy of the Contract Documents accompanies this Notice of Award, or has been transmitted or made available to Bidder electronically.

☐ Drawings will be delivered separately from the other Contract Documents.

You must comply with the following conditions precedent within 15 days of the date of receipt of this Notice of Award:

1. Deliver to Owner **two** counterparts of the Agreement, signed by Bidder (as Contractor).
2. Deliver with the signed Agreement(s) the Contract security (such as required performance and payment bonds) and insurance documentation, as specified in the Instructions to Bidders and in the General Conditions, Articles 2 and 6.
3. Other conditions precedent (if any):

Failure to comply with these conditions within the time specified will entitle Owner to consider you in default, annul this Notice of Award, and declare your Bid security forfeited.

Within 10 days after you comply with the above conditions, Owner will return to you one fully signed counterpart of the Agreement, together with any additional copies of the Contract Documents as indicated in Paragraph 2.02 of the General Conditions.

Owner: **City of Vineyard**

By *(signature)*: _____

Name *(printed)*: _____

Title: _____

Copy: Engineer

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SECTION 00 52 00
AGREEMENT

This Agreement is by and between **City of Vineyard** ("Owner") and _____ ("Contractor").

Terms used in this Agreement have the meanings stated in the General Conditions and the Supplementary Conditions.

Owner and Contractor hereby agree as follows:

ARTICLE 1—WORK

1.01 **CONTRACTOR SHALL COMPLETE ALL WORK AS SPECIFIED OR INDICATED IN THE CONTRACT DOCUMENTS. THE WORK IS GENERALLY DESCRIBED AS FOLLOWS:**

The Work includes the removal of two (2) existing dry-pit chopper pumps and VFDs, furnishing and installing four (4) new dry-pit chopper pumps and VFDs, two (2) new concrete pedestals, two new mag flow meters, new valves and ductile iron piping and fittings, replacement of an existing plug valve, pipe supports, pipeline coating, removal of existing wet well mixer, removal and replacement of existing wet ultrasonic level sensor with new radar level sensor, replacement of existing exhaust fan, electrical modifications, and replacement of main control panel/RTU back panel.

ARTICLE 2—THE PROJECT

2.01 The Project, of which the Work under the Contract Documents is a part, is generally described as follows: **City of Vineyard – Lift Station #2 Upgrades**

ARTICLE 3—ENGINEER

3.01 The Owner has retained Hansen, Allen & Luce, Inc. ("Engineer") to act as Owner's representative, assume all duties and responsibilities of Engineer, and have the rights and authority assigned to Engineer in the Contract.

3.02 The part of the Project that pertains to the Work has been designed by Engineer.

ARTICLE 4—CONTRACT TIMES

4.01 *Time is of the Essence*

A. All time limits for Milestones, if any, Substantial Completion, and completion and readiness for final payment as stated in the Contract Documents are of the essence of the Contract.

4.02 *Contract Times: Number of Days*

A. The Work will be substantially complete within 180 calendar days from the Notice to Proceed and completed and ready for final payment within 210 calendar days in accordance with Paragraph 15.06 of the General Conditions.

4.03 *Liquidated Damages*

A. Contractor and Owner recognize that time is of the essence as stated in Paragraph 4.01 above and that Owner will suffer financial and other losses if the Work is not completed and Milestones not achieved within the Contract Times, as duly modified. The parties also recognize the delays, expense, and difficulties involved in proving, in a legal or arbitration proceeding, the actual loss suffered by Owner if the Work is not completed on time. Accordingly, instead of requiring any such proof, Owner and Contractor agree that as liquidated damages for delay (but not as a penalty):

1. *Substantial Completion:* Contractor shall pay Owner $500.00 for each day that expires after the time (as duly adjusted pursuant to the Contract) specified above for Substantial Completion, until the Work is substantially complete.

2. *Completion of Remaining Work:* After Substantial Completion, if Contractor shall neglect, refuse, or fail to complete the remaining Work within the Contract Times (as duly adjusted pursuant to the Contract) for completion and readiness for final payment, Contractor shall pay Owner $250.00 for each day that expires after such time until the Work is completed and ready for final payment.

3. Liquidated damages for failing to timely attain Milestones, Substantial Completion, and final completion are not additive, and will not be imposed concurrently.

B. If Owner recovers liquidated damages for a delay in completion by Contractor, then such liquidated damages are Owner's sole and exclusive remedy for such delay, and Owner is precluded from recovering any other damages, whether actual, direct, excess, or consequential, for such delay, except for special damages (if any) specified in this Agreement.

ARTICLE 5—CONTRACT PRICE

5.01 Owner shall pay Contractor for completion of the Work in accordance with the Contract Documents, the amounts that follow, subject to adjustment under the Contract:

A. For all Work, at the prices stated in Contractor's Bid, attached hereto as an exhibit.

All specific cash allowances are included in the above price in accordance with Paragraph 13.02 of the General Conditions.

ARTICLE 6—PAYMENT PROCEDURES

6.01 *Submittal and Processing of Payments*

A. Contractor shall submit Applications for Payment in accordance with Article 15 of the General Conditions. Applications for Payment will be processed by Engineer as provided in the General Conditions.

6.02 *Progress Payments; Retainage*

A. Owner shall make progress payments on the basis of Contractor's Applications for Payment on or about the 1st day of each month during performance of the Work as provided in Paragraph 6.02.A.1 below, provided that such Applications for Payment have been submitted in a timely manner and otherwise meet the requirements of the Contract. All such payments will be measured by the Schedule of Values established as provided in the General Conditions

(and in the case of Unit Price Work based on the number of units completed) or, in the event there is no Schedule of Values, as provided elsewhere in the Contract.

1. Prior to Substantial Completion, progress payments will be made in an amount equal to the percentage indicated below but, in each case, less the aggregate of payments previously made and less such amounts as Owner may withhold, including but not limited to liquidated damages, in accordance with the Contract.

    a. 95 percent of the value of the Work completed (with the balance being retainage).

        1) If 50 percent or more of the Work has been completed, as determined by Engineer, and if the character and progress of the Work have been satisfactory to Owner and Engineer, then as long as the character and progress of the Work remain satisfactory to Owner and Engineer, there will be no additional retainage; and

    b. 95 percent of cost of materials and equipment not incorporated in the Work (with the balance being retainage).

B. Upon Substantial Completion, Owner shall pay an amount sufficient to increase total payments to Contractor to 97.5 percent of the Work completed, less such amounts set off by Owner pursuant to Paragraph 15.01.E of the General Conditions, and less 100 percent of Engineer's estimate of the value of Work to be completed or corrected as shown on the punch list of items to be completed or corrected prior to final payment.

6.03 *Final Payment*

A. Upon final completion and acceptance of the Work, Owner shall pay the remainder of the Contract Price in accordance with Paragraph 15.06 of the General Conditions.

6.04 *Consent of Surety*

A. Owner will not make final payment, or return or release retainage at Substantial Completion or any other time, unless Contractor submits written consent of the surety to such payment, return, or release.

6.05 *Interest*

A. All amounts not paid when due will bear a maximum interest rate of up to or equal to Owner's maximum interest rate, but in no case greater than 4 percent per annum.

ARTICLE 7—CONTRACT DOCUMENTS

7.01 *Contents*

A. The Contract Documents consist of all of the following:

1. This Agreement.
2. Bonds:
    a. Performance bond (together with power of attorney).
    b. Payment bond (together with power of attorney).
3. General Conditions.
4. Supplementary Conditions.

5. Specifications as listed in the table of contents of the project manual (copy of list attached).
6. Drawings (not attached but incorporated by reference) consisting of **16** sheets with each sheet bearing the following general title: **Lift Station #2 Upgrades**
7. Drawings listed on the attached sheet index.
8. Addenda (numbers **[number]** to **[number]**, inclusive).
9. Exhibits to this Agreement (enumerated as follows):
    a. **[list exhibits]**
10. The following which may be delivered or issued on or after the Effective Date of the Contract and are not attached hereto:
    a. Notice to Proceed.
    b. Work Change Directives.
    c. Change Orders.
    d. Field Orders.
    e. Warranty Bond, if any.

B. The Contract Documents listed in Paragraph 7.01.A are attached to this Agreement (except as expressly noted otherwise above).

C. There are no Contract Documents other than those listed above in this Article 7.

D. The Contract Documents may only be amended, modified, or supplemented as provided in the Contract.

ARTICLE 8—REPRESENTATIONS, CERTIFICATIONS, AND STIPULATIONS

8.01 *Contractor's Representations*

A. In order to induce Owner to enter into this Contract, Contractor makes the following representations:

1. Contractor has examined and carefully studied the Contract Documents, including Addenda.
2. Contractor has visited the Site, conducted a thorough visual examination of the Site and adjacent areas, and become familiar with the general, local, and Site conditions that may affect cost, progress, and performance of the Work.
3. Contractor is familiar with all Laws and Regulations that may affect cost, progress, and performance of the Work.
4. Contractor has carefully studied the reports of explorations and tests of subsurface conditions at or adjacent to the Site and the drawings of physical conditions relating to existing surface or subsurface structures at the Site that have been identified in the Supplementary Conditions, with respect to the Technical Data in such reports and drawings.

5. Contractor has carefully studied the reports and drawings relating to Hazardous Environmental Conditions, if any, at or adjacent to the Site that have been identified in the Supplementary Conditions, with respect to Technical Data in such reports and drawings.

6. Contractor has considered the information known to Contractor itself; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Contract Documents; and the Technical Data identified in the Supplementary Conditions or by definition, with respect to the effect of such information, observations, and Technical Data on (a) the cost, progress, and performance of the Work; (b) the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor; and (c) Contractor's safety precautions and programs.

7. Based on the information and observations referred to in the preceding paragraph, Contractor agrees that no further examinations, investigations, explorations, tests, studies, or data are necessary for the performance of the Work at the Contract Price, within the Contract Times, and in accordance with the other terms and conditions of the Contract.

8. Contractor is aware of the general nature of work to be performed by Owner and others at the Site that relates to the Work as indicated in the Contract Documents.

9. Contractor has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Contractor has discovered in the Contract Documents, and of discrepancies between Site conditions and the Contract Documents, and the written resolution thereof by Engineer is acceptable to Contractor.

10. The Contract Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.

11. Contractor's entry into this Contract constitutes an incontrovertible representation by Contractor that without exception all prices in the Agreement are premised upon performing and furnishing the Work required by the Contract Documents.

8.02 *Contractor's Certifications*

A. Contractor certifies that it has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for or in executing the Contract. For the purposes of this Paragraph 8.02:

1. "corrupt practice" means the offering, giving, receiving, or soliciting of anything of value likely to influence the action of a public official in the bidding process or in the Contract execution;

2. "fraudulent practice" means an intentional misrepresentation of facts made (a) to influence the bidding process or the execution of the Contract to the detriment of Owner, (b) to establish Bid or Contract prices at artificial non-competitive levels, or (c) to deprive Owner of the benefits of free and open competition;

3. "collusive practice" means a scheme or arrangement between two or more Bidders, with or without the knowledge of Owner, a purpose of which is to establish Bid prices at artificial, non-competitive levels; and

4. “coercive practice” means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the bidding process or affect the execution of the Contract.

8.03 *Standard General Conditions*

A. Owner stipulates that if the General Conditions that are made a part of this Contract are EJCDC® C-700, Standard General Conditions for the Construction Contract (2018), published by the Engineers Joint Contract Documents Committee, and if Owner is the party that has furnished said General Conditions, then Owner has plainly shown all modifications to the standard wording of such published document to the Contractor, through a process such as highlighting or “track changes” (redline/strikeout), or in the Supplementary Conditions.

IN WITNESS WHEREOF, Owner and Contractor have signed this Agreement.

This Agreement will be effective on _____ (which is the Effective Date of the Contract).

Owner:	Contractor:
_____ *(typed or printed name of organization)*	_____ *(typed or printed name of organization)*
By: _____ *(individual's signature)*	By: _____ *(individual's signature)*
Date: _____ *(date signed)*	Date: _____ *(date signed)*
Name: _____ *(typed or printed)*	Name: _____ *(typed or printed)*
Title: _____ *(typed or printed)*	Title: _____ *(typed or printed)* *(If **[Type of Entity]** is a corporation, a partnership, or a joint venture, attach evidence of authority to sign.)*
Attest: _____ *(individual's signature)*	Attest: _____ *(individual's signature)*
Title: _____ *(typed or printed)*	Title: _____ *(typed or printed)*
Address for giving notices:	Address for giving notices:
_____	_____
_____	_____
_____	_____
Designated Representative:	Designated Representative:
Name: _____ *(typed or printed)*	Name: _____ *(typed or printed)*
Title: _____ *(typed or printed)*	Title: _____ *(typed or printed)*
Address:	Address:
_____	_____
_____	_____
_____	_____
Phone: _____	Phone: _____
Email: _____ *(If **[Type of Entity]** is a corporation, attach evidence of authority to sign. If **[Type of Entity]** is a public body, attach evidence of authority to sign and resolution or other documents authorizing execution of this Agreement.)*	Email: _____ License No.: _____ *(where applicable)* State: _____

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Section 00 55 00
NOTICE TO PROCEED

Owner:	Vineyard City	Owner's Project No.:	
Engineer:	Hansen, Allen & Luce	Engineer's Project No.:	319.13.100
Contractor:		Contractor's Project No.:	
Project:	Lift Station #2 Upgrades		
Contract Name:	Lift Station #2 Upgrades		
Effective Date of Contract:			

Owner hereby notifies Contractor that the Contract Times under the above Contract will commence to run on **[date Contract Times are to start]** pursuant to Paragraph 4.01 of the General Conditions.

On that date, Contractor shall start performing its obligations under the Contract Documents. No Work will be done at the Site prior to such date.

In accordance with the Agreement:

The number of days to achieve Substantial Completion is **180** from the date stated above for the commencement of the Contract Times, resulting in a date for Substantial Completion of **[date, calculated from commencement date above]**; and the number of days to achieve readiness for final payment is **210** from the commencement date of the Contract Times, resulting in a date for readiness for final payment of **[date, calculated from commencement date above]**.

Before starting any Work at the Site, Contractor must comply with the following:

[Note any access limitations, security procedures, or other restrictions]

Owner:	**Vineyard City**
By *(signature)*:	
Name *(printed)*:	
Title:	
Date Issued:	

Copy: Engineer

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SECTION 00 61 13
PERFORMANCE BOND

Contractor	**Surety**
Name:	Name:
Address *(principal place of business)*:	Address *(principal place of business)*:
Owner	**Contract**
Name: **Vineyard City**	Description *(name and location)*:
Mailing address *(principal place of business)*:	**Lift Station #2 Upgrades** **273 West 1600 North** **Vineyard, UT 84059**
125 South Main Street **Vineyard, UT 84059**	Contract Price: **[Amount from Contract]**
	Effective Date of Contract: **[Date from Contract]**

Bond

Bond Amount:

Date of Bond:

(Date of Bond cannot be earlier than Effective Date of Contract)

Modifications to this Bond form:

☐ None ☐ See Paragraph 16

Surety and Contractor, intending to be legally bound hereby, subject to the terms set forth in this Performance Bond, do each cause this Performance Bond to be duly executed by an authorized officer, agent, or representative.

Contractor as Principal	Surety
_____	_____
(Full formal name of Contractor)	*(Full formal name of Surety) (corporate seal)*
By: _____	By: _____
(Signature)	*(Signature)(Attach Power of Attorney)*
Name: _____	Name: _____
(Printed or typed)	*(Printed or typed)*
Title: _____	Title: _____
Attest: _____	Attest: _____
(Signature)	*(Signature)*
Name: _____	Name: _____
(Printed or typed)	*(Printed or typed)*
Title: _____	Title: _____

Notes: (1) Provide supplemental execution by any additional parties, such as joint venturers. (2) Any singular reference to Contractor, Surety, Owner, or other party is considered plural where applicable.

1. The Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to the Owner for the performance of the Construction Contract, which is incorporated herein by reference.

2. If the Contractor performs the Construction Contract, the Surety and the Contractor shall have no obligation under this Bond, except when applicable to participate in a conference as provided in Paragraph 3.

3. If there is no Owner Default under the Construction Contract, the Surety's obligation under this Bond will arise after:

    3.1. The Owner first provides notice to the Contractor and the Surety that the Owner is considering declaring a Contractor Default. Such notice may indicate whether the Owner is requesting a conference among the Owner, Contractor, and Surety to discuss the Contractor's performance. If the Owner does not request a conference, the Surety may, within five (5) business days after receipt of the Owner's notice, request such a conference. If the Surety timely requests a conference, the Owner shall attend. Unless the Owner agrees otherwise, any conference requested under this Paragraph 3.1 will be held within ten (10) business days of the Surety's receipt of the Owner's notice. If the Owner, the Contractor, and the Surety agree, the Contractor shall be allowed a reasonable time to perform the Construction Contract, but such an agreement does not waive the Owner's right, if any, subsequently to declare a Contractor Default;

    3.2. The Owner declares a Contractor Default, terminates the Construction Contract and notifies the Surety; and

    3.3. The Owner has agreed to pay the Balance of the Contract Price in accordance with the terms of the Construction Contract to the Surety or to a contractor selected to perform the Construction Contract.

4. Failure on the part of the Owner to comply with the notice requirement in Paragraph 3.1 does not constitute a failure to comply with a condition precedent to the Surety's obligations, or release the Surety from its obligations, except to the extent the Surety demonstrates actual prejudice.

5. When the Owner has satisfied the conditions of Paragraph 3, the Surety shall promptly and at the Surety's expense take one of the following actions:

    5.1. Arrange for the Contractor, with the consent of the Owner, to perform and complete the Construction Contract;

    5.2. Undertake to perform and complete the Construction Contract itself, through its agents or independent contractors;

    5.3. Obtain bids or negotiated proposals from qualified contractors acceptable to the Owner for a contract for performance and completion of the Construction Contract, arrange for a contract to be prepared for execution by the Owner and a contractor selected with the Owners concurrence, to be secured with performance and payment bonds executed by a qualified surety equivalent to the bonds issued on the Construction Contract, and pay to the Owner the amount of damages as described in Paragraph 7 in excess of the Balance of the Contract Price incurred by the Owner as a result of the Contractor Default; or

    5.4. Waive its right to perform and complete, arrange for completion, or obtain a new contractor, and with reasonable promptness under the circumstances:

5.4.1 After investigation, determine the amount for which it may be liable to the Owner and, as soon as practicable after the amount is determined, make payment to the Owner; or

5.4.2 Deny liability in whole or in part and notify the Owner, citing the reasons for denial.

6. If the Surety does not proceed as provided in Paragraph 5 with reasonable promptness, the Surety shall be deemed to be in default on this Bond seven days after receipt of an additional written notice from the Owner to the Surety demanding that the Surety perform its obligations under this Bond, and the Owner shall be entitled to enforce any remedy available to the Owner. If the Surety proceeds as provided in Paragraph 5.4, and the Owner refuses the payment, or the Surety has denied liability, in whole or in part, without further notice, the Owner shall be entitled to enforce any remedy available to the Owner.

7. If the Surety elects to act under Paragraph 5.1, 5.2, or 5.3, then the responsibilities of the Surety to the Owner will not be greater than those of the Contractor under the Construction Contract, and the responsibilities of the Owner to the Surety will not be greater than those of the Owner under the Construction Contract. Subject to the commitment by the Owner to pay the Balance of the Contract Price, the Surety is obligated, without duplication for:

   7.1. the responsibilities of the Contractor for correction of defective work and completion of the Construction Contract;

   7.2. additional legal, design professional, and delay costs resulting from the Contractor's Default, and resulting from the actions or failure to act of the Surety under Paragraph 5; and

   7.3. liquidated damages, or if no liquidated damages are specified in the Construction Contract, actual damages caused by delayed performance or non-performance of the Contractor.

8. If the Surety elects to act under Paragraph 5.1, 5.3, or 5.4, the Surety's liability is limited to the amount of this Bond.

9. The Surety shall not be liable to the Owner or others for obligations of the Contractor that are unrelated to the Construction Contract, and the Balance of the Contract Price will not be reduced or set off on account of any such unrelated obligations. No right of action will accrue on this Bond to any person or entity other than the Owner or its heirs, executors, administrators, successors, and assigns.

10. The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders, and other obligations.

11. Any proceeding, legal or equitable, under this Bond must be instituted in any court of competent jurisdiction in the location in which the work or part of the work is located and must be instituted within two years after a declaration of Contractor Default or within two years after the Contractor ceased working or within two years after the Surety refuses or fails to perform its obligations under this Bond, whichever occurs first. If the provisions of this paragraph are void or prohibited by law, the minimum periods of limitations available to sureties as a defense in the jurisdiction of the suit will be applicable.

12. Notice to the Surety, the Owner, or the Contractor must be mailed or delivered to the address shown on the page on which their signature appears.

13. When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement will be deemed deleted therefrom and provisions conforming to such

statutory or other legal requirement will be deemed incorporated herein. When so furnished, the intent is that this Bond will be construed as a statutory bond and not as a common law bond.

14. Definitions

    14.1. *Balance of the Contract Price*—The total amount payable by the Owner to the Contractor under the Construction Contract after all proper adjustments have been made including allowance for the Contractor for any amounts received or to be received by the Owner in settlement of insurance or other claims for damages to which the Contractor is entitled, reduced by all valid and proper payments made to or on behalf of the Contractor under the Construction Contract.

    14.2. *Construction Contract*—The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and changes made to the agreement and the Contract Documents.

    14.3. *Contractor Default*—Failure of the Contractor, which has not been remedied or waived, to perform or otherwise to comply with a material term of the Construction Contract.

    14.4. *Owner Default*—Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.

    14.5. *Contract Documents*—All the documents that comprise the agreement between the Owner and Contractor.

15. If this Bond is issued for an agreement between a contractor and subcontractor, the term Contractor in this Bond will be deemed to be Subcontractor and the term Owner will be deemed to be Contractor.

16. Modifications to this Bond are as follows: **[Describe modification or enter "None"]**

SECTION 00 61 14
PAYMENT BOND

Contractor Name: **[Full formal name of Contractor]** Address *(principal place of business)*: **[Address of Contractor's principal place of business]**	**Surety** Name: **[Full formal name of Surety]** Address *(principal place of business)*: **[Address of Surety's principal place of business]**
Owner Name: **Vineyard City** Mailing address *(principal place of business)*: **125 South Main Street** **Vineyard, UT 84059**	**Contract** Description *(name and location)*: **Lift Station Upgrades** **273 West 1600 North** **Vineyard, UT 84059** Contract Price: **[Amount, from Contract]** Effective Date of Contract: **[Date, from Contract]**

Bond

Bond Amount: **[Amount]**

Date of Bond: **[Date]**

(Date of Bond cannot be earlier than Effective Date of Contract)

Modifications to this Bond form:

☐ None ☐ See Paragraph 18

Surety and Contractor, intending to be legally bound hereby, subject to the terms set forth in this Payment Bond, do each cause this Payment Bond to be duly executed by an authorized officer, agent, or representative.

Contractor as Principal	Surety
_____ *(Full formal name of Contractor)*	_____ *(Full formal name of Surety) (corporate seal)*
By: _____ *(Signature)*	By: _____ *(Signature)(Attach Power of Attorney)*
Name: _____ *(Printed or typed)*	Name: _____ *(Printed or typed)*
Title: _____	Title: _____
Attest: _____ *(Signature)*	Attest: _____ *(Signature)*
Name: _____ *(Printed or typed)*	Name: _____ *(Printed or typed)*
Title: _____	Title: _____

Notes: (1) Provide supplemental execution by any additional parties, such as joint venturers. (2) Any singular reference to Contractor, Surety, Owner, or other party is considered plural where applicable.

1. The Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to the Owner to pay for labor, materials, and equipment furnished for use in the performance of the Construction Contract, which is incorporated herein by reference, subject to the following terms.
2. If the Contractor promptly makes payment of all sums due to Claimants, and defends, indemnifies, and holds harmless the Owner from claims, demands, liens, or suits by any person or entity seeking payment for labor, materials, or equipment furnished for use in the performance of the Construction Contract, then the Surety and the Contractor shall have no obligation under this Bond.
3. If there is no Owner Default under the Construction Contract, the Surety's obligation to the Owner under this Bond will arise after the Owner has promptly notified the Contractor and the Surety (at the address described in Paragraph 13) of claims, demands, liens, or suits against the Owner or the Owner's property by any person or entity seeking payment for labor, materials, or equipment furnished for use in the performance of the Construction Contract, and tendered defense of such claims, demands, liens, or suits to the Contractor and the Surety.
4. When the Owner has satisfied the conditions in Paragraph 3, the Surety shall promptly and at the Surety's expense defend, indemnify, and hold harmless the Owner against a duly tendered claim, demand, lien, or suit.
5. The Surety's obligations to a Claimant under this Bond will arise after the following:
    5.1. Claimants who do not have a direct contract with the Contractor
        5.1.1. have furnished a written notice of non-payment to the Contractor, stating with substantial accuracy the amount claimed and the name of the party to whom the materials were, or equipment was, furnished or supplied or for whom the labor was done or performed, within ninety (90) days after having last performed labor or last furnished materials or equipment included in the Claim; and
        5.1.2. have sent a Claim to the Surety (at the address described in Paragraph 13).
    5.2. Claimants who are employed by or have a direct contract with the Contractor have sent a Claim to the Surety (at the address described in Paragraph 13).
6. If a notice of non-payment required by Paragraph 5.1.1 is given by the Owner to the Contractor, that is sufficient to satisfy a Claimant's obligation to furnish a written notice of non-payment under Paragraph 5.1.1.
7. When a Claimant has satisfied the conditions of Paragraph 5.1 or 5.2, whichever is applicable, the Surety shall promptly and at the Surety's expense take the following actions:
    7.1. Send an answer to the Claimant, with a copy to the Owner, within sixty (60) days after receipt of the Claim, stating the amounts that are undisputed and the basis for challenging any amounts that are disputed; and
    7.2. Pay or arrange for payment of any undisputed amounts.
    7.3. The Surety's failure to discharge its obligations under Paragraph 7.1 or 7.2 will not be deemed to constitute a waiver of defenses the Surety or Contractor may have or acquire as to a Claim, except as to undisputed amounts for which the Surety and Claimant have reached agreement. If, however, the Surety fails to discharge its obligations under Paragraph 7.1 or 7.2, the Surety shall indemnify the Claimant for the reasonable attorney's fees the Claimant incurs thereafter to recover any sums found to be due and owing to the Claimant.

8. The Surety's total obligation will not exceed the amount of this Bond, plus the amount of reasonable attorney's fees provided under Paragraph 7.3, and the amount of this Bond will be credited for any payments made in good faith by the Surety.

9. Amounts owed by the Owner to the Contractor under the Construction Contract will be used for the performance of the Construction Contract and to satisfy claims, if any, under any construction performance bond. By the Contractor furnishing and the Owner accepting this Bond, they agree that all funds earned by the Contractor in the performance of the Construction Contract are dedicated to satisfying obligations of the Contractor and Surety under this Bond, subject to the Owner's priority to use the funds for the completion of the work.

10. The Surety shall not be liable to the Owner, Claimants, or others for obligations of the Contractor that are unrelated to the Construction Contract. The Owner shall not be liable for the payment of any costs or expenses of any Claimant under this Bond, and shall have under this Bond no obligation to make payments to or give notice on behalf of Claimants, or otherwise have any obligations to Claimants under this Bond.

11. The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders, and other obligations.

12. No suit or action will be commenced by a Claimant under this Bond other than in a court of competent jurisdiction in the state in which the project that is the subject of the Construction Contract is located or after the expiration of one year from the date (1) on which the Claimant sent a Claim to the Surety pursuant to Paragraph 5.1.2 or 5.2, or (2) on which the last labor or service was performed by anyone or the last materials or equipment were furnished by anyone under the Construction Contract, whichever of (1) or (2) first occurs. If the provisions of this paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit will be applicable.

13. Notice and Claims to the Surety, the Owner, or the Contractor must be mailed or delivered to the address shown on the page on which their signature appears. Actual receipt of notice or Claims, however accomplished, will be sufficient compliance as of the date received.

14. When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement will be deemed deleted here from and provisions conforming to such statutory or other legal requirement will be deemed incorporated herein. When so furnished, the intent is that this Bond will be construed as a statutory bond and not as a common law bond.

15. Upon requests by any person or entity appearing to be a potential beneficiary of this Bond, the Contractor and Owner shall promptly furnish a copy of this Bond or shall permit a copy to be made.

16. Definitions

    16.1. *Claim*—A written statement by the Claimant including at a minimum:

        16.1.1. The name of the Claimant;

        16.1.2. The name of the person for whom the labor was done, or materials or equipment furnished;

        16.1.3. A copy of the agreement or purchase order pursuant to which labor, materials, or equipment was furnished for use in the performance of the Construction Contract;

        16.1.4. A brief description of the labor, materials, or equipment furnished;

16.1.5. The date on which the Claimant last performed labor or last furnished materials or equipment for use in the performance of the Construction Contract;

16.1.6. The total amount earned by the Claimant for labor, materials, or equipment furnished as of the date of the Claim;

16.1.7. The total amount of previous payments received by the Claimant; and

16.1.8. The total amount due and unpaid to the Claimant for labor, materials, or equipment furnished as of the date of the Claim.

16.2. *Claimant*—An individual or entity having a direct contract with the Contractor or with a subcontractor of the Contractor to furnish labor, materials, or equipment for use in the performance of the Construction Contract. The term Claimant also includes any individual or entity that has rightfully asserted a claim under an applicable mechanic's lien or similar statute against the real property upon which the Project is located. The intent of this Bond is to include without limitation in the terms of "labor, materials, or equipment" that part of the water, gas, power, light, heat, oil, gasoline, telephone service, or rental equipment used in the Construction Contract, architectural and engineering services required for performance of the work of the Contractor and the Contractor's subcontractors, and all other items for which a mechanic's lien may be asserted in the jurisdiction where the labor, materials, or equipment were furnished.

16.3. *Construction Contract*—The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and all changes made to the agreement and the Contract Documents.

16.4. *Owner Default*—Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.

16.5. *Contract Documents*—All the documents that comprise the agreement between the Owner and Contractor.

17. If this Bond is issued for an agreement between a contractor and subcontractor, the term Contractor in this Bond will be deemed to be Subcontractor and the term Owner will be deemed to be Contractor.

18. Modifications to this Bond are as follows: **[Describe modification or enter "None"]**

Contractor's Application for Payment

Owner:		**Owner's Project No.:**	
Engineer:		**Engineer's Project No.:**	
Contractor:		**Contractor's Project No.:**	
Project:			
Contract:			
Application No.:		**Application Date:**	
Application Period:	**From**	**to**	

1. Original Contract Price					$ -
2. Net change by Change Orders					$ -
3. Current Contract Price (Line 1 + Line 2)					$ -
4. Total Work completed and materials stored to date (Sum of Column G Lump Sum Total and Column J Unit Price Total)					$ -
5. Retainage					
a.		X	$ -	Work Completed	$ -
b.		X	$ -	Stored Materials	$ -
c. Total Retainage (Line 5.a + Line 5.b)					$ -
6. Amount eligible to date (Line 4 - Line 5.c)					$ -
7. Less previous payments (Line 6 from prior application)					
8. Amount due this application					$ -
9. Balance to finish, including retainage (Line 3 - Line 4)					$ -

Contractor's Certification

The undersigned Contractor certifies, to the best of its knowledge, the following:
(1) All previous progress payments received from Owner on account of Work done under the Contract have been applied on account to discharge Contractor's legitimate obligations incurred in connection with the Work covered by prior Applications for Payment;
(2) Title to all Work, materials and equipment incorporated in said Work, or otherwise listed in or covered by this Application for Payment, will pass to Owner at time of payment free and clear of all liens, security interests, and encumbrances (except such as are covered by a bond acceptable to Owner indemnifying Owner against any such liens, security interest, or encumbrances); and
(3) All the Work covered by this Application for Payment is in accordance with the Contract Documents and is not defective.

Contractor:			
Signature:		**Date:**	

Recommended by Engineer		**Approved by Owner**	
By:		**By:**	
Title:		**Title:**	
Date:		**Date:**	
Approved by Funding Agency			
By:		**By:**	
Title:		**Title:**	
Date:		**Date:**	

Progress Estimate - Lump Sum Work **Contractor's Application for Payment**

Owner:		**Owner's Project No.:**	
Engineer:		**Engineer's Project No.:**	
Contractor:		**Contractor's Project No.:**	
Project:			
Contract:			

Application No.: **Application Period:** **From** **to** **Application Date:**

A	B	C	D	E	F	G	H	I
			Work Completed					
Item No.	Description	Scheduled Value ($)	(D + E) From Previous Application ($)	This Period ($)	Materials Currently Stored (not in D or E) ($)	Work Completed and Materials Stored to Date (D + E + F) ($)	% of Scheduled Value (G / C) (%)	Balance to Finish (C - G) ($)
			Original Contract					
			-			-		-
						-		-
						-		-
						-		-
						-		-
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						-		-
						-		-
						-		-
	Original Contract Totals	$ -	$ -	$ -	$ -	$ -		$ -

Progress Estimate - Lump Sum Work **Contractor's Application for Payment**

Owner:		**Owner's Project No.:**	
Engineer:		**Engineer's Project No.:**	
Contractor:		**Contractor's Project No.:**	
Project:			
Contract:			

Application No.: _____ **Application Period:** **From** _____ **to** _____ **Application Date:** _____

A	B	C	D	E	F	G	H	I
			Work Completed					
Item No.	Description	Scheduled Value ($)	(D + E) From Previous Application ($)	This Period ($)	Materials Currently Stored (not in D or E) ($)	Work Completed and Materials Stored to Date (D + E + F) ($)	% of Scheduled Value (G / C) (%)	Balance to Finish (C - G) ($)
Change Orders								
						-		-
						-		-
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						-		-
						-		-
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						-		-
						-		-
						-		-
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						-		-
						-		-
	Change Order Totals	$ -	$ -	$ -	$ -	$ -		$ -
Original Contract and Change Orders								
	Project Totals	$ -	$ -	$ -	$ -	$ -		$ -

Progress Estimate - Unit Price Work | **Contractor's Application for Payment**

Owner:		**Owner's Project No.:**	
Engineer:		**Engineer's Project No.:**	
Contractor:		**Contractor's Project No.:**	
Project:			
Contract:			

Application No.: _____ **Application Period:** **From** _____ **to** _____ **Application Date:** _____

A	B	C	D	E	F	G	H	I	J	K	L
		Contract Information				Work Completed					
Bid Item No.	Description	Item Quantity	Units	Unit Price ($)	Value of Bid Item (C X E) ($)	Estimated Quantity Incorporated in the Work	Value of Work Completed to Date (E X G) ($)	Materials Currently Stored (not in G) ($)	Work Completed and Materials Stored to Date (H + I) ($)	% of Value of Item (J / F) (%)	Balance to Finish (F - J) ($)
Original Contract											
					-		-		-		-
					-		-		-		-
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					-		-		-		-
Original Contract Totals					$ -		$ -	$ -	$ -		$ -

EJCDC C-620 Contractor's Application for Payment
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Progress Estimate - Unit Price Work | **Contractor's Application for Payment**

Owner: _____ **Owner's Project No.:** _____
Engineer: _____ **Engineer's Project No.:** _____
Contractor: _____ **Contractor's Project No.:** _____
Project: _____
Contract: _____

Application No.: _____ **Application Period:** From _____ to _____ **Application Date:** _____

A	B	C	D	E	F	G	H	I	J	K	L
		Contract Information				Work Completed					
Bid Item No.	Description	Item Quantity	Units	Unit Price ($)	Value of Bid Item (C X E) ($)	Estimated Quantity Incorporated in the Work	Value of Work Completed to Date (E X G) ($)	Materials Currently Stored (not in G) ($)	Work Completed and Materials Stored to Date (H + I) ($)	% of Value of Item (J / F) (%)	Balance to Finish (F - J) ($)
Change Orders											
					-		-		-		-
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				Change Order Totals	$ -		$ -	$ -	$ -		$ -
Original Contract and Change Orders											
				Project Totals	$ -		$ -	$ -	$ -		$ -

EJCDC C-620 Contractor's Application for Payment
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Stored Materials Summary **Contractor's Application for Payment**

Owner:		**Owner's Project No.:**	
Engineer:		**Engineer's Project No.:**	
Contractor:		**Contractor's Project No.:**	
Project:			
Contract:			

Application No.: **Application Period:** **From** **to** **Application Date:**

A	B	C	D	E	F	G	H	I	J	K	L	M
						Materials Stored			Incorporated in Work			
Item No. (Lump Sum Tab) or Bid Item No. (Unit Price Tab)	Supplier Invoice No.	Submittal No. (with Specification Section No.)	Description of Materials or Equipment Stored	Storage Location	Application No. When Materials Placed in Storage	Previous Amount Stored ($)	Amount Stored this Period ($)	Amount Stored to Date (G+H) ($)	Amount Previously Incorporated in the Work ($)	Amount Incorporated in the Work this Period ($)	Total Amount Incorporated in the Work (J+K) ($)	Materials Remaining in Storage (I-L) ($)
								-			-	-
								-			-	-
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								-			-	-
								-			-	-
					Totals	$ -	$ -	$ -	$ -	$ -	$ -	$ -

SECTION 00 62 50
CERTIFICATE OF SUBSTANTIAL COMPLETION

Owner:	Vineyard City	Owner's Project No.:	
Engineer:	Hansen, Allen & Luces, Inc.	Engineer's Project No.:	319.13.100
Contractor:		Contractor's Project No.:	
Project:	Lift Station #2 Upgrades		
Contract Name:			

This ☐ Preliminary ☐ Final Certificate of Substantial Completion applies to:

☐ All Work ☐ The following specified portions of the Work:

[Describe the portion of the work for which Certificate of Substantial Completion is issued]

Date of Substantial Completion: **[Enter date, as determined by Engineer]**

The Work to which this Certificate applies has been inspected by authorized representatives of OWNER, CONTRACTOR, and ENGINEER, and found to be substantially complete. The Date of Substantial Completion of the Work or portion thereof designated above is hereby established, subject to the provisions of the Contract pertaining to Substantial Completion. The date of Substantial Completion in the final Certificate of Substantial Completion marks the commencement of the contractual correction period and applicable warranties required by the Contract.

A punch list of items to be completed or corrected is attached to this Certificate. This list may not be all-inclusive, and the failure to include any items on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents.

Amendments of contractual responsibilities recorded in this Certificate should be the product of mutual agreement of OWNER and CONTRACTOR; see Paragraph 15.03.D of the General Conditions.

The responsibilities between OWNER and CONTRACTOR for security, operation, safety, maintenance, heat, utilities, insurance, and warranties upon OWNER's use or occupancy of the Work must be as provided in the Contract, except as amended as follows:

Amendments to OWNER's Responsibilities: ☐ None ☐ As follows:

[List amendments to Owner's Responsibilities]

Amendments to CONTRACTOR's Responsibilities: ☐ None ☐ As follows:

[List amendments to Contractor's Responsibilities]

The following documents are attached to and made a part of this Certificate:

[List attachments such as punch list; other documents]

This Certificate does not constitute an acceptance of Work not in accordance with the Contract Documents, nor is it a release of CONTRACTOR's obligation to complete the Work in accordance with the Contract Documents.

Engineer

By *(signature)*: _____

Name *(printed)*: _____

Title: _____

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SECTION 00 62 60
NOTICE OF ACCEPTABILITY OF WORK

Owner:	Vineyard City	Owner's Project No.:	
Engineer:	Hansen, Allen & Luce, Inc.	Engineer's Project No.:	319.13.100
Contractor:		Contractor's Project No.:	
Project:	Lift Station #2 Upgrades		
Contract Name:			
Notice Date:		Effective Date of the Construction Contract:	

ENGINEER hereby gives notice to OWNER and CONTRACTOR that ENGINEER recommends final payment to CONTRACTOR, and that the Work furnished and performed by CONTRACTOR under the Construction Contract is acceptable, expressly subject to the provisions of the Construction Contract's Contract Documents ("Contract Documents") and of the Agreement between OWNER and ENGINEER for Professional Services dated **[date of professional services agreement]** ("Owner-Engineer Agreement"). This Notice of Acceptability of Work (Notice) is made expressly subject to the following terms and conditions to which all who receive and rely on said Notice agree:

1. This Notice has been prepared with the skill and care ordinarily used by members of the engineering profession practicing under similar conditions at the same time and in the same locality.
2. This Notice reflects and is an expression of the ENGINEER's professional opinion.
3. This Notice has been prepared to the best of ENGINEER's knowledge, information, and belief as of the Notice Date.
4. This Notice is based entirely on and expressly limited by the scope of services ENGINEER has been employed by OWNER to perform or furnish during construction of the Project (including observation of the CONTRACTOR's Work) under the Owner-Engineer Agreement, and applies only to facts that are within ENGINEER's knowledge or could reasonably have been ascertained by ENGINEER as a result of carrying out the responsibilities specifically assigned to ENGINEER under such Owner-Engineer Agreement.
5. This Notice is not a guarantee or warranty of CONTRACTOR's performance under the Construction Contract, an acceptance of Work that is not in accordance with the Contract Documents, including but not limited to defective Work discovered after final inspection, nor an assumption of responsibility for any failure of CONTRACTOR to furnish and perform the Work thereunder in accordance with the Contract Documents, or to otherwise comply with the Contract Documents or the terms of any special guarantees specified therein.
6. This Notice does not relieve CONTRACTOR of any surviving obligations under the Construction Contract and is subject to OWNER's reservations of rights with respect to completion and final payment.

ENGINEER

By *(signature)*: _____

Name *(printed)*: _____

Title: _____

PART 3
CONDITIONS OF CONTRACT

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SECTION 00 72 00
GENERAL CONDITIONS

The General Conditions to be used for the Project are the Standard General Conditions of the Construction Contract prepared by Engineers Joint Contract Documents Council (No. EJCDC C-700, 2018 Edition) as included in this Section.

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STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

TABLE OF CONTENTS

Page

Article 1—Definitions and Terminology 1
1.01 Defined Terms 1
1.02 Terminology 6
Article 2—Preliminary Matters 7
2.01 Delivery of Performance and Payment Bonds; Evidence of Insurance 7
2.02 Copies of Documents 7
2.03 Before Starting Construction 8
2.04 Preconstruction Conference; Designation of Authorized Representatives 8
2.05 Acceptance of Schedules 8
2.06 Electronic Transmittals 9
Article 3—Contract Documents: Intent, Requirements, Reuse 9
3.01 Intent 9
3.02 Reference Standards 10
3.03 Reporting and Resolving Discrepancies 10
3.04 Requirements of the Contract Documents 11
3.05 Reuse of Documents 11
Article 4—Commencement and Progress of the Work 12
4.01 Commencement of Contract Times; Notice to Proceed 12
4.02 Starting the Work 12
4.03 Reference Points 12
4.04 Progress Schedule 12
4.05 Delays in CONTRACTOR's Progress 12
Article 5—Site; Subsurface and Physical Conditions; Hazardous Environmental Conditions 14
5.01 Availability of Lands 14
5.02 Use of Site and Other Areas 14
5.03 Subsurface and Physical Conditions 15
5.04 Differing Subsurface or Physical Conditions 16
5.05 Underground Facilities 18
5.06 Hazardous Environmental Conditions at Site 19

Article 6—Bonds and Insurance 22
6.01 Performance, Payment, and Other Bonds 22
6.02 Insurance—General Provisions 23
6.03 CONTRACTOR's Insurance 24
6.04 Builder's Risk and Other Property Insurance 25
6.05 Property Losses; Subrogation 26
6.06 Receipt and Application of Property Insurance Proceeds 27
Article 7—CONTRACTOR's Responsibilities 27
7.01 CONTRACTOR's Means and Methods of Construction 27
7.02 Supervision and Superintendence 28
7.03 Labor; Working Hours 28
7.04 Services, Materials, and Equipment 28
7.05 "Or Equals" 29
7.06 Substitutes 30
7.07 Concerning Subcontractors and Suppliers 31
7.08 Patent Fees and Royalties 33
7.09 Permits 33
7.10 Taxes 33
7.11 Laws and Regulations 33
7.12 Record Documents 34
7.13 Safety and Protection 34
7.14 Hazard Communication Programs 35
7.15 Emergencies 35
7.16 Submittals 36
7.17 CONTRACTOR's General Warranty and Guarantee 38
7.18 Indemnification 39
7.19 Delegation of Professional Design Services 40
Article 8—Other Work at the Site 41
8.01 Other Work 41
8.02 Coordination 42
8.03 Legal Relationships 42
Article 9—OWNER's Responsibilities 43
9.01 Communications to CONTRACTOR 43
9.02 Replacement of ENGINEER 43
9.03 Furnish Data 43

9.04 Pay When Due....43
9.05 Lands and Easements; Reports, Tests, and Drawings....43
9.06 Insurance....44
9.07 Change Orders....44
9.08 Inspections, Tests, and Approvals....44
9.09 Limitations on OWNER's Responsibilities....44
9.10 Undisclosed Hazardous Environmental Condition....44
9.11 Evidence of Financial Arrangements....44
9.12 Safety Programs....44
Article 10—ENGINEER's Status During Construction....44
10.01 OWNER's Representative....44
10.02 Visits to Site....45
10.03 Resident Project Representative....45
10.04 ENGINEER's Authority....45
10.05 Determinations for Unit Price Work....45
10.06 Decisions on Requirements of Contract Documents and Acceptability of Work....46
10.07 Limitations on ENGINEER's Authority and Responsibilities....46
10.08 Compliance with Safety Program....46
Article 11—Changes to the Contract....46
11.01 Amending and Supplementing the Contract....46
11.02 Change Orders....47
11.03 Work Change Directives....47
11.04 Field Orders....48
11.05 OWNER-Authorized Changes in the Work....48
11.06 Unauthorized Changes in the Work....48
11.07 Change of Contract Price....48
11.08 Change of Contract Times....50
11.09 Change Proposals....50
11.10 Notification to Surety....51
Article 12—Claims....51
12.01 Claims....51
Article 13—Cost of the Work; Allowances; Unit Price Work....52
13.01 Cost of the Work....52
13.02 Allowances....56
13.03 Unit Price Work....56

Article 14—Tests and Inspections; Correction, Removal, or Acceptance of Defective Work.....57
14.01 Access to Work 57
14.02 Tests, Inspections, and Approvals 57
14.03 Defective Work 58
14.04 Acceptance of Defective Work.....59
14.05 Uncovering Work.....59
14.06 OWNER May Stop the Work 60
14.07 OWNER May Correct Defective Work 60
Article 15—Payments to CONTRACTOR; Set-Offs; Completion; Correction Period.....61
15.01 Progress Payments 61
15.02 CONTRACTOR's Warranty of Title.....64
15.03 Substantial Completion.....64
15.04 Partial Use or Occupancy.....65
15.05 Final Inspection 66
15.06 Final Payment 66
15.07 Waiver of Claims 67
15.08 Correction Period 67
Article 16—Suspension of Work and Termination 68
16.01 OWNER May Suspend Work.....68
16.02 OWNER May Terminate for Cause.....69
16.03 OWNER May Terminate for Convenience 70
16.04 CONTRACTOR May Stop Work or Terminate.....70
Article 17—Final Resolution of Disputes 71
17.01 Methods and Procedures 71
Article 18—Miscellaneous.....71
18.01 Giving Notice.....71
18.02 Computation of Times 71
18.03 Cumulative Remedies 71
18.04 Limitation of Damages.....72
18.05 No Waiver 72
18.06 Survival of Obligations.....72
18.07 Controlling Law.....72
18.08 Assignment of Contract 72
18.09 Successors and Assigns 72
18.10 Headings.....72

STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

ARTICLE 1—DEFINITIONS AND TERMINOLOGY

1.01 *Defined Terms*

A. Wherever used in the Bidding Requirements or Contract Documents, a term printed with initial capital letters, including the term's singular and plural forms, will have the meaning indicated in the definitions below. In addition to terms specifically defined, terms with initial capital letters in the Contract Documents include references to identified articles and paragraphs, and the titles of other documents or forms.

1. *Addenda*—Written or graphic instruments issued prior to the opening of Bids which clarify, correct, or change the Bidding Requirements or the proposed Contract Documents.

2. *Agreement*—The written instrument, executed by OWNER and CONTRACTOR, that sets forth the Contract Price and Contract Times, identifies the parties and the ENGINEER, and designates the specific items that are Contract Documents.

3. *Application for Payment*—The document prepared by CONTRACTOR, in a form acceptable to ENGINEER, to request progress or final payments, and which is to be accompanied by such supporting documentation as is required by the Contract Documents.

4. *Bid*—The offer of a Bidder submitted on the prescribed form setting forth the prices for the Work to be performed.

5. *Bidder*—An individual or entity that submits a Bid to OWNER.

6. *Bidding Documents*—The Bidding Requirements, the proposed Contract Documents, and all Addenda.

7. *Bidding Requirements*—The Advertisement or invitation to bid, Instructions to Bidders, Bid Bond or other Bid security, if any, the Bid Form, and the Bid with any attachments.

8. *Change Order*—A document which is signed by CONTRACTOR and OWNER and authorizes an addition, deletion, or revision in the Work or an adjustment in the Contract Price or the Contract Times, or other revision to the Contract, issued on or after the Effective Date of the Contract.

9. *Change Proposal*—A written request by CONTRACTOR, duly submitted in compliance with the procedural requirements set forth herein, seeking an adjustment in Contract Price or Contract Times; contesting an initial decision by ENGINEER concerning the requirements of the Contract Documents or the acceptability of Work under the Contract Documents; challenging a set-off against payments due; or seeking other relief with respect to the terms of the Contract.

10. *Claim*

a. A demand or assertion by OWNER directly to CONTRACTOR, duly submitted in compliance with the procedural requirements set forth herein, seeking an adjustment of Contract Price or Contract Times; contesting an initial decision

by ENGINEER concerning the requirements of the Contract Documents or the acceptability of Work under the Contract Documents; contesting ENGINEER's decision regarding a Change Proposal; seeking resolution of a contractual issue that ENGINEER has declined to address; or seeking other relief with respect to the terms of the Contract.

b. A demand or assertion by CONTRACTOR directly to OWNER, duly submitted in compliance with the procedural requirements set forth herein, contesting ENGINEER's decision regarding a Change Proposal, or seeking resolution of a contractual issue that ENGINEER has declined to address.

c. A demand or assertion by OWNER or CONTRACTOR, duly submitted in compliance with the procedural requirements set forth herein, made pursuant to Paragraph 12.01.A.4, concerning disputes arising after ENGINEER has issued a recommendation of final payment.

d. A demand for money or services by a third party is not a Claim.

11. *Constituent of Concern*—Asbestos, petroleum, radioactive materials, polychlorinated biphenyls (PCBs), lead-based paint (as defined by the HUD/EPA standard), hazardous waste, and any substance, product, waste, or other material of any nature whatsoever that is or becomes listed, regulated, or addressed pursuant to Laws and Regulations regulating, relating to, or imposing liability or standards of conduct concerning, any hazardous, toxic, or dangerous waste, substance, or material.

12. *Contract*—The entire and integrated written contract between OWNER and CONTRACTOR concerning the Work.

13. *Contract Documents*—Those items so designated in the Agreement, and which together comprise the Contract.

14. *Contract Price*—The money that OWNER has agreed to pay CONTRACTOR for completion of the Work in accordance with the Contract Documents.

15. *Contract Times*—The number of days or the dates by which CONTRACTOR shall: (a) achieve Milestones, if any; (b) achieve Substantial Completion; and (c) complete the Work.

16. *CONTRACTOR*—The individual or entity with which OWNER has contracted for performance of the Work.

17. *Cost of the Work*—See Paragraph 13.01 for definition.

18. *Drawings*—The part of the Contract that graphically shows the scope, extent, and character of the Work to be performed by CONTRACTOR.

19. *Effective Date of the Contract*—The date, indicated in the Agreement, on which the Contract becomes effective.

20. *Electronic Document*—Any Project-related correspondence, attachments to correspondence, data, documents, drawings, information, or graphics, including but not limited to Shop Drawings and other Submittals, that are in an electronic or digital format.

21. *Electronic Means*—Electronic mail (email), upload/download from a secure Project website, or other communications methods that allow: (a) the transmission or communication of Electronic Documents; (b) the documentation of transmissions,

including sending and receipt; (c) printing of the transmitted Electronic Document by the recipient; (d) the storage and archiving of the Electronic Document by sender and recipient; and (e) the use by recipient of the Electronic Document for purposes permitted by this Contract. Electronic Means does not include the use of text messaging, or of Facebook, Twitter, Instagram, or similar social media services for transmission of Electronic Documents.

22. *ENGINEER*—The individual or entity named as such in the Agreement.
23. *Field Order*—A written order issued by ENGINEER which requires minor changes in the Work but does not change the Contract Price or the Contract Times.
24. *Hazardous Environmental Condition*—The presence at the Site of Constituents of Concern in such quantities or circumstances that may present a danger to persons or property exposed thereto.
    a. The presence at the Site of materials that are necessary for the execution of the Work, or that are to be incorporated into the Work, and that are controlled and contained pursuant to industry practices, Laws and Regulations, and the requirements of the Contract, is not a Hazardous Environmental Condition.
    b. The presence of Constituents of Concern that are to be removed or remediated as part of the Work is not a Hazardous Environmental Condition.
    c. The presence of Constituents of Concern as part of the routine, anticipated, and obvious working conditions at the Site, is not a Hazardous Environmental Condition.
25. *Laws and Regulations; Laws or Regulations*—Any and all applicable laws, statutes, rules, regulations, ordinances, codes, and binding decrees, resolutions, and orders of any and all governmental bodies, agencies, authorities, and courts having jurisdiction.
26. *Liens*—Charges, security interests, or encumbrances upon Contract-related funds, real property, or personal property.
27. *Milestone*—A principal event in the performance of the Work that the Contract requires CONTRACTOR to achieve by an intermediate completion date, or by a time prior to Substantial Completion of all the Work.
28. *Notice of Award*—The written notice by OWNER to a Bidder of OWNER's acceptance of the Bid.
29. *Notice to Proceed*—A written notice by OWNER to CONTRACTOR fixing the date on which the Contract Times will commence to run and on which CONTRACTOR shall start to perform the Work.
30. *OWNER*—The individual or entity with which CONTRACTOR has contracted regarding the Work, and which has agreed to pay CONTRACTOR for the performance of the Work, pursuant to the terms of the Contract.
31. *Progress Schedule*—A schedule, prepared and maintained by CONTRACTOR, describing the sequence and duration of the activities comprising CONTRACTOR's plan to accomplish the Work within the Contract Times.
32. *Project*—The total undertaking to be accomplished for OWNER by ENGINEERS, CONTRACTORS, and others, including planning, study, design, construction,

testing, commissioning, and start-up, and of which the Work to be performed under the Contract Documents is a part.

33. *Resident Project Representative*—The authorized representative of ENGINEER assigned to assist ENGINEER at the Site. As used herein, the term Resident Project Representative (RPR) includes any assistants or field staff of Resident Project Representative.

34. *Samples*—Physical examples of materials, equipment, or workmanship that are representative of some portion of the Work and that establish the standards by which such portion of the Work will be judged.

35. *Schedule of Submittals*—A schedule, prepared and maintained by CONTRACTOR, of required submittals and the time requirements for ENGINEER's review of the submittals.

36. *Schedule of Values*—A schedule, prepared and maintained by CONTRACTOR, allocating portions of the Contract Price to various portions of the Work and used as the basis for reviewing CONTRACTOR's Applications for Payment.

37. *Shop Drawings*—All drawings, diagrams, illustrations, schedules, and other data or information that are specifically prepared or assembled by or for CONTRACTOR and submitted by CONTRACTOR to illustrate some portion of the Work. Shop Drawings, whether approved or not, are not Drawings and are not Contract Documents.

38. *Site*—Lands or areas indicated in the Contract Documents as being furnished by OWNER upon which the Work is to be performed, including rights-of-way and easements, and such other lands or areas furnished by OWNER which are designated for the use of CONTRACTOR.

39. *Specifications*—The part of the Contract that consists of written requirements for materials, equipment, systems, standards, and workmanship as applied to the Work, and certain administrative requirements and procedural matters applicable to the Work.

40. *Subcontractor*—An individual or entity having a direct contract with CONTRACTOR or with any other Subcontractor for the performance of a part of the Work.

41. *Submittal*—A written or graphic document, prepared by or for CONTRACTOR, which the Contract Documents require CONTRACTOR to submit to ENGINEER, or that is indicated as a Submittal in the Schedule of Submittals accepted by ENGINEER. Submittals may include Shop Drawings and Samples; schedules; product data; OWNER-delegated designs; sustainable design information; information on special procedures; testing plans; results of tests and evaluations, source quality-control testing and inspections, and field or Site quality-control testing and inspections; warranties and certifications; Suppliers' instructions and reports; records of delivery of spare parts and tools; operations and maintenance data; Project photographic documentation; record documents; and other such documents required by the Contract Documents. Submittals, whether or not approved or accepted by ENGINEER, are not Contract Documents. Change Proposals, Change Orders, Claims, notices, Applications for Payment, and requests for interpretation or clarification are not Submittals.

42. *Substantial Completion*—The time at which the Work (or a specified part thereof) has progressed to the point where, in the opinion of ENGINEER, the Work (or a specified part thereof) is sufficiently complete, in accordance with the Contract Documents, so that the Work (or a specified part thereof) can be utilized for the purposes for which it is intended. The terms "substantially complete" and "substantially completed" as applied to all or part of the Work refer to Substantial Completion of such Work.

43. *Successful Bidder*—The Bidder to which the OWNER makes an award of contract.

44. *Supplementary Conditions*—The part of the Contract that amends or supplements these General Conditions.

45. *Supplier*—A manufacturer, fabricator, supplier, distributor, or vendor having a direct contract with CONTRACTOR or with any Subcontractor to furnish materials or equipment to be incorporated in the Work by CONTRACTOR or a Subcontractor.

46. *Technical Data*

    a. Those items expressly identified as Technical Data in the Supplementary Conditions, with respect to either (1) existing subsurface conditions at or adjacent to the Site, or existing physical conditions at or adjacent to the Site including existing surface or subsurface structures (except Underground Facilities) or (2) Hazardous Environmental Conditions at the Site.

    b. If no such express identifications of Technical Data have been made with respect to conditions at the Site, then Technical Data is defined, with respect to conditions at the Site under Paragraphs 5.03, 5.04, and 5.06, as the data contained in boring logs, recorded measurements of subsurface water levels, assessments of the condition of subsurface facilities, laboratory test results, and other factual, objective information regarding conditions at the Site that are set forth in any geotechnical, environmental, or other Site or facilities conditions report prepared for the Project and made available to CONTRACTOR.

    c. Information and data regarding the presence or location of Underground Facilities are not intended to be categorized, identified, or defined as Technical Data, and instead Underground Facilities are shown or indicated on the Drawings.

47. *Underground Facilities*—All active or not-in-service underground lines, pipelines, conduits, ducts, encasements, cables, wires, manholes, vaults, tanks, tunnels, or other such facilities or systems at the Site, including but not limited to those facilities or systems that produce, transmit, distribute, or convey telephone or other communications, cable television, fiber optic transmissions, power, electricity, light, heat, gases, oil, crude oil products, liquid petroleum products, water, steam, waste, wastewater, storm water, other liquids or chemicals, or traffic or other control systems. An abandoned facility or system is not an Underground Facility.

48. *Unit Price Work*—Work to be paid for on the basis of unit prices.

49. *Work*—The entire construction or the various separately identifiable parts thereof required to be provided under the Contract Documents. Work includes and is the result of performing or providing all labor, services, and documentation necessary to produce such construction; furnishing, installing, and incorporating all materials

and equipment into such construction; and may include related services such as testing, start-up, and commissioning, all as required by the Contract Documents.

50. *Work Change Directive*—A written directive to CONTRACTOR issued on or after the Effective Date of the Contract, signed by OWNER and recommended by ENGINEER, ordering an addition, deletion, or revision in the Work.

1.02 *Terminology*

A. The words and terms discussed in Paragraphs 1.02.B, C, D, and E are not defined terms that require initial capital letters, but, when used in the Bidding Requirements or Contract Documents, have the indicated meaning.

B. *Intent of Certain Terms or Adjectives*: The Contract Documents include the terms "as allowed," "as approved," "as ordered," "as directed" or terms of like effect or import to authorize an exercise of professional judgment by ENGINEER. In addition, the adjectives "reasonable," "suitable," "acceptable," "proper," "satisfactory," or adjectives of like effect or import are used to describe an action or determination of ENGINEER as to the Work. It is intended that such exercise of professional judgment, action, or determination will be solely to evaluate, in general, the Work for compliance with the information in the Contract Documents and with the design concept of the Project as a functioning whole as shown or indicated in the Contract Documents (unless there is a specific statement indicating otherwise). The use of any such term or adjective is not intended to and shall not be effective to assign to ENGINEER any duty or authority to supervise or direct the performance of the Work, or any duty or authority to undertake responsibility contrary to the provisions of Article 10 or any other provision of the Contract Documents.

C. *Day*: The word "day" means a calendar day of 24 hours measured from midnight to the next midnight.

D. *Defective*: The word "defective," when modifying the word "Work," refers to Work that is unsatisfactory, faulty, or deficient in that it:

1. does not conform to the Contract Documents;

2. does not meet the requirements of any applicable inspection, reference standard, test, or approval referred to in the Contract Documents; or

3. has been damaged prior to ENGINEER's recommendation of final payment (unless responsibility for the protection thereof has been assumed by OWNER at Substantial Completion in accordance with Paragraph 15.03 or Paragraph 15.04).

E. *Furnish, Install, Perform, Provide*

1. The word "furnish," when used in connection with services, materials, or equipment, means to supply and deliver said services, materials, or equipment to the Site (or some other specified location) ready for use or installation and in usable or operable condition.

2. The word "install," when used in connection with services, materials, or equipment, means to put into use or place in final position said services, materials, or equipment complete and ready for intended use.

3. The words "perform" or "provide," when used in connection with services, materials, or equipment, means to furnish and install said services, materials, or equipment complete and ready for intended use.

4. If the Contract Documents establish an obligation of CONTRACTOR with respect to specific services, materials, or equipment, but do not expressly use any of the four words “furnish,” “install,” “perform,” or “provide,” then CONTRACTOR shall furnish and install said services, materials, or equipment complete and ready for intended use.

F. *Contract Price or Contract Times*: References to a change in “Contract Price or Contract Times” or “Contract Times or Contract Price” or similar, indicate that such change applies to (1) Contract Price, (2) Contract Times, or (3) both Contract Price and Contract Times, as warranted, even if the term “or both” is not expressed.

G. Unless stated otherwise in the Contract Documents, words or phrases that have a well-known technical or construction industry or trade meaning are used in the Contract Documents in accordance with such recognized meaning.

ARTICLE 2—PRELIMINARY MATTERS

2.01 *Delivery of Performance and Payment Bonds; Evidence of Insurance*

A. *Performance and Payment Bonds*: When CONTRACTOR delivers the signed counterparts of the Agreement to OWNER, CONTRACTOR shall also deliver to OWNER the performance bond and payment bond (if the Contract requires CONTRACTOR to furnish such bonds).

B. *Evidence of CONTRACTOR’s Insurance*: When CONTRACTOR delivers the signed counterparts of the Agreement to OWNER, CONTRACTOR shall also deliver to OWNER, with copies to each additional insured (as identified in the Contract), the certificates, endorsements, and other evidence of insurance required to be provided by CONTRACTOR in accordance with Article 6, except to the extent the Supplementary Conditions expressly establish other dates for delivery of specific insurance policies.

C. *Evidence of OWNER’s Insurance*: After receipt of the signed counterparts of the Agreement and all required bonds and insurance documentation, OWNER shall promptly deliver to CONTRACTOR, with copies to each additional insured (as identified in the Contract), the certificates and other evidence of insurance required to be provided by OWNER under Article 6.

2.02 *Copies of Documents*

A. OWNER shall furnish to CONTRACTOR four printed copies of the Contract (including one fully signed counterpart of the Agreement), and one copy in electronic portable document format (PDF). Additional printed copies will be furnished upon request at the cost of reproduction.

B. OWNER shall maintain and safeguard at least one original printed record version of the Contract, including Drawings and Specifications signed and sealed by ENGINEER and other design professionals. OWNER shall make such original printed record version of the Contract available to CONTRACTOR for review. OWNER may delegate the responsibilities under this provision to ENGINEER.

2.03 *Before Starting Construction*

A. *Preliminary Schedules*: Within 10 days after the Effective Date of the Contract (or as otherwise required by the Contract Documents), CONTRACTOR shall submit to ENGINEER for timely review:

1. a preliminary Progress Schedule indicating the times (numbers of days or dates) for starting and completing the various stages of the Work, including any Milestones specified in the Contract;

2. a preliminary Schedule of Submittals; and

3. a preliminary Schedule of Values for all of the Work which includes quantities and prices of items which when added together equal the Contract Price and subdivides the Work into component parts in sufficient detail to serve as the basis for progress payments during performance of the Work. Such prices will include an appropriate amount of overhead and profit applicable to each item of Work.

2.04 *Preconstruction Conference; Designation of Authorized Representatives*

A. Before any Work at the Site is started, a conference attended by OWNER, CONTRACTOR, ENGINEER, and others as appropriate will be held to establish a working understanding among the parties as to the Work, and to discuss the schedules referred to in Paragraph 2.03.A, procedures for handling Shop Drawings, Samples, and other Submittals, processing Applications for Payment, electronic or digital transmittals, and maintaining required records.

B. At this conference OWNER and CONTRACTOR each shall designate, in writing, a specific individual to act as its authorized representative with respect to the services and responsibilities under the Contract. Such individuals shall have the authority to transmit and receive information, render decisions relative to the Contract, and otherwise act on behalf of each respective party.

2.05 *Acceptance of Schedules*

A. At least 10 days before submission of the first Application for Payment a conference, attended by CONTRACTOR, ENGINEER, and others as appropriate, will be held to review the schedules submitted in accordance with Paragraph 2.03.A. No progress payment will be made to CONTRACTOR until acceptable schedules are submitted to ENGINEER.

1. The Progress Schedule will be acceptable to ENGINEER if it provides an orderly progression of the Work to completion within the Contract Times. Such acceptance will not impose on ENGINEER responsibility for the Progress Schedule, for sequencing, scheduling, or progress of the Work, nor interfere with or relieve CONTRACTOR from CONTRACTOR's full responsibility therefor.

2. CONTRACTOR's Schedule of Submittals will be acceptable to ENGINEER if it provides a workable arrangement for reviewing and processing the required submittals.

3. CONTRACTOR's Schedule of Values will be acceptable to ENGINEER as to form and substance if it provides a reasonable allocation of the Contract Price to the component parts of the Work.

4. If a schedule is not acceptable, CONTRACTOR will have an additional 10 days to revise and resubmit the schedule.

2.06 *Electronic Transmittals*

A. Except as otherwise stated elsewhere in the Contract, the OWNER, ENGINEER, and CONTRACTOR may send, and shall accept, Electronic Documents transmitted by Electronic Means.

B. If the Contract does not establish protocols for Electronic Means, then OWNER, ENGINEER, and CONTRACTOR shall jointly develop such protocols.

C. Subject to any governing protocols for Electronic Means, when transmitting Electronic Documents by Electronic Means, the transmitting party makes no representations as to long-term compatibility, usability, or readability of the Electronic Documents resulting from the recipient's use of software application packages, operating systems, or computer hardware differing from those used in the drafting or transmittal of the Electronic Documents.

ARTICLE 3—CONTRACT DOCUMENTS: INTENT, REQUIREMENTS, REUSE

3.01 *Intent*

A. The Contract Documents are complementary; what is required by one Contract Document is as binding as if required by all.

B. It is the intent of the Contract Documents to describe a functionally complete Project (or part thereof) to be constructed in accordance with the Contract Documents.

C. Unless otherwise stated in the Contract Documents, if there is a discrepancy between the electronic versions of the Contract Documents (including any printed copies derived from such electronic versions) and the printed record version, the printed record version will govern.

D. The Contract supersedes prior negotiations, representations, and agreements, whether written or oral.

E. ENGINEER will issue clarifications and interpretations of the Contract Documents as provided herein.

F. Any provision or part of the Contract Documents held to be void or unenforceable under any Law or Regulation will be deemed stricken, and all remaining provisions will continue to be valid and binding upon OWNER and CONTRACTOR, which agree that the Contract Documents will be reformed to replace such stricken provision or part thereof with a valid and enforceable provision that comes as close as possible to expressing the intention of the stricken provision.

G. Nothing in the Contract Documents creates:

1. any contractual relationship between OWNER or ENGINEER and any Subcontractor, Supplier, or other individual or entity performing or furnishing any of the Work, for the benefit of such Subcontractor, Supplier, or other individual or entity; or

2. any obligation on the part of OWNER or ENGINEER to pay or to see to the payment of any money due any such Subcontractor, Supplier, or other individual or entity, except as may otherwise be required by Laws and Regulations.

3.02 *Reference Standards*

A. *Standards Specifications, Codes, Laws, and Regulations*

1. Reference in the Contract Documents to standard specifications, manuals, reference standards, or codes of any technical society, organization, or association, or to Laws or Regulations, whether such reference be specific or by implication, means the standard specification, manual, reference standard, code, or Laws or Regulations in effect at the time of opening of Bids (or on the Effective Date of the Contract if there were no Bids), except as may be otherwise specifically stated in the Contract Documents.

2. No provision of any such standard specification, manual, reference standard, or code, and no instruction of a Supplier, will be effective to change the duties or responsibilities of OWNER, CONTRACTOR, or ENGINEER from those set forth in the part of the Contract Documents prepared by or for ENGINEER. No such provision or instruction shall be effective to assign to OWNER or ENGINEER any duty or authority to supervise or direct the performance of the Work, or any duty or authority to undertake responsibility inconsistent with the provisions of the part of the Contract Documents prepared by or for ENGINEER.

3.03 *Reporting and Resolving Discrepancies*

A. *Reporting Discrepancies*

1. *CONTRACTOR's Verification of Figures and Field Measurements*: Before undertaking each part of the Work, CONTRACTOR shall carefully study the Contract Documents, and check and verify pertinent figures and dimensions therein, particularly with respect to applicable field measurements. CONTRACTOR shall promptly report in writing to ENGINEER any conflict, error, ambiguity, or discrepancy that CONTRACTOR discovers, or has actual knowledge of, and shall not proceed with any Work affected thereby until the conflict, error, ambiguity, or discrepancy is resolved by a clarification or interpretation by ENGINEER, or by an amendment or supplement to the Contract issued pursuant to Paragraph 11.01.

2. *CONTRACTOR's Review of Contract Documents*: If, before or during the performance of the Work, CONTRACTOR discovers any conflict, error, ambiguity, or discrepancy within the Contract Documents, or between the Contract Documents and (a) any applicable Law or Regulation, (b) actual field conditions, (c) any standard specification, manual, reference standard, or code, or (d) any instruction of any Supplier, then CONTRACTOR shall promptly report it to ENGINEER in writing. CONTRACTOR shall not proceed with the Work affected thereby (except in an emergency as required by Paragraph 7.15) until the conflict, error, ambiguity, or discrepancy is resolved, by a clarification or interpretation by ENGINEER, or by an amendment or supplement to the Contract issued pursuant to Paragraph 11.01.

3. CONTRACTOR shall not be liable to OWNER or ENGINEER for failure to report any conflict, error, ambiguity, or discrepancy in the Contract Documents unless CONTRACTOR had actual knowledge thereof.

B. *Resolving Discrepancies*

1. Except as may be otherwise specifically stated in the Contract Documents, the provisions of the part of the Contract Documents prepared by or for ENGINEER

take precedence in resolving any conflict, error, ambiguity, or discrepancy between such provisions of the Contract Documents and:

a. the provisions of any standard specification, manual, reference standard, or code, or the instruction of any Supplier (whether or not specifically incorporated by reference as a Contract Document); or

b. the provisions of any Laws or Regulations applicable to the performance of the Work (unless such an interpretation of the provisions of the Contract Documents would result in violation of such Law or Regulation).

3.04 *Requirements of the Contract Documents*

A. During the performance of the Work and until final payment, CONTRACTOR and OWNER shall submit to the ENGINEER in writing all matters in question concerning the requirements of the Contract Documents (sometimes referred to as requests for information or interpretation—RFIs), or relating to the acceptability of the Work under the Contract Documents, as soon as possible after such matters arise. ENGINEER will be the initial interpreter of the requirements of the Contract Documents, and judge of the acceptability of the Work.

B. ENGINEER will, with reasonable promptness, render a written clarification, interpretation, or decision on the issue submitted, or initiate an amendment or supplement to the Contract Documents. ENGINEER's written clarification, interpretation, or decision will be final and binding on CONTRACTOR, unless it appeals by submitting a Change Proposal, and on OWNER, unless it appeals by filing a Claim.

C. If a submitted matter in question concerns terms and conditions of the Contract Documents that do not involve (1) the performance or acceptability of the Work under the Contract Documents, (2) the design (as set forth in the Drawings, Specifications, or otherwise), or (3) other ENGINEERing or technical matters, then ENGINEER will promptly notify OWNER and CONTRACTOR in writing that ENGINEER is unable to provide a decision or interpretation. If OWNER and CONTRACTOR are unable to agree on resolution of such a matter in question, either party may pursue resolution as provided in Article 12.

3.05 *Reuse of Documents*

A. CONTRACTOR and its Subcontractors and Suppliers shall not:

1. have or acquire any title to or OWNERship rights in any of the Drawings, Specifications, or other documents (or copies of any thereof) prepared by or bearing the seal of ENGINEER or its consultants, including electronic media versions, or reuse any such Drawings, Specifications, other documents, or copies thereof on extensions of the Project or any other project without written consent of OWNER and ENGINEER and specific written verification or adaptation by ENGINEER; or

2. have or acquire any title or OWNERship rights in any other Contract Documents, reuse any such Contract Documents for any purpose without OWNER's express written consent, or violate any copyrights pertaining to such Contract Documents.

B. The prohibitions of this Paragraph 3.05 will survive final payment, or termination of the Contract. Nothing herein precludes CONTRACTOR from retaining copies of the Contract Documents for record purposes.

ARTICLE 4—COMMENCEMENT AND PROGRESS OF THE WORK

4.01 *Commencement of Contract Times; Notice to Proceed*

A. The Contract Times will commence to run on the 30th day after the Effective Date of the Contract or, if a Notice to Proceed is given, on the day indicated in the Notice to Proceed. A Notice to Proceed may be given at any time within 30 days after the Effective Date of the Contract. In no event will the Contract Times commence to run later than the 60th day after the day of Bid opening or the 30th day after the Effective Date of the Contract, whichever date is earlier.

4.02 *Starting the Work*

A. CONTRACTOR shall start to perform the Work on the date when the Contract Times commence to run. No Work may be done at the Site prior to such date.

4.03 *Reference Points*

A. OWNER shall provide ENGINEERing surveys to establish reference points for construction which in ENGINEER's judgment are necessary to enable CONTRACTOR to proceed with the Work. CONTRACTOR shall be responsible for laying out the Work, shall protect and preserve the established reference points and property monuments, and shall make no changes or relocations without the prior written approval of OWNER. CONTRACTOR shall report to ENGINEER whenever any reference point or property monument is lost or destroyed or requires relocation because of necessary changes in grades or locations, and shall be responsible for the accurate replacement or relocation of such reference points or property monuments by professionally qualified personnel.

4.04 *Progress Schedule*

A. CONTRACTOR shall adhere to the Progress Schedule established in accordance with Paragraph 2.05 as it may be adjusted from time to time as provided below.

1. CONTRACTOR shall submit to ENGINEER for acceptance (to the extent indicated in Paragraph 2.05) proposed adjustments in the Progress Schedule that will not result in changing the Contract Times.

2. Proposed adjustments in the Progress Schedule that will change the Contract Times must be submitted in accordance with the requirements of Article 11.

B. CONTRACTOR shall carry on the Work and adhere to the Progress Schedule during all disputes or disagreements with OWNER. No Work will be delayed or postponed pending resolution of any disputes or disagreements, or during any appeal process, except as permitted by Paragraph 16.04, or as OWNER and CONTRACTOR may otherwise agree in writing.

4.05 *Delays in CONTRACTOR's Progress*

A. If OWNER, ENGINEER, or anyone for whom OWNER is responsible, delays, disrupts, or interferes with the performance or progress of the Work, then CONTRACTOR shall be entitled to an equitable adjustment in Contract Price or Contract Times.

B. CONTRACTOR shall not be entitled to an adjustment in Contract Price or Contract Times for delay, disruption, or interference caused by or within the control of CONTRACTOR. Delay, disruption, and interference attributable to and within the control of a Subcontractor or Supplier shall be deemed to be within the control of CONTRACTOR.

C. If CONTRACTOR's performance or progress is delayed, disrupted, or interfered with by unanticipated causes not the fault of and beyond the control of OWNER, CONTRACTOR, and those for which they are responsible, then CONTRACTOR shall be entitled to an equitable adjustment in Contract Times. Such an adjustment will be CONTRACTOR's sole and exclusive remedy for the delays, disruption, and interference described in this paragraph. Causes of delay, disruption, or interference that may give rise to an adjustment in Contract Times under this paragraph include but are not limited to the following:

1. Severe and unavoidable natural catastrophes such as fires, floods, epidemics, and earthquakes;
2. Abnormal weather conditions;
3. Acts or failures to act of third-party utility OWNERs or other third-party entities (other than those third-party utility OWNERs or other third-party entities performing other work at or adjacent to the Site as arranged by or under contract with OWNER, as contemplated in Article 8); and
4. Acts of war or terrorism.

D. CONTRACTOR's entitlement to an adjustment of Contract Times or Contract Price is limited as follows:

1. CONTRACTOR's entitlement to an adjustment of the Contract Times is conditioned on the delay, disruption, or interference adversely affecting an activity on the critical path to completion of the Work, as of the time of the delay, disruption, or interference.
2. CONTRACTOR shall not be entitled to an adjustment in Contract Price for any delay, disruption, or interference if such delay is concurrent with a delay, disruption, or interference caused by or within the control of CONTRACTOR. Such a concurrent delay by CONTRACTOR shall not preclude an adjustment of Contract Times to which CONTRACTOR is otherwise entitled.
3. Adjustments of Contract Times or Contract Price are subject to the provisions of Article 11.

E. Each CONTRACTOR request or Change Proposal seeking an increase in Contract Times or Contract Price must be supplemented by supporting data that sets forth in detail the following:

1. The circumstances that form the basis for the requested adjustment;
2. The date upon which each cause of delay, disruption, or interference began to affect the progress of the Work;
3. The date upon which each cause of delay, disruption, or interference ceased to affect the progress of the Work;
4. The number of days' increase in Contract Times claimed as a consequence of each such cause of delay, disruption, or interference; and
5. The impact on Contract Price, in accordance with the provisions of Paragraph 11.07.

CONTRACTOR shall also furnish such additional supporting documentation as OWNER or ENGINEER may require including, where appropriate, a revised progress schedule indicating all the activities affected by the delay, disruption, or interference,

and an explanation of the effect of the delay, disruption, or interference on the critical path to completion of the Work.

F. Delays, disruption, and interference to the performance or progress of the Work resulting from the existence of a differing subsurface or physical condition, an Underground Facility that was not shown or indicated by the Contract Documents, or not shown or indicated with reasonable accuracy, and those resulting from Hazardous Environmental Conditions, are governed by Article 5, together with the provisions of Paragraphs 4.05.D and 4.05.E.

G. Paragraph 8.03 addresses delays, disruption, and interference to the performance or progress of the Work resulting from the performance of certain other work at or adjacent to the Site.

ARTICLE 5—SITE; SUBSURFACE AND PHYSICAL CONDITIONS; HAZARDOUS ENVIRONMENTAL CONDITIONS

5.01 *Availability of Lands*

A. OWNER shall furnish the Site. OWNER shall notify CONTRACTOR in writing of any encumbrances or restrictions not of general application but specifically related to use of the Site with which CONTRACTOR must comply in performing the Work.

B. Upon reasonable written request, OWNER shall furnish CONTRACTOR with a current statement of record legal title and legal description of the lands upon which permanent improvements are to be made and OWNER's interest therein as necessary for giving notice of or filing a mechanic's or construction lien against such lands in accordance with applicable Laws and Regulations.

C. CONTRACTOR shall provide for all additional lands and access thereto that may be required for temporary construction facilities or storage of materials and equipment.

5.02 *Use of Site and Other Areas*

A. *Limitation on Use of Site and Other Areas*

1. CONTRACTOR shall confine construction equipment, temporary construction facilities, the storage of materials and equipment, and the operations of workers to the Site, adjacent areas that CONTRACTOR has arranged to use through construction easements or otherwise, and other adjacent areas permitted by Laws and Regulations, and shall not unreasonably encumber the Site and such other adjacent areas with construction equipment or other materials or equipment. CONTRACTOR shall assume full responsibility for (a) damage to the Site; (b) damage to any such other adjacent areas used for CONTRACTOR's operations; (c) damage to any other adjacent land or areas, or to improvements, structures, utilities, or similar facilities located at such adjacent lands or areas; and (d) for injuries and losses sustained by the OWNERs or occupants of any such land or areas; provided that such damage or injuries result from the performance of the Work or from other actions or conduct of the CONTRACTOR or those for which CONTRACTOR is responsible.

2. If a damage or injury claim is made by the OWNER or occupant of any such land or area because of the performance of the Work, or because of other actions or conduct of the CONTRACTOR or those for which CONTRACTOR is responsible, CONTRACTOR shall (a) take immediate corrective or remedial action as required by Paragraph 7.13, or otherwise; (b) promptly attempt to settle the claim as to all

parties through negotiations with such OWNER or occupant, or otherwise resolve the claim by arbitration or other dispute resolution proceeding, or in a court of competent jurisdiction; and (c) to the fullest extent permitted by Laws and Regulations, indemnify and hold harmless OWNER and ENGINEER, and the officers, directors, members, partners, employees, agents, consultants and Subcontractors of each and any of them, from and against any such claim, and against all costs, losses, and damages (including but not limited to all fees and charges of ENGINEERs, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any claim or action, legal or equitable, brought by any such OWNER or occupant against OWNER, ENGINEER, or any other party indemnified hereunder to the extent caused directly or indirectly, in whole or in part by, or based upon, CONTRACTOR's performance of the Work, or because of other actions or conduct of the CONTRACTOR or those for which CONTRACTOR is responsible.

B. *Removal of Debris During Performance of the Work*: During the progress of the Work the CONTRACTOR shall keep the Site and other adjacent areas free from accumulations of waste materials, rubbish, and other debris. Removal and disposal of such waste materials, rubbish, and other debris will conform to applicable Laws and Regulations.

C. *Cleaning*: Prior to Substantial Completion of the Work CONTRACTOR shall clean the Site and the Work and make it ready for utilization by OWNER. At the completion of the Work CONTRACTOR shall remove from the Site and adjacent areas all tools, appliances, construction equipment and machinery, and surplus materials and shall restore to original condition all property not designated for alteration by the Contract Documents.

D. *Loading of Structures*: CONTRACTOR shall not load nor permit any part of any structure to be loaded in any manner that will endanger the structure, nor shall CONTRACTOR subject any part of the Work or adjacent structures or land to stresses or pressures that will endanger them.

5.03 *Subsurface and Physical Conditions*

A. *Reports and Drawings*: The Supplementary Conditions identify:

1. Those reports of explorations and tests of subsurface conditions at or adjacent to the Site that contain Technical Data;

2. Those drawings of existing physical conditions at or adjacent to the Site, including those drawings depicting existing surface or subsurface structures at or adjacent to the Site (except Underground Facilities), that contain Technical Data; and

3. Technical Data contained in such reports and drawings.

B. *Underground Facilities*: Underground Facilities are shown or indicated on the Drawings, pursuant to Paragraph 5.05, and not in the drawings referred to in Paragraph 5.03.A. Information and data regarding the presence or location of Underground Facilities are not intended to be categorized, identified, or defined as Technical Data.

C. *Reliance by CONTRACTOR on Technical Data*: CONTRACTOR may rely upon the accuracy of the Technical Data expressly identified in the Supplementary Conditions with respect to such reports and drawings, but such reports and drawings are not Contract Documents. If no such express identification has been made, then

CONTRACTOR may rely upon the accuracy of the Technical Data as defined in Paragraph 1.01.A.46.b.

D. *Limitations of Other Data and Documents*: Except for such reliance on Technical Data, CONTRACTOR may not rely upon or make any claim against OWNER or ENGINEER, or any of their officers, directors, members, partners, employees, agents, consultants, or Subcontractors, with respect to:

1. the completeness of such reports and drawings for CONTRACTOR's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences, and procedures of construction to be employed by CONTRACTOR, and safety precautions and programs incident thereto;
2. other data, interpretations, opinions, and information contained in such reports or shown or indicated in such drawings;
3. the contents of other Site-related documents made available to CONTRACTOR, such as record drawings from other projects at or adjacent to the Site, or OWNER's archival documents concerning the Site; or
4. any CONTRACTOR interpretation of or conclusion drawn from any Technical Data or any such other data, interpretations, opinions, or information.

5.04 *Differing Subsurface or Physical Conditions*

A. *Notice by CONTRACTOR*: If CONTRACTOR believes that any subsurface or physical condition that is uncovered or revealed at the Site:

1. is of such a nature as to establish that any Technical Data on which CONTRACTOR is entitled to rely as provided in Paragraph 5.03 is materially inaccurate;
2. is of such a nature as to require a change in the Drawings or Specifications;
3. differs materially from that shown or indicated in the Contract Documents; or
4. is of an unusual nature, and differs materially from conditions ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract Documents;

then CONTRACTOR shall, promptly after becoming aware thereof and before further disturbing the subsurface or physical conditions or performing any Work in connection therewith (except in an emergency as required by Paragraph 7.15), notify OWNER and ENGINEER in writing about such condition. CONTRACTOR shall not further disturb such condition or perform any Work in connection therewith (except with respect to an emergency) until receipt of a written statement permitting CONTRACTOR to do so.

B. *ENGINEER's Review*: After receipt of written notice as required by the preceding paragraph, ENGINEER will promptly review the subsurface or physical condition in question; determine whether it is necessary for OWNER to obtain additional exploration or tests with respect to the condition; conclude whether the condition falls within any one or more of the differing site condition categories in Paragraph 5.04.A; obtain any pertinent cost or schedule information from CONTRACTOR; prepare recommendations to OWNER regarding the CONTRACTOR's resumption of Work in connection with the subsurface or physical condition in question and the need for any change in the Drawings or Specifications; and advise OWNER in writing of ENGINEER's findings, conclusions, and recommendations.

C. *OWNER's Statement to CONTRACTOR Regarding Site Condition*: After receipt of ENGINEER's written findings, conclusions, and recommendations, OWNER shall issue a written statement to CONTRACTOR (with a copy to ENGINEER) regarding the subsurface or physical condition in question, addressing the resumption of Work in connection with such condition, indicating whether any change in the Drawings or Specifications will be made, and adopting or rejecting ENGINEER's written findings, conclusions, and recommendations, in whole or in part.

D. *Early Resumption of Work*: If at any time ENGINEER determines that Work in connection with the subsurface or physical condition in question may resume prior to completion of ENGINEER's review or OWNER's issuance of its statement to CONTRACTOR, because the condition in question has been adequately documented, and analyzed on a preliminary basis, then the ENGINEER may at its discretion instruct CONTRACTOR to resume such Work.

E. *Possible Price and Times Adjustments*

1. CONTRACTOR shall be entitled to an equitable adjustment in Contract Price or Contract Times, to the extent that the existence of a differing subsurface or physical condition, or any related delay, disruption, or interference, causes an increase or decrease in CONTRACTOR's cost of, or time required for, performance of the Work; subject, however, to the following:

    a. Such condition must fall within any one or more of the categories described in Paragraph 5.04.A;

    b. With respect to Work that is paid for on a unit price basis, any adjustment in Contract Price will be subject to the provisions of Paragraph 13.03; and,

    c. CONTRACTOR's entitlement to an adjustment of the Contract Times is subject to the provisions of Paragraphs 4.05.D and 4.05.E.

2. CONTRACTOR shall not be entitled to any adjustment in the Contract Price or Contract Times with respect to a subsurface or physical condition if:

    a. CONTRACTOR knew of the existence of such condition at the time CONTRACTOR made a commitment to OWNER with respect to Contract Price and Contract Times by the submission of a Bid or becoming bound under a negotiated contract, or otherwise;

    b. The existence of such condition reasonably could have been discovered or revealed as a result of any examination, investigation, exploration, test, or study of the Site and contiguous areas expressly required by the Bidding Requirements or Contract Documents to be conducted by or for CONTRACTOR prior to CONTRACTOR's making such commitment; or

    c. CONTRACTOR failed to give the written notice required by Paragraph 5.04.A.

3. If OWNER and CONTRACTOR agree regarding CONTRACTOR's entitlement to and the amount or extent of any adjustment in the Contract Price or Contract Times, then any such adjustment will be set forth in a Change Order.

4. CONTRACTOR may submit a Change Proposal regarding its entitlement to or the amount or extent of any adjustment in the Contract Price or Contract Times, no later than 30 days after OWNER's issuance of the OWNER's written statement to CONTRACTOR regarding the subsurface or physical condition in question.

F. *Underground Facilities; Hazardous Environmental Conditions*: Paragraph 5.05 governs rights and responsibilities regarding the presence or location of Underground Facilities. Paragraph 5.06 governs rights and responsibilities regarding Hazardous Environmental Conditions. The provisions of Paragraphs 5.03 and 5.04 are not applicable to the presence or location of Underground Facilities, or to Hazardous Environmental Conditions.

5.05 *Underground Facilities*

A. *CONTRACTOR's Responsibilities*: Unless it is otherwise expressly provided in the Supplementary Conditions, the cost of all of the following are included in the Contract Price, and CONTRACTOR shall have full responsibility for:

1. reviewing and checking all information and data regarding existing Underground Facilities at the Site;
2. complying with applicable state and local utility damage prevention Laws and Regulations;
3. verifying the actual location of those Underground Facilities shown or indicated in the Contract Documents as being within the area affected by the Work, by exposing such Underground Facilities during the course of construction;
4. coordination of the Work with the OWNERs (including OWNER) of such Underground Facilities, during construction; and
5. the safety and protection of all existing Underground Facilities at the Site, and repairing any damage thereto resulting from the Work.

B. *Notice by CONTRACTOR*: If CONTRACTOR believes that an Underground Facility that is uncovered or revealed at the Site was not shown or indicated on the Drawings, or was not shown or indicated on the Drawings with reasonable accuracy, then CONTRACTOR shall, promptly after becoming aware thereof and before further disturbing conditions affected thereby or performing any Work in connection therewith (except in an emergency as required by Paragraph 7.15), notify OWNER and ENGINEER in writing regarding such Underground Facility.

C. *ENGINEER's Review*: ENGINEER will:

1. promptly review the Underground Facility and conclude whether such Underground Facility was not shown or indicated on the Drawings, or was not shown or indicated with reasonable accuracy;
2. identify and communicate with the OWNER of the Underground Facility; prepare recommendations to OWNER (and if necessary issue any preliminary instructions to CONTRACTOR) regarding the CONTRACTOR's resumption of Work in connection with the Underground Facility in question;
3. obtain any pertinent cost or schedule information from CONTRACTOR; determine the extent, if any, to which a change is required in the Drawings or Specifications to reflect and document the consequences of the existence or location of the Underground Facility; and
4. advise OWNER in writing of ENGINEER's findings, conclusions, and recommendations.

During such time, CONTRACTOR shall be responsible for the safety and protection of such Underground Facility.

D. *OWNER's Statement to CONTRACTOR Regarding Underground Facility*: After receipt of ENGINEER's written findings, conclusions, and recommendations, OWNER shall issue a written statement to CONTRACTOR (with a copy to ENGINEER) regarding the Underground Facility in question addressing the resumption of Work in connection with such Underground Facility, indicating whether any change in the Drawings or Specifications will be made, and adopting or rejecting ENGINEER's written findings, conclusions, and recommendations in whole or in part.

E. *Early Resumption of Work*: If at any time ENGINEER determines that Work in connection with the Underground Facility may resume prior to completion of ENGINEER's review or OWNER's issuance of its statement to CONTRACTOR, because the Underground Facility in question and conditions affected by its presence have been adequately documented, and analyzed on a preliminary basis, then the ENGINEER may at its discretion instruct CONTRACTOR to resume such Work.

F. *Possible Price and Times Adjustments*

1. CONTRACTOR shall be entitled to an equitable adjustment in the Contract Price or Contract Times, to the extent that any existing Underground Facility at the Site that was not shown or indicated on the Drawings, or was not shown or indicated with reasonable accuracy, or any related delay, disruption, or interference, causes an increase or decrease in CONTRACTOR's cost of, or time required for, performance of the Work; subject, however, to the following:

   a. With respect to Work that is paid for on a unit price basis, any adjustment in Contract Price will be subject to the provisions of Paragraph 13.03;

   b. CONTRACTOR's entitlement to an adjustment of the Contract Times is subject to the provisions of Paragraphs 4.05.D and 4.05.E; and

   c. CONTRACTOR gave the notice required in Paragraph 5.05.B.

2. If OWNER and CONTRACTOR agree regarding CONTRACTOR's entitlement to and the amount or extent of any adjustment in the Contract Price or Contract Times, then any such adjustment will be set forth in a Change Order.

3. CONTRACTOR may submit a Change Proposal regarding its entitlement to or the amount or extent of any adjustment in the Contract Price or Contract Times, no later than 30 days after OWNER's issuance of the OWNER's written statement to CONTRACTOR regarding the Underground Facility in question.

4. The information and data shown or indicated on the Drawings with respect to existing Underground Facilities at the Site is based on information and data (a) furnished by the OWNERs of such Underground Facilities, or by others, (b) obtained from available records, or (c) gathered in an investigation conducted in accordance with the current edition of ASCE 38, Standard Guideline for the Collection and Depiction of Existing Subsurface Utility Data, by the American Society of Civil ENGINEERs. If such information or data is incorrect or incomplete, CONTRACTOR's remedies are limited to those set forth in this Paragraph 5.05.F.

5.06 *Hazardous Environmental Conditions at Site*

A. *Reports and Drawings*: The Supplementary Conditions identify:

1. those reports known to OWNER relating to Hazardous Environmental Conditions that have been identified at or adjacent to the Site;

2. drawings known to OWNER relating to Hazardous Environmental Conditions that have been identified at or adjacent to the Site; and

3. Technical Data contained in such reports and drawings.

B. *Reliance by CONTRACTOR on Technical Data Authorized*: CONTRACTOR may rely upon the accuracy of the Technical Data expressly identified in the Supplementary Conditions with respect to such reports and drawings, but such reports and drawings are not Contract Documents. If no such express identification has been made, then CONTRACTOR may rely on the accuracy of the Technical Data as defined in Paragraph 1.01.A.46.b. Except for such reliance on Technical Data, CONTRACTOR may not rely upon or make any claim against OWNER or ENGINEER, or any of their officers, directors, members, partners, employees, agents, consultants, or Subcontractors, with respect to:

1. the completeness of such reports and drawings for CONTRACTOR's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences and procedures of construction to be employed by CONTRACTOR, and safety precautions and programs incident thereto;

2. other data, interpretations, opinions, and information contained in such reports or shown or indicated in such drawings; or

3. any CONTRACTOR interpretation of or conclusion drawn from any Technical Data or any such other data, interpretations, opinions or information.

C. CONTRACTOR shall not be responsible for removing or remediating any Hazardous Environmental Condition encountered, uncovered, or revealed at the Site unless such removal or remediation is expressly identified in the Contract Documents to be within the scope of the Work.

D. CONTRACTOR shall be responsible for controlling, containing, and duly removing all Constituents of Concern brought to the Site by CONTRACTOR, Subcontractors, Suppliers, or anyone else for whom CONTRACTOR is responsible, and for any associated costs; and for the costs of removing and remediating any Hazardous Environmental Condition created by the presence of any such Constituents of Concern.

E. If CONTRACTOR encounters, uncovers, or reveals a Hazardous Environmental Condition whose removal or remediation is not expressly identified in the Contract Documents as being within the scope of the Work, or if CONTRACTOR or anyone for whom CONTRACTOR is responsible creates a Hazardous Environmental Condition, then CONTRACTOR shall immediately: (1) secure or otherwise isolate such condition; (2) stop all Work in connection with such condition and in any area affected thereby (except in an emergency as required by Paragraph 7.15); and (3) notify OWNER and ENGINEER (and promptly thereafter confirm such notice in writing). OWNER shall promptly consult with ENGINEER concerning the necessity for OWNER to retain a qualified expert to evaluate such condition or take corrective action, if any. Promptly after consulting with ENGINEER, OWNER shall take such actions as are necessary to permit OWNER to timely obtain required permits and provide CONTRACTOR the written notice required by Paragraph 5.06.F. If CONTRACTOR or anyone for whom CONTRACTOR is responsible created the Hazardous Environmental Condition in question, then OWNER may remove and remediate the Hazardous Environmental Condition, and impose a set-off against payments to account for the associated costs.

F. CONTRACTOR shall not resume Work in connection with such Hazardous Environmental Condition or in any affected area until after OWNER has obtained any required permits related thereto, and delivered written notice to CONTRACTOR either (1) specifying that such condition and any affected area is or has been rendered safe for the resumption of Work, or (2) specifying any special conditions under which such Work may be resumed safely.

G. If OWNER and CONTRACTOR cannot agree as to entitlement to or on the amount or extent, if any, of any adjustment in Contract Price or Contract Times, as a result of such Work stoppage, such special conditions under which Work is agreed to be resumed by CONTRACTOR, or any costs or expenses incurred in response to the Hazardous Environmental Condition, then within 30 days of OWNER's written notice regarding the resumption of Work, CONTRACTOR may submit a Change Proposal, or OWNER may impose a set-off. Entitlement to any such adjustment is subject to the provisions of Paragraphs 4.05.D, 4.05.E, 11.07, and 11.08.

H. If, after receipt of such written notice, CONTRACTOR does not agree to resume such Work based on a reasonable belief it is unsafe, or does not agree to resume such Work under such special conditions, then OWNER may order the portion of the Work that is in the area affected by such condition to be deleted from the Work, following the contractual change procedures in Article 11. OWNER may have such deleted portion of the Work performed by OWNER's own forces or others in accordance with Article 8.

I. To the fullest extent permitted by Laws and Regulations, OWNER shall indemnify and hold harmless CONTRACTOR, Subcontractors, and ENGINEER, and the officers, directors, members, partners, employees, agents, consultants, and Subcontractors of each and any of them, from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of ENGINEERs, architects, attorneys, and other professionals, and all court, arbitration, or other dispute resolution costs) arising out of or relating to a Hazardous Environmental Condition, provided that such Hazardous Environmental Condition (1) was not shown or indicated in the Drawings, Specifications, or other Contract Documents, identified as Technical Data entitled to limited reliance pursuant to Paragraph 5.06.B, or identified in the Contract Documents to be included within the scope of the Work, and (2) was not created by CONTRACTOR or by anyone for whom CONTRACTOR is responsible. Nothing in this Paragraph 5.06.I obligates OWNER to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.

J. To the fullest extent permitted by Laws and Regulations, CONTRACTOR shall indemnify and hold harmless OWNER and ENGINEER, and the officers, directors, members, partners, employees, agents, consultants, and Subcontractors of each and any of them, from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of ENGINEERs, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to the failure to control, contain, or remove a Constituent of Concern brought to the Site by CONTRACTOR or by anyone for whom CONTRACTOR is responsible, or to a Hazardous Environmental Condition created by CONTRACTOR or by anyone for whom CONTRACTOR is responsible. Nothing in this Paragraph 5.06.J obligates CONTRACTOR to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.

K. The provisions of Paragraphs 5.03, 5.04, and 5.05 do not apply to the presence of Constituents of Concern or to a Hazardous Environmental Condition uncovered or revealed at the Site.

ARTICLE 6—BONDS AND INSURANCE

6.01 *Performance, Payment, and Other Bonds*

A. CONTRACTOR shall furnish a performance bond and a payment bond, each in an amount at least equal to the Contract Price, as security for the faithful performance and payment of CONTRACTOR's obligations under the Contract. These bonds must remain in effect until one year after the date when final payment becomes due or until completion of the correction period specified in Paragraph 15.08, whichever is later, except as provided otherwise by Laws or Regulations, the terms of a prescribed bond form, the Supplementary Conditions, or other provisions of the Contract.

B. CONTRACTOR shall also furnish such other bonds (if any) as are required by the Supplementary Conditions or other provisions of the Contract.

C. All bonds must be in the form included in the Bidding Documents or otherwise specified by OWNER prior to execution of the Contract, except as provided otherwise by Laws or Regulations, and must be issued and signed by a surety named in "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Department Circular 570 (as amended and supplemented) by the Bureau of the Fiscal Service, U.S. Department of the Treasury. A bond signed by an agent or attorney-in-fact must be accompanied by a certified copy of that individual's authority to bind the surety. The evidence of authority must show that it is effective on the date the agent or attorney-in-fact signed the accompanying bond.

D. CONTRACTOR shall obtain the required bonds from surety companies that are duly licensed or authorized, in the state or jurisdiction in which the Project is located, to issue bonds in the required amounts.

E. If the surety on a bond furnished by CONTRACTOR is declared bankrupt or becomes insolvent, or the surety ceases to meet the requirements above, then CONTRACTOR shall promptly notify OWNER and ENGINEER in writing and shall, within 20 days after the event giving rise to such notification, provide another bond and surety, both of which must comply with the bond and surety requirements above.

F. If CONTRACTOR has failed to obtain a required bond, OWNER may exclude the CONTRACTOR from the Site and exercise OWNER's termination rights under Article 16.

G. Upon request to OWNER from any Subcontractor, Supplier, or other person or entity claiming to have furnished labor, services, materials, or equipment used in the performance of the Work, OWNER shall provide a copy of the payment bond to such person or entity.

H. Upon request to CONTRACTOR from any Subcontractor, Supplier, or other person or entity claiming to have furnished labor, services, materials, or equipment used in the performance of the Work, CONTRACTOR shall provide a copy of the payment bond to such person or entity.

6.02 *Insurance—General Provisions*

A. OWNER and CONTRACTOR shall obtain and maintain insurance as required in this article and in the Supplementary Conditions.

B. All insurance required by the Contract to be purchased and maintained by OWNER or CONTRACTOR shall be obtained from insurance companies that are duly licensed or authorized in the state or jurisdiction in which the Project is located to issue insurance policies for the required limits and coverages. Unless a different standard is indicated in the Supplementary Conditions, all companies that provide insurance policies required under this Contract shall have an A.M. Best rating of A-VII or better.

C. Alternative forms of insurance coverage, including but not limited to self-insurance and "Occupational Accident and Excess Employer's Indemnity Policies," are not sufficient to meet the insurance requirements of this Contract, unless expressly allowed in the Supplementary Conditions.

D. CONTRACTOR shall deliver to OWNER, with copies to each additional insured identified in the Contract, certificates of insurance and endorsements establishing that CONTRACTOR has obtained and is maintaining the policies and coverages required by the Contract. Upon request by OWNER or any other insured, CONTRACTOR shall also furnish other evidence of such required insurance, including but not limited to copies of policies, documentation of applicable self-insured retentions (if allowed) and deductibles, full disclosure of all relevant exclusions, and evidence of insurance required to be purchased and maintained by Subcontractors or Suppliers. In any documentation furnished under this provision, CONTRACTOR, Subcontractors, and Suppliers may block out (redact) (1) any confidential premium or pricing information and (2) any wording specific to a project or jurisdiction other than those applicable to this Contract.

E. OWNER shall deliver to CONTRACTOR, with copies to each additional insured identified in the Contract, certificates of insurance and endorsements establishing that OWNER has obtained and is maintaining the policies and coverages required of OWNER by the Contract (if any). Upon request by CONTRACTOR or any other insured, OWNER shall also provide other evidence of such required insurance (if any), including but not limited to copies of policies, documentation of applicable self-insured retentions (if allowed) and deductibles, and full disclosure of all relevant exclusions. In any documentation furnished under this provision, OWNER may block out (redact) (1) any confidential premium or pricing information and (2) any wording specific to a project or jurisdiction other than those relevant to this Contract.

F. Failure of OWNER or CONTRACTOR to demand such certificates or other evidence of the other party's full compliance with these insurance requirements, or failure of OWNER or CONTRACTOR to identify a deficiency in compliance from the evidence provided, will not be construed as a waiver of the other party's obligation to obtain and maintain such insurance.

G. In addition to the liability insurance required to be provided by CONTRACTOR, the OWNER, at OWNER's option, may purchase and maintain OWNER's own liability insurance. OWNER's liability policies, if any, operate separately and independently from policies required to be provided by CONTRACTOR, and CONTRACTOR cannot rely upon OWNER's liability policies for any of CONTRACTOR's obligations to the OWNER, ENGINEER, or third parties.

H. CONTRACTOR shall require:

1. Subcontractors to purchase and maintain worker's compensation, commercial general liability, and other insurance that is appropriate for their participation in the Project, and to name as additional insureds OWNER and ENGINEER (and any other individuals or entities identified in the Supplementary Conditions as additional insureds on CONTRACTOR's liability policies) on each Subcontractor's commercial general liability insurance policy; and

2. Suppliers to purchase and maintain insurance that is appropriate for their participation in the Project.

I. If either party does not purchase or maintain the insurance required of such party by the Contract, such party shall notify the other party in writing of such failure to purchase prior to the start of the Work, or of such failure to maintain prior to any change in the required coverage.

J. If CONTRACTOR has failed to obtain and maintain required insurance, CONTRACTOR's entitlement to enter or remain at the Site will end immediately, and OWNER may impose an appropriate set-off against payment for any associated costs (including but not limited to the cost of purchasing necessary insurance coverage), and exercise OWNER's termination rights under Article 16.

K. Without prejudice to any other right or remedy, if a party has failed to obtain required insurance, the other party may elect (but is in no way obligated) to obtain equivalent insurance to protect such other party's interests at the expense of the party who was required to provide such coverage, and the Contract Price will be adjusted accordingly.

L. OWNER does not represent that insurance coverage and limits established in this Contract necessarily will be adequate to protect CONTRACTOR or CONTRACTOR's interests. CONTRACTOR is responsible for determining whether such coverage and limits are adequate to protect its interests, and for obtaining and maintaining any additional insurance that CONTRACTOR deems necessary.

M. The insurance and insurance limits required herein will not be deemed as a limitation on CONTRACTOR's liability, or that of its Subcontractors or Suppliers, under the indemnities granted to OWNER and other individuals and entities in the Contract or otherwise.

N. All the policies of insurance required to be purchased and maintained under this Contract will contain a provision or endorsement that the coverage afforded will not be canceled, or renewal refused, until at least 10 days prior written notice has been given to the purchasing policyholder. Within three days of receipt of any such written notice, the purchasing policyholder shall provide a copy of the notice to each other insured and ENGINEER.

6.03 *CONTRACTOR's Insurance*

A. *Required Insurance*: CONTRACTOR shall purchase and maintain Worker's Compensation, Commercial General Liability, and other insurance pursuant to the specific requirements of the Supplementary Conditions.

B. *General Provisions*: The policies of insurance required by this Paragraph 6.03 as supplemented must:

1. include at least the specific coverages required;

2. be written for not less than the limits provided, or those required by Laws or Regulations, whichever is greater;

3. remain in effect at least until the Work is complete (as set forth in Paragraph 15.06.D), and longer if expressly required elsewhere in this Contract, and at all times thereafter when CONTRACTOR may be correcting, removing, or replacing defective Work as a warranty or correction obligation, or otherwise, or returning to the Site to conduct other tasks arising from the Contract;

4. apply with respect to the performance of the Work, whether such performance is by CONTRACTOR, any Subcontractor or Supplier, or by anyone directly or indirectly employed by any of them to perform any of the Work, or by anyone for whose acts any of them may be liable; and

5. include all necessary endorsements to support the stated requirements.

C. *Additional Insureds*: The CONTRACTOR's commercial general liability, automobile liability, employer's liability, umbrella or excess, pollution liability, and unmanned aerial vehicle liability policies, if required by this Contract, must:

1. include and list as additional insureds OWNER and ENGINEER, and any individuals or entities identified as additional insureds in the Supplementary Conditions;

2. include coverage for the respective officers, directors, members, partners, employees, and consultants of all such additional insureds;

3. afford primary coverage to these additional insureds for all claims covered thereby (including as applicable those arising from both ongoing and completed operations);

4. not seek contribution from insurance maintained by the additional insured; and

5. as to commercial general liability insurance, apply to additional insureds with respect to liability caused in whole or in part by CONTRACTOR's acts or omissions, or the acts and omissions of those working on CONTRACTOR's behalf, in the performance of CONTRACTOR's operations.

6.04 *Builder's Risk and Other Property Insurance*

A. *Builder's Risk*: Unless otherwise provided in the Supplementary Conditions, CONTRACTOR shall purchase and maintain builder's risk insurance upon the Work on a completed value basis, in the amount of the Work's full insurable replacement cost (subject to such deductible amounts as may be provided in the Supplementary Conditions or required by Laws and Regulations). The specific requirements applicable to the builder's risk insurance are set forth in the Supplementary Conditions.

B. *Property Insurance for Facilities of OWNER Where Work Will Occur*: OWNER is responsible for obtaining and maintaining property insurance covering each existing structure, building, or facility in which any part of the Work will occur, or to which any part of the Work will attach or be adjoined. Such property insurance will be written on a special perils (all-risk) form, on a replacement cost basis, providing coverage consistent with that required for the builder's risk insurance, and will be maintained until the Work is complete, as set forth in Paragraph 15.06.D.

C. *Property Insurance for Substantially Complete Facilities*: Promptly after Substantial Completion, and before actual occupancy or use of the substantially completed Work, OWNER will obtain property insurance for such substantially completed Work, and

maintain such property insurance at least until the Work is complete, as set forth in Paragraph 15.06.D. Such property insurance will be written on a special perils (all-risk) form, on a replacement cost basis, and provide coverage consistent with that required for the builder's risk insurance. The builder's risk insurance may terminate upon written confirmation of OWNER's procurement of such property insurance.

D. *Partial Occupancy or Use by OWNER*: If OWNER will occupy or use a portion or portions of the Work prior to Substantial Completion of all the Work, as provided in Paragraph 15.04, then OWNER (directly, if it is the purchaser of the builder's risk policy, or through CONTRACTOR) will provide advance notice of such occupancy or use to the builder's risk insurer, and obtain an endorsement consenting to the continuation of coverage prior to commencing such partial occupancy or use.

E. *Insurance of Other Property; Additional Insurance*: If the express insurance provisions of the Contract do not require or address the insurance of a property item or interest, then the entity or individual owning such property item will be responsible for insuring it. If CONTRACTOR elects to obtain other special insurance to be included in or supplement the builder's risk or property insurance policies provided under this Paragraph 6.04, it may do so at CONTRACTOR's expense.

6.05 *Property Losses; Subrogation*

A. The builder's risk insurance policy purchased and maintained in accordance with Paragraph 6.04 (or an installation floater policy if authorized by the Supplementary Conditions), will contain provisions to the effect that in the event of payment of any loss or damage the insurer will have no rights of recovery against any insureds thereunder, or against ENGINEER or its consultants, or their officers, directors, members, partners, employees, agents, consultants, or Subcontractors.

1. OWNER and CONTRACTOR waive all rights against each other and the respective officers, directors, members, partners, employees, agents, consultants, and Subcontractors of each and any of them, for all losses and damages caused by, arising out of, or resulting from any of the perils, risks, or causes of loss covered by such policies and any other property insurance applicable to the Work; and, in addition, waive all such rights against ENGINEER, its consultants, all individuals or entities identified in the Supplementary Conditions as builder's risk or installation floater insureds, and the officers, directors, members, partners, employees, agents, consultants, and Subcontractors of each and any of them, under such policies for losses and damages so caused.

2. None of the above waivers extends to the rights that any party making such waiver may have to the proceeds of insurance held by OWNER or CONTRACTOR as trustee or fiduciary, or otherwise payable under any policy so issued.

B. Any property insurance policy maintained by OWNER covering any loss, damage, or consequential loss to OWNER's existing structures, buildings, or facilities in which any part of the Work will occur, or to which any part of the Work will attach or adjoin; to adjacent structures, buildings, or facilities of OWNER; or to part or all of the completed or substantially completed Work, during partial occupancy or use pursuant to Paragraph 15.04, after Substantial Completion pursuant to Paragraph 15.03, or after final payment pursuant to Paragraph 15.06, will contain provisions to the effect that in the event of payment of any loss or damage the insurer will have no rights of recovery against any insureds thereunder, or against CONTRACTOR, Subcontractors, or ENGINEER, or the officers, directors, members, partners, employees, agents,

consultants, or Subcontractors of each and any of them, and that the insured is allowed to waive the insurer's rights of subrogation in a written contract executed prior to the loss, damage, or consequential loss.

1. OWNER waives all rights against CONTRACTOR, Subcontractors, and ENGINEER, and the officers, directors, members, partners, employees, agents, consultants and Subcontractors of each and any of them, for all losses and damages caused by, arising out of, or resulting from fire or any of the perils, risks, or causes of loss covered by such policies.

C. The waivers in this Paragraph 6.05 include the waiver of rights due to business interruption, loss of use, or other consequential loss extending beyond direct physical loss or damage to OWNER's property or the Work caused by, arising out of, or resulting from fire or other insured peril, risk, or cause of loss.

D. CONTRACTOR shall be responsible for assuring that each Subcontract contains provisions whereby the Subcontractor waives all rights against OWNER, CONTRACTOR, all individuals or entities identified in the Supplementary Conditions as insureds, the ENGINEER and its consultants, and the officers, directors, members, partners, employees, agents, consultants, and Subcontractors of each and any of them, for all losses and damages caused by, arising out of, relating to, or resulting from fire or other peril, risk, or cause of loss covered by builder's risk insurance, installation floater, and any other property insurance applicable to the Work.

6.06 *Receipt and Application of Property Insurance Proceeds*

A. Any insured loss under the builder's risk and other policies of property insurance required by Paragraph 6.04 will be adjusted and settled with the named insured that purchased the policy. Such named insured shall act as fiduciary for the other insureds, and give notice to such other insureds that adjustment and settlement of a claim is in progress. Any other insured may state its position regarding a claim for insured loss in writing within 15 days after notice of such claim.

B. Proceeds for such insured losses may be made payable by the insurer either jointly to multiple insureds, or to the named insured that purchased the policy in its own right and as fiduciary for other insureds, subject to the requirements of any applicable mortgage clause. A named insured receiving insurance proceeds under the builder's risk and other policies of insurance required by Paragraph 6.04 shall maintain such proceeds in a segregated account, and distribute such proceeds in accordance with such agreement as the parties in interest may reach, or as otherwise required under the dispute resolution provisions of this Contract or applicable Laws and Regulations.

C. If no other special agreement is reached, CONTRACTOR shall repair or replace the damaged Work, using allocated insurance proceeds.

ARTICLE 7—CONTRACTOR'S RESPONSIBILITIES

7.01 *CONTRACTOR's Means and Methods of Construction*

A. CONTRACTOR shall be solely responsible for the means, methods, techniques, sequences, and procedures of construction.

B. If the Contract Documents note, or CONTRACTOR determines, that professional ENGINEERing or other design services are needed to carry out CONTRACTOR's responsibilities for construction means, methods, techniques, sequences, and procedures, or for Site safety, then CONTRACTOR shall cause such services to be

provided by a properly licensed design professional, at CONTRACTOR's expense. Such services are not OWNER-delegated professional design services under this Contract, and neither OWNER nor ENGINEER has any responsibility with respect to (1) CONTRACTOR's determination of the need for such services, (2) the qualifications or licensing of the design professionals retained or employed by CONTRACTOR, (3) the performance of such services, or (4) any errors, omissions, or defects in such services.

7.02 *Supervision and Superintendence*

A. CONTRACTOR shall supervise, inspect, and direct the Work competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to perform the Work in accordance with the Contract Documents.

B. At all times during the progress of the Work, CONTRACTOR shall assign a competent resident superintendent who will not be replaced without written notice to OWNER and ENGINEER except under extraordinary circumstances.

7.03 *Labor; Working Hours*

A. CONTRACTOR shall provide competent, suitably qualified personnel to survey and lay out the Work and perform construction as required by the Contract Documents. CONTRACTOR shall maintain good discipline and order at the Site.

B. CONTRACTOR shall be fully responsible to OWNER and ENGINEER for all acts and omissions of CONTRACTOR's employees; of Suppliers and Subcontractors, and their employees; and of any other individuals or entities performing or furnishing any of the Work, just as CONTRACTOR is responsible for CONTRACTOR's own acts and omissions.

C. Except as otherwise required for the safety or protection of persons or the Work or property at the Site or adjacent thereto, and except as otherwise stated in the Contract Documents, all Work at the Site will be performed during regular working hours, Monday through Friday. CONTRACTOR will not perform Work on a Saturday, Sunday, or any legal holiday. CONTRACTOR may perform Work outside regular working hours or on Saturdays, Sundays, or legal holidays only with OWNER's written consent, which will not be unreasonably withheld.

7.04 *Services, Materials, and Equipment*

A. Unless otherwise specified in the Contract Documents, CONTRACTOR shall provide and assume full responsibility for all services, materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water, sanitary facilities, temporary facilities, and all other facilities and incidentals necessary for the performance, testing, start up, and completion of the Work, whether or not such items are specifically called for in the Contract Documents.

B. All materials and equipment incorporated into the Work must be new and of good quality, except as otherwise provided in the Contract Documents. All special warranties and guarantees required by the Specifications will expressly run to the benefit of OWNER. If required by ENGINEER, CONTRACTOR shall furnish satisfactory evidence (including reports of required tests) as to the source, kind, and quality of materials and equipment.

C. All materials and equipment must be stored, applied, installed, connected, erected, protected, used, cleaned, and conditioned in accordance with instructions of the applicable Supplier, except as otherwise may be provided in the Contract Documents.

7.05 *"Or Equals"*

A. *CONTRACTOR's Request; Governing Criteria*: Whenever an item of equipment or material is specified or described in the Contract Documents by using the names of one or more proprietary items or specific Suppliers, the Contract Price has been based upon CONTRACTOR furnishing such item as specified. The specification or description of such an item is intended to establish the type, function, appearance, and quality required. Unless the specification or description contains or is followed by words reading that no like, equivalent, or "or equal" item is permitted, CONTRACTOR may request that ENGINEER authorize the use of other items of equipment or material, or items from other proposed Suppliers, under the circumstances described below.

1. If ENGINEER in its sole discretion determines that an item of equipment or material proposed by CONTRACTOR is functionally equal to that named and sufficiently similar so that no change in related Work will be required, ENGINEER will deem it an "or equal" item. For the purposes of this paragraph, a proposed item of equipment or material will be considered functionally equal to an item so named if:

   a. in the exercise of reasonable judgment ENGINEER determines that the proposed item:

      1) is at least equal in materials of construction, quality, durability, appearance, strength, and design characteristics;

      2) will reliably perform at least equally well the function and achieve the results imposed by the design concept of the completed Project as a functioning whole;

      3) has a proven record of performance and availability of responsive service; and

      4) is not objectionable to OWNER.

   b. CONTRACTOR certifies that, if the proposed item is approved and incorporated into the Work:

      1) there will be no increase in cost to the OWNER or increase in Contract Times; and

      2) the item will conform substantially to the detailed requirements of the item named in the Contract Documents.

B. *CONTRACTOR's Expense*: CONTRACTOR shall provide all data in support of any proposed "or equal" item at CONTRACTOR's expense.

C. *ENGINEER's Evaluation and Determination*: ENGINEER will be allowed a reasonable time to evaluate each "or-equal" request. ENGINEER may require CONTRACTOR to furnish additional data about the proposed "or-equal" item. ENGINEER will be the sole judge of acceptability. No "or-equal" item will be ordered, furnished, installed, or utilized until ENGINEER's review is complete and ENGINEER determines that the proposed item is an "or-equal," which will be evidenced by an approved Shop Drawing or other written communication. ENGINEER will advise CONTRACTOR in writing of any negative determination.

D. *Effect of ENGINEER's Determination*: Neither approval nor denial of an "or-equal" request will result in any change in Contract Price. The ENGINEER's denial of an "or-equal" request will be final and binding, and may not be reversed through an appeal under any provision of the Contract.

E. *Treatment as a Substitution Request*: If ENGINEER determines that an item of equipment or material proposed by CONTRACTOR does not qualify as an "or-equal" item, CONTRACTOR may request that ENGINEER consider the item a proposed substitute pursuant to Paragraph 7.06.

7.06 *Substitutes*

A. *CONTRACTOR's Request; Governing Criteria*: Unless the specification or description of an item of equipment or material required to be furnished under the Contract Documents contains or is followed by words reading that no substitution is permitted, CONTRACTOR may request that ENGINEER authorize the use of other items of equipment or material under the circumstances described below. To the extent possible such requests must be made before commencement of related construction at the Site.

1. CONTRACTOR shall submit sufficient information as provided below to allow ENGINEER to determine if the item of material or equipment proposed is functionally equivalent to that named and an acceptable substitute therefor. ENGINEER will not accept requests for review of proposed substitute items of equipment or material from anyone other than CONTRACTOR.

2. The requirements for review by ENGINEER will be as set forth in Paragraph 7.06.B, as supplemented by the Specifications, and as ENGINEER may decide is appropriate under the circumstances.

3. CONTRACTOR shall make written application to ENGINEER for review of a proposed substitute item of equipment or material that CONTRACTOR seeks to furnish or use. The application:

   a. will certify that the proposed substitute item will:

      1) perform adequately the functions and achieve the results called for by the general design;

      2) be similar in substance to the item specified; and

      3) be suited to the same use as the item specified.

   b. will state:

      1) the extent, if any, to which the use of the proposed substitute item will necessitate a change in Contract Times;

      2) whether use of the proposed substitute item in the Work will require a change in any of the Contract Documents (or in the provisions of any other direct contract with OWNER for other work on the Project) to adapt the design to the proposed substitute item; and

      3) whether incorporation or use of the proposed substitute item in connection with the Work is subject to payment of any license fee or royalty.

   c. will identify:

      1) all variations of the proposed substitute item from the item specified; and

2) available ENGINEERing, sales, maintenance, repair, and replacement services.

d. will contain an itemized estimate of all costs or credits that will result directly or indirectly from use of such substitute item, including but not limited to changes in Contract Price, shared savings, costs of redesign, and claims of other CONTRACTORs affected by any resulting change.

B. *ENGINEER's Evaluation and Determination*: ENGINEER will be allowed a reasonable time to evaluate each substitute request, and to obtain comments and direction from OWNER. ENGINEER may require CONTRACTOR to furnish additional data about the proposed substitute item. ENGINEER will be the sole judge of acceptability. No substitute will be ordered, furnished, installed, or utilized until ENGINEER's review is complete and ENGINEER determines that the proposed item is an acceptable substitute. ENGINEER's determination will be evidenced by a Field Order or a proposed Change Order accounting for the substitution itself and all related impacts, including changes in Contract Price or Contract Times. ENGINEER will advise CONTRACTOR in writing of any negative determination.

C. *Special Guarantee*: OWNER may require CONTRACTOR to furnish at CONTRACTOR's expense a special performance guarantee or other surety with respect to any substitute.

D. *Reimbursement of ENGINEER's Cost*: ENGINEER will record ENGINEER's costs in evaluating a substitute proposed or submitted by CONTRACTOR. Whether or not ENGINEER approves a substitute so proposed or submitted by CONTRACTOR, CONTRACTOR shall reimburse OWNER for the reasonable charges of ENGINEER for evaluating each such proposed substitute. CONTRACTOR shall also reimburse OWNER for the reasonable charges of ENGINEER for making changes in the Contract Documents (or in the provisions of any other direct contract with OWNER) resulting from the acceptance of each proposed substitute.

E. *CONTRACTOR's Expense*: CONTRACTOR shall provide all data in support of any proposed substitute at CONTRACTOR's expense.

F. *Effect of ENGINEER's Determination*: If ENGINEER approves the substitution request, CONTRACTOR shall execute the proposed Change Order and proceed with the substitution. The ENGINEER's denial of a substitution request will be final and binding, and may not be reversed through an appeal under any provision of the Contract. CONTRACTOR may challenge the scope of reimbursement costs imposed under Paragraph 7.06.D, by timely submittal of a Change Proposal.

7.07 *Concerning Subcontractors and Suppliers*

A. CONTRACTOR may retain Subcontractors and Suppliers for the performance of parts of the Work. Such Subcontractors and Suppliers must be acceptable to OWNER. The CONTRACTOR's retention of a Subcontractor or Supplier for the performance of parts of the Work will not relieve CONTRACTOR's obligation to OWNER to perform and complete the Work in accordance with the Contract Documents.

B. CONTRACTOR shall retain specific Subcontractors and Suppliers for the performance of designated parts of the Work if required by the Contract to do so.

C. Subsequent to the submittal of CONTRACTOR's Bid or final negotiation of the terms of the Contract, OWNER may not require CONTRACTOR to retain any Subcontractor

or Supplier to furnish or perform any of the Work against which CONTRACTOR has reasonable objection.

D. Prior to entry into any binding subcontract or purchase order, CONTRACTOR shall submit to OWNER the identity of the proposed Subcontractor or Supplier (unless OWNER has already deemed such proposed Subcontractor or Supplier acceptable during the bidding process or otherwise). Such proposed Subcontractor or Supplier shall be deemed acceptable to OWNER unless OWNER raises a substantive, reasonable objection within 5 days.

E. OWNER may require the replacement of any Subcontractor or Supplier. OWNER also may require CONTRACTOR to retain specific replacements; provided, however, that OWNER may not require a replacement to which CONTRACTOR has a reasonable objection. If CONTRACTOR has submitted the identity of certain Subcontractors or Suppliers for acceptance by OWNER, and OWNER has accepted it (either in writing or by failing to make written objection thereto), then OWNER may subsequently revoke the acceptance of any such Subcontractor or Supplier so identified solely on the basis of substantive, reasonable objection after due investigation. CONTRACTOR shall submit an acceptable replacement for the rejected Subcontractor or Supplier.

F. If OWNER requires the replacement of any Subcontractor or Supplier retained by CONTRACTOR to perform any part of the Work, then CONTRACTOR shall be entitled to an adjustment in Contract Price or Contract Times, with respect to the replacement; and CONTRACTOR shall initiate a Change Proposal for such adjustment within 30 days of OWNER's requirement of replacement.

G. No acceptance by OWNER of any such Subcontractor or Supplier, whether initially or as a replacement, will constitute a waiver of the right of OWNER to the completion of the Work in accordance with the Contract Documents.

H. On a monthly basis, CONTRACTOR shall submit to ENGINEER a complete list of all Subcontractors and Suppliers having a direct contract with CONTRACTOR, and of all other Subcontractors and Suppliers known to CONTRACTOR at the time of submittal.

I. CONTRACTOR shall be solely responsible for scheduling and coordinating the work of Subcontractors and Suppliers.

J. The divisions and sections of the Specifications and the identifications of any Drawings do not control CONTRACTOR in dividing the Work among Subcontractors or Suppliers, or in delineating the Work to be performed by any specific trade.

K. All Work performed for CONTRACTOR by a Subcontractor or Supplier must be pursuant to an appropriate contractual agreement that specifically binds the Subcontractor or Supplier to the applicable terms and conditions of the Contract for the benefit of OWNER and ENGINEER.

L. OWNER may furnish to any Subcontractor or Supplier, to the extent practicable, information about amounts paid to CONTRACTOR for Work performed for CONTRACTOR by the Subcontractor or Supplier.

M. CONTRACTOR shall restrict all Subcontractors and Suppliers from communicating with ENGINEER or OWNER, except through CONTRACTOR or in case of an emergency, or as otherwise expressly allowed in this Contract.

7.08 *Patent Fees and Royalties*

A. CONTRACTOR shall pay all license fees and royalties and assume all costs incident to the use in the performance of the Work or the incorporation in the Work of any invention, design, process, product, or device which is the subject of patent rights or copyrights held by others. If an invention, design, process, product, or device is specified in the Contract Documents for use in the performance of the Work and if, to the actual knowledge of OWNER or ENGINEER, its use is subject to patent rights or copyrights calling for the payment of any license fee or royalty to others, the existence of such rights will be disclosed in the Contract Documents.

B. To the fullest extent permitted by Laws and Regulations, OWNER shall indemnify and hold harmless CONTRACTOR, and its officers, directors, members, partners, employees, agents, consultants, and Subcontractors, from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of ENGINEERs, architects, attorneys, and other professionals, and all court or arbitration or other dispute resolution costs) arising out of or relating to any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product, or device specified in the Contract Documents, but not identified as being subject to payment of any license fee or royalty to others required by patent rights or copyrights.

C. To the fullest extent permitted by Laws and Regulations, CONTRACTOR shall indemnify and hold harmless OWNER and ENGINEER, and the officers, directors, members, partners, employees, agents, consultants and Subcontractors of each and any of them, from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of ENGINEERs, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product, or device not specified in the Contract Documents.

7.09 *Permits*

A. Unless otherwise provided in the Contract Documents, CONTRACTOR shall obtain and pay for all construction permits, licenses, and certificates of occupancy. OWNER shall assist CONTRACTOR, when necessary, in obtaining such permits and licenses. CONTRACTOR shall pay all governmental charges and inspection fees necessary for the prosecution of the Work which are applicable at the time of the submission of CONTRACTOR's Bid (or when CONTRACTOR became bound under a negotiated contract). OWNER shall pay all charges of utility OWNERs for connections for providing permanent service to the Work.

7.10 *Taxes*

A. CONTRACTOR shall pay all sales, consumer, use, and other similar taxes required to be paid by CONTRACTOR in accordance with the Laws and Regulations of the place of the Project which are applicable during the performance of the Work.

7.11 *Laws and Regulations*

A. CONTRACTOR shall give all notices required by and shall comply with all Laws and Regulations applicable to the performance of the Work. Neither OWNER nor ENGINEER shall be responsible for monitoring CONTRACTOR's compliance with any Laws or Regulations.

B. If CONTRACTOR performs any Work or takes any other action knowing or having reason to know that it is contrary to Laws or Regulations, CONTRACTOR shall bear all resulting costs and losses, and shall indemnify and hold harmless OWNER and ENGINEER, and the officers, directors, members, partners, employees, agents, consultants, and Subcontractors of each and any of them, from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of ENGINEERs, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such Work or other action. It is not CONTRACTOR's responsibility to make certain that the Work described in the Contract Documents is in accordance with Laws and Regulations, but this does not relieve CONTRACTOR of its obligations under Paragraph 3.03.

C. OWNER or CONTRACTOR may give written notice to the other party of any changes after the submission of CONTRACTOR's Bid (or after the date when CONTRACTOR became bound under a negotiated contract) in Laws or Regulations having an effect on the cost or time of performance of the Work, including but not limited to changes in Laws or Regulations having an effect on procuring permits and on sales, use, value-added, consumption, and other similar taxes. If OWNER and CONTRACTOR are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in Contract Price or Contract Times resulting from such changes, then within 30 days of such written notice CONTRACTOR may submit a Change Proposal, or OWNER may initiate a Claim.

7.12 *Record Documents*

A. CONTRACTOR shall maintain in a safe place at the Site one printed record copy of all Drawings, Specifications, Addenda, Change Orders, Work Change Directives, Field Orders, written interpretations and clarifications, and approved Shop Drawings. CONTRACTOR shall keep such record documents in good order and annotate them to show changes made during construction. These record documents, together with all approved Samples, will be available to ENGINEER for reference. Upon completion of the Work, CONTRACTOR shall deliver these record documents to ENGINEER.

7.13 *Safety and Protection*

A. CONTRACTOR shall be solely responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the Work. Such responsibility does not relieve Subcontractors of their responsibility for the safety of persons or property in the performance of their work, nor for compliance with applicable safety Laws and Regulations.

B. CONTRACTOR shall designate a qualified and experienced safety representative whose duties and responsibilities are the prevention of Work-related accidents and the maintenance and supervision of safety precautions and programs.

C. CONTRACTOR shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury, or loss to:

1. all persons on the Site or who may be affected by the Work;

2. all the Work and materials and equipment to be incorporated therein, whether in storage on or off the Site; and

3. other property at the Site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, other work in progress, utilities, and

Underground Facilities not designated for removal, relocation, or replacement in the course of construction.

D. All damage, injury, or loss to any property referred to in Paragraph 7.13.C.2 or 7.13.C.3 caused, directly or indirectly, in whole or in part, by CONTRACTOR, any Subcontractor, Supplier, or any other individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, shall be remedied by CONTRACTOR at its expense (except damage or loss attributable to the fault of Drawings or Specifications or to the acts or omissions of OWNER or ENGINEER or anyone employed by any of them, or anyone for whose acts any of them may be liable, and not attributable, directly or indirectly, in whole or in part, to the fault or negligence of CONTRACTOR or any Subcontractor, Supplier, or other individual or entity directly or indirectly employed by any of them).

E. CONTRACTOR shall comply with all applicable Laws and Regulations relating to the safety of persons or property, or to the protection of persons or property from damage, injury, or loss; and shall erect and maintain all necessary safeguards for such safety and protection.

F. CONTRACTOR shall notify OWNER; the OWNERs of adjacent property; the OWNERs of Underground Facilities and other utilities (if the identity of such OWNERs is known to CONTRACTOR); and other CONTRACTORs and utility OWNERs performing work at or adjacent to the Site, in writing, when CONTRACTOR knows that prosecution of the Work may affect them, and shall cooperate with them in the protection, removal, relocation, and replacement of their property or work in progress.

G. CONTRACTOR shall comply with the applicable requirements of OWNER's safety programs, if any. Any OWNER's safety programs that are applicable to the Work are identified or included in the Supplementary Conditions or Specifications.

H. CONTRACTOR shall inform OWNER and ENGINEER of the specific requirements of CONTRACTOR's safety program with which OWNER's and ENGINEER's employees and representatives must comply while at the Site.

I. CONTRACTOR's duties and responsibilities for safety and protection will continue until all the Work is completed, ENGINEER has issued a written notice to OWNER and CONTRACTOR in accordance with Paragraph 15.06.C that the Work is acceptable, and CONTRACTOR has left the Site (except as otherwise expressly provided in connection with Substantial Completion).

J. CONTRACTOR's duties and responsibilities for safety and protection will resume whenever CONTRACTOR or any Subcontractor or Supplier returns to the Site to fulfill warranty or correction obligations, or to conduct other tasks arising from the Contract Documents.

7.14 *Hazard Communication Programs*

A. CONTRACTOR shall be responsible for coordinating any exchange of safety data sheets (formerly known as material safety data sheets) or other hazard communication information required to be made available to or exchanged between or among employers at the Site in accordance with Laws or Regulations.

7.15 *Emergencies*

A. In emergencies affecting the safety or protection of persons or the Work or property at the Site or adjacent thereto, CONTRACTOR is obligated to act to prevent damage, injury, or loss. CONTRACTOR shall give ENGINEER prompt written notice if

CONTRACTOR believes that any significant changes in the Work or variations from the Contract Documents have been caused by an emergency, or are required as a result of CONTRACTOR's response to an emergency. If ENGINEER determines that a change in the Contract Documents is required because of an emergency or CONTRACTOR's response, a Work Change Directive or Change Order will be issued.

7.16 *Submittals*

A. *Shop Drawing and Sample Requirements*

1. Before submitting a Shop Drawing or Sample, CONTRACTOR shall:

a. review and coordinate the Shop Drawing or Sample with other Shop Drawings and Samples and with the requirements of the Work and the Contract Documents;

b. determine and verify:

1) all field measurements, quantities, dimensions, specified performance and design criteria, installation requirements, materials, catalog numbers, and similar information with respect to the Submittal;

2) the suitability of all materials and equipment offered with respect to the indicated application, fabrication, shipping, handling, storage, assembly, and installation pertaining to the performance of the Work; and

3) all information relative to CONTRACTOR's responsibilities for means, methods, techniques, sequences, and procedures of construction, and safety precautions and programs incident thereto;

c. confirm that the Submittal is complete with respect to all related data included in the Submittal.

2. Each Shop Drawing or Sample must bear a stamp or specific written certification that CONTRACTOR has satisfied CONTRACTOR's obligations under the Contract Documents with respect to CONTRACTOR's review of that Submittal, and that CONTRACTOR approves the Submittal.

3. With each Shop Drawing or Sample, CONTRACTOR shall give ENGINEER specific written notice of any variations that the Submittal may have from the requirements of the Contract Documents. This notice must be set forth in a written communication separate from the Submittal; and, in addition, in the case of a Shop Drawing by a specific notation made on the Shop Drawing itself.

B. *Submittal Procedures for Shop Drawings and Samples*: CONTRACTOR shall label and submit Shop Drawings and Samples to ENGINEER for review and approval in accordance with the accepted Schedule of Submittals.

1. *Shop Drawings*

a. CONTRACTOR shall submit the number of copies required in the Specifications.

b. Data shown on the Shop Drawings must be complete with respect to quantities, dimensions, specified performance and design criteria, materials, and similar data to show ENGINEER the services, materials, and equipment CONTRACTOR proposes to provide, and to enable ENGINEER to review the information for the limited purposes required by Paragraph 7.16.C.

2. *Samples*

    a. CONTRACTOR shall submit the number of Samples required in the Specifications.

    b. CONTRACTOR shall clearly identify each Sample as to material, Supplier, pertinent data such as catalog numbers, the use for which intended and other data as ENGINEER may require to enable ENGINEER to review the Submittal for the limited purposes required by Paragraph 7.16.C.

3. Where a Shop Drawing or Sample is required by the Contract Documents or the Schedule of Submittals, any related Work performed prior to ENGINEER's review and approval of the pertinent submittal will be at the sole expense and responsibility of CONTRACTOR.

C. *ENGINEER's Review of Shop Drawings and Samples*

1. ENGINEER will provide timely review of Shop Drawings and Samples in accordance with the accepted Schedule of Submittals. ENGINEER's review and approval will be only to determine if the items covered by the Submittals will, after installation or incorporation in the Work, comply with the requirements of the Contract Documents, and be compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents.

2. ENGINEER's review and approval will not extend to means, methods, techniques, sequences, or procedures of construction, or to safety precautions or programs incident thereto.

3. ENGINEER's review and approval of a separate item as such will not indicate approval of the assembly in which the item functions.

4. ENGINEER's review and approval of a Shop Drawing or Sample will not relieve CONTRACTOR from responsibility for any variation from the requirements of the Contract Documents unless CONTRACTOR has complied with the requirements of Paragraph 7.16.A.3 and ENGINEER has given written approval of each such variation by specific written notation thereof incorporated in or accompanying the Shop Drawing or Sample. ENGINEER will document any such approved variation from the requirements of the Contract Documents in a Field Order or other appropriate Contract modification.

5. ENGINEER's review and approval of a Shop Drawing or Sample will not relieve CONTRACTOR from responsibility for complying with the requirements of Paragraphs 7.16.A and B.

6. ENGINEER's review and approval of a Shop Drawing or Sample, or of a variation from the requirements of the Contract Documents, will not, under any circumstances, change the Contract Times or Contract Price, unless such changes are included in a Change Order.

7. Neither ENGINEER's receipt, review, acceptance, or approval of a Shop Drawing or Sample will result in such item becoming a Contract Document.

8. CONTRACTOR shall perform the Work in compliance with the requirements and commitments set forth in approved Shop Drawings and Samples, subject to the provisions of Paragraph 7.16.C.4.

D. *Resubmittal Procedures for Shop Drawings and Samples*

1. CONTRACTOR shall make corrections required by ENGINEER and shall return the required number of corrected copies of Shop Drawings and submit, as required, new Samples for review and approval. CONTRACTOR shall direct specific attention in writing to revisions other than the corrections called for by ENGINEER on previous Submittals.

2. CONTRACTOR shall furnish required Shop Drawing and Sample submittals with sufficient information and accuracy to obtain required approval of an item with no more than two resubmittals. ENGINEER will record ENGINEER's time for reviewing a third or subsequent resubmittal of a Shop Drawing or Sample, and CONTRACTOR shall be responsible for ENGINEER's charges to OWNER for such time. OWNER may impose a set-off against payments due CONTRACTOR to secure reimbursement for such charges.

3. If CONTRACTOR requests a change of a previously approved Shop Drawing or Sample, CONTRACTOR shall be responsible for ENGINEER's charges to OWNER for its review time, and OWNER may impose a set-off against payments due CONTRACTOR to secure reimbursement for such charges, unless the need for such change is beyond the control of CONTRACTOR.

E. *Submittals Other than Shop Drawings, Samples, and OWNER-Delegated Designs*

1. The following provisions apply to all Submittals other than Shop Drawings, Samples, and OWNER-delegated designs:

   a. CONTRACTOR shall submit all such Submittals to the ENGINEER in accordance with the Schedule of Submittals and pursuant to the applicable terms of the Contract Documents.

   b. ENGINEER will provide timely review of all such Submittals in accordance with the Schedule of Submittals and return such Submittals with a notation of either Accepted or Not Accepted. Any such Submittal that is not returned within the time established in the Schedule of Submittals will be deemed accepted.

   c. ENGINEER's review will be only to determine if the Submittal is acceptable under the requirements of the Contract Documents as to general form and content of the Submittal.

   d. If any such Submittal is not accepted, CONTRACTOR shall confer with ENGINEER regarding the reason for the non-acceptance, and resubmit an acceptable document.

2. Procedures for the submittal and acceptance of the Progress Schedule, the Schedule of Submittals, and the Schedule of Values are set forth in Paragraphs 2.03. 2.04, and 2.05.

F. OWNER-delegated Designs: Submittals pursuant to OWNER-delegated designs are governed by the provisions of Paragraph 7.19.

7.17 *CONTRACTOR's General Warranty and Guarantee*

A. CONTRACTOR warrants and guarantees to OWNER that all Work will be in accordance with the Contract Documents and will not be defective. ENGINEER is entitled to rely on CONTRACTOR's warranty and guarantee.

B. OWNER's rights under this warranty and guarantee are in addition to, and are not limited by, OWNER's rights under the correction period provisions of Paragraph 15.08. The time in which OWNER may enforce its warranty and guarantee rights under this Paragraph 7.17 is limited only by applicable Laws and Regulations restricting actions to enforce such rights; provided, however, that after the end of the correction period under Paragraph 15.08:

1. OWNER shall give CONTRACTOR written notice of any defective Work within 60 days of the discovery that such Work is defective; and
2. Such notice will be deemed the start of an event giving rise to a Claim under Paragraph 12.01.B, such that any related Claim must be brought within 30 days of the notice.

C. CONTRACTOR's warranty and guarantee hereunder excludes defects or damage caused by:

1. abuse, or improper modification, maintenance, or operation, by persons other than CONTRACTOR, Subcontractors, Suppliers, or any other individual or entity for whom CONTRACTOR is responsible; or
2. normal wear and tear under normal usage.

D. CONTRACTOR's obligation to perform and complete the Work in accordance with the Contract Documents is absolute. None of the following will constitute an acceptance of Work that is not in accordance with the Contract Documents, a release of CONTRACTOR's obligation to perform the Work in accordance with the Contract Documents, or a release of OWNER's warranty and guarantee rights under this Paragraph 7.17:

1. Observations by ENGINEER;
2. Recommendation by ENGINEER or payment by OWNER of any progress or final payment;
3. The issuance of a certificate of Substantial Completion by ENGINEER or any payment related thereto by OWNER;
4. Use or occupancy of the Work or any part thereof by OWNER;
5. Any review and approval of a Shop Drawing or Sample submittal;
6. The issuance of a notice of acceptability by ENGINEER;
7. The end of the correction period established in Paragraph 15.08;
8. Any inspection, test, or approval by others; or
9. Any correction of defective Work by OWNER.

E. If the Contract requires the CONTRACTOR to accept the assignment of a contract entered into by OWNER, then the specific warranties, guarantees, and correction obligations contained in the assigned contract will govern with respect to CONTRACTOR's performance obligations to OWNER for the Work described in the assigned contract.

7.18 *Indemnification*

A. To the fullest extent permitted by Laws and Regulations, and in addition to any other obligations of CONTRACTOR under the Contract or otherwise, CONTRACTOR shall

indemnify and hold harmless OWNER and ENGINEER, and the officers, directors, members, partners, employees, agents, consultants and Subcontractors of each and any of them, from losses, damages, costs, and judgments (including but not limited to all fees and charges of ENGINEERs, architects, attorneys, and other professionals, and all court or arbitration or other dispute resolution costs) arising from third-party claims or actions relating to or resulting from the performance or furnishing of the Work, provided that any such claim, action, loss, cost, judgment or damage is attributable to bodily injury, sickness, disease, or death, or to damage to or destruction of tangible property (other than the Work itself), including the loss of use resulting therefrom, but only to the extent caused by any negligent act or omission of CONTRACTOR, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable.

B. In any and all claims against OWNER or ENGINEER, or any of their officers, directors, members, partners, employees, agents, consultants, or Subcontractors, by any employee (or the survivor or personal representative of such employee) of CONTRACTOR, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, the indemnification obligation under Paragraph 7.18.A will not be limited in any way by any limitation on the amount or type of damages, compensation, or benefits payable by or for CONTRACTOR or any such Subcontractor, Supplier, or other individual or entity under workers' compensation acts, disability benefit acts, or other employee benefit acts.

7.19 *Delegation of Professional Design Services*

A. OWNER may require CONTRACTOR to provide professional design services for a portion of the Work by express delegation in the Contract Documents. Such delegation will specify the performance and design criteria that such services must satisfy, and the Submittals that CONTRACTOR must furnish to ENGINEER with respect to the OWNER-delegated design.

B. CONTRACTOR shall cause such OWNER-delegated professional design services to be provided pursuant to the professional standard of care by a properly licensed design professional, whose signature and seal must appear on all drawings, calculations, specifications, certifications, and Submittals prepared by such design professional. Such design professional must issue all certifications of design required by Laws and Regulations.

C. If a Shop Drawing or other Submittal related to the OWNER-delegated design is prepared by CONTRACTOR, a Subcontractor, or others for submittal to ENGINEER, then such Shop Drawing or other Submittal must bear the written approval of CONTRACTOR's design professional when submitted by CONTRACTOR to ENGINEER.

D. OWNER and ENGINEER shall be entitled to rely upon the adequacy, accuracy, and completeness of the services, certifications, and approvals performed or provided by the design professionals retained or employed by CONTRACTOR under an OWNER-delegated design, subject to the professional standard of care and the performance and design criteria stated in the Contract Documents.

E. Pursuant to this Paragraph 7.19, ENGINEER's review, approval, and other determinations regarding design drawings, calculations, specifications, certifications,

and other Submittals furnished by CONTRACTOR pursuant to an OWNER-delegated design will be only for the following limited purposes:

1. Checking for conformance with the requirements of this Paragraph 7.19;
2. Confirming that CONTRACTOR (through its design professionals) has used the performance and design criteria specified in the Contract Documents; and
3. Establishing that the design furnished by CONTRACTOR is consistent with the design concept expressed in the Contract Documents.

F. CONTRACTOR shall not be responsible for the adequacy of performance or design criteria specified by OWNER or ENGINEER.

G. CONTRACTOR is not required to provide professional services in violation of applicable Laws and Regulations.

ARTICLE 8—OTHER WORK AT THE SITE

8.01 *Other Work*

A. In addition to and apart from the Work under the Contract Documents, the OWNER may perform other work at or adjacent to the Site. Such other work may be performed by OWNER's employees, or through contracts between the OWNER and third parties. OWNER may also arrange to have third-party utility OWNERs perform work on their utilities and facilities at or adjacent to the Site.

B. If OWNER performs other work at or adjacent to the Site with OWNER's employees, or through contracts for such other work, then OWNER shall give CONTRACTOR written notice thereof prior to starting any such other work. If OWNER has advance information regarding the start of any third-party utility work that OWNER has arranged to take place at or adjacent to the Site, OWNER shall provide such information to CONTRACTOR.

C. CONTRACTOR shall afford proper and safe access to the Site to each CONTRACTOR that performs such other work, each utility OWNER performing other work, and OWNER, if OWNER is performing other work with OWNER's employees, and provide a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such other work.

D. CONTRACTOR shall do all cutting, fitting, and patching of the Work that may be required to properly connect or otherwise make its several parts come together and properly integrate with such other work. CONTRACTOR shall not endanger any work of others by cutting, excavating, or otherwise altering such work; provided, however, that CONTRACTOR may cut or alter others' work with the written consent of ENGINEER and the others whose work will be affected.

E. If the proper execution or results of any part of CONTRACTOR's Work depends upon work performed by others, CONTRACTOR shall inspect such other work and promptly report to ENGINEER in writing any delays, defects, or deficiencies in such other work that render it unavailable or unsuitable for the proper execution and results of CONTRACTOR's Work. CONTRACTOR's failure to so report will constitute an acceptance of such other work as fit and proper for integration with CONTRACTOR's Work except for latent defects and deficiencies in such other work.

F. The provisions of this article are not applicable to work that is performed by third-party utilities or other third-party entities without a contract with OWNER, or that is performed

without having been arranged by OWNER. If such work occurs, then any related delay, disruption, or interference incurred by CONTRACTOR is governed by the provisions of Paragraph 4.05.C.3.

8.02 *Coordination*

A. If OWNER intends to contract with others for the performance of other work at or adjacent to the Site, to perform other work at or adjacent to the Site with OWNER's employees, or to arrange to have utility OWNERs perform work at or adjacent to the Site, the following will be set forth in the Supplementary Conditions or provided to CONTRACTOR prior to the start of any such other work:

1. The identity of the individual or entity that will have authority and responsibility for coordination of the activities among the various CONTRACTORs;

2. An itemization of the specific matters to be covered by such authority and responsibility; and

3. The extent of such authority and responsibilities.

B. Unless otherwise provided in the Supplementary Conditions, OWNER shall have sole authority and responsibility for such coordination.

8.03 *Legal Relationships*

A. If, in the course of performing other work for OWNER at or adjacent to the Site, the OWNER's employees, any other CONTRACTOR working for OWNER, or any utility OWNER that OWNER has arranged to perform work, causes damage to the Work or to the property of CONTRACTOR or its Subcontractors, or delays, disrupts, interferes with, or increases the scope or cost of the performance of the Work, through actions or inaction, then CONTRACTOR shall be entitled to an equitable adjustment in the Contract Price or the Contract Times. CONTRACTOR must submit any Change Proposal seeking an equitable adjustment in the Contract Price or the Contract Times under this paragraph within 30 days of the damaging, delaying, disrupting, or interfering event. The entitlement to, and extent of, any such equitable adjustment will take into account information (if any) regarding such other work that was provided to CONTRACTOR in the Contract Documents prior to the submittal of the Bid or the final negotiation of the terms of the Contract, and any remedies available to CONTRACTOR under Laws or Regulations concerning utility action or inaction. When applicable, any such equitable adjustment in Contract Price will be conditioned on CONTRACTOR assigning to OWNER all CONTRACTOR's rights against such other CONTRACTOR or utility OWNER with respect to the damage, delay, disruption, or interference that is the subject of the adjustment. CONTRACTOR's entitlement to an adjustment of the Contract Times or Contract Price is subject to the provisions of Paragraphs 4.05.D and 4.05.E.

B. CONTRACTOR shall take reasonable and customary measures to avoid damaging, delaying, disrupting, or interfering with the work of OWNER, any other CONTRACTOR, or any utility OWNER performing other work at or adjacent to the Site.

1. If CONTRACTOR fails to take such measures and as a result damages, delays, disrupts, or interferes with the work of any such other CONTRACTOR or utility OWNER, then OWNER may impose a set-off against payments due CONTRACTOR, and assign to such other CONTRACTOR or utility OWNER the

OWNER's contractual rights against CONTRACTOR with respect to the breach of the obligations set forth in this Paragraph 8.03.B.

2. When OWNER is performing other work at or adjacent to the Site with OWNER's employees, CONTRACTOR shall be liable to OWNER for damage to such other work, and for the reasonable direct delay, disruption, and interference costs incurred by OWNER as a result of CONTRACTOR's failure to take reasonable and customary measures with respect to OWNER's other work. In response to such damage, delay, disruption, or interference, OWNER may impose a set-off against payments due CONTRACTOR.

C. If CONTRACTOR damages, delays, disrupts, or interferes with the work of any other CONTRACTOR, or any utility OWNER performing other work at or adjacent to the Site, through CONTRACTOR's failure to take reasonable and customary measures to avoid such impacts, or if any claim arising out of CONTRACTOR's actions, inactions, or negligence in performance of the Work at or adjacent to the Site is made by any such other CONTRACTOR or utility OWNER against CONTRACTOR, OWNER, or ENGINEER, then CONTRACTOR shall (1) promptly attempt to settle the claim as to all parties through negotiations with such other CONTRACTOR or utility OWNER, or otherwise resolve the claim by arbitration or other dispute resolution proceeding or at law, and (2) indemnify and hold harmless OWNER and ENGINEER, and the officers, directors, members, partners, employees, agents, consultants and Subcontractors of each and any of them from and against any such claims, and against all costs, losses, and damages (including but not limited to all fees and charges of ENGINEERs, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such damage, delay, disruption, or interference.

ARTICLE 9—OWNER'S RESPONSIBILITIES

9.01 *Communications to CONTRACTOR*

A. Except as otherwise provided in these General Conditions, OWNER shall issue all communications to CONTRACTOR through ENGINEER.

9.02 *Replacement of ENGINEER*

A. OWNER may at its discretion appoint an ENGINEER to replace ENGINEER, provided CONTRACTOR makes no reasonable objection to the replacement ENGINEER. The replacement ENGINEER's status under the Contract Documents will be that of the former ENGINEER.

9.03 *Furnish Data*

A. OWNER shall promptly furnish the data required of OWNER under the Contract Documents.

9.04 *Pay When Due*

A. OWNER shall make payments to CONTRACTOR when they are due as provided in the Agreement.

9.05 *Lands and Easements; Reports, Tests, and Drawings*

A. OWNER's duties with respect to providing lands and easements are set forth in Paragraph 5.01.

B. OWNER's duties with respect to providing ENGINEERing surveys to establish reference points are set forth in Paragraph 4.03.

C. Article 5 refers to OWNER's identifying and making available to CONTRACTOR copies of reports of explorations and tests of conditions at the Site, and drawings of physical conditions relating to existing surface or subsurface structures at the Site.

9.06 *Insurance*

A. OWNER's responsibilities, if any, with respect to purchasing and maintaining liability and property insurance are set forth in Article 6.

9.07 *Change Orders*

A. OWNER's responsibilities with respect to Change Orders are set forth in Article 11.

9.08 *Inspections, Tests, and Approvals*

A. OWNER's responsibility with respect to certain inspections, tests, and approvals is set forth in Paragraph 14.02.B.

9.09 *Limitations on OWNER's Responsibilities*

A. The OWNER shall not supervise, direct, or have control or authority over, nor be responsible for, CONTRACTOR's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of CONTRACTOR to comply with Laws and Regulations applicable to the performance of the Work. OWNER will not be responsible for CONTRACTOR's failure to perform the Work in accordance with the Contract Documents.

9.10 *Undisclosed Hazardous Environmental Condition*

A. OWNER's responsibility in respect to an undisclosed Hazardous Environmental Condition is set forth in Paragraph 5.06.

9.11 *Evidence of Financial Arrangements*

A. Upon request of CONTRACTOR, OWNER shall furnish CONTRACTOR reasonable evidence that financial arrangements have been made to satisfy OWNER's obligations under the Contract (including obligations under proposed changes in the Work).

9.12 *Safety Programs*

A. While at the Site, OWNER's employees and representatives shall comply with the specific applicable requirements of CONTRACTOR's safety programs of which OWNER has been informed.

B. OWNER shall furnish copies of any applicable OWNER safety programs to CONTRACTOR.

ARTICLE 10—ENGINEER'S STATUS DURING CONSTRUCTION

10.01 *OWNER's Representative*

A. ENGINEER will be OWNER's representative during the construction period. The duties and responsibilities and the limitations of authority of ENGINEER as OWNER's representative during construction are set forth in the Contract.

10.02 *Visits to Site*

A. ENGINEER will make visits to the Site at intervals appropriate to the various stages of construction as ENGINEER deems necessary in order to observe, as an experienced and qualified design professional, the progress that has been made and the quality of the various aspects of CONTRACTOR's executed Work. Based on information obtained during such visits and observations, ENGINEER, for the benefit of OWNER, will determine, in general, if the Work is proceeding in accordance with the Contract Documents. ENGINEER will not be required to make exhaustive or continuous inspections on the Site to check the quality or quantity of the Work. ENGINEER's efforts will be directed toward providing for OWNER a greater degree of confidence that the completed Work will conform generally to the Contract Documents. On the basis of such visits and observations, ENGINEER will keep OWNER informed of the progress of the Work and will endeavor to guard OWNER against defective Work.

B. ENGINEER's visits and observations are subject to all the limitations on ENGINEER's authority and responsibility set forth in Paragraph 10.07. Particularly, but without limitation, during or as a result of ENGINEER's visits or observations of CONTRACTOR's Work, ENGINEER will not supervise, direct, control, or have authority over or be responsible for CONTRACTOR's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of CONTRACTOR to comply with Laws and Regulations applicable to the performance of the Work.

10.03 *Resident Project Representative*

A. If OWNER and ENGINEER have agreed that ENGINEER will furnish a Resident Project Representative to represent ENGINEER at the Site and assist ENGINEER in observing the progress and quality of the Work, then the authority and responsibilities of any such Resident Project Representative will be as provided in the Supplementary Conditions, and limitations on the responsibilities thereof will be as provided in the Supplementary Conditions and in Paragraph 10.07.

B. If OWNER designates an individual or entity who is not ENGINEER's consultant, agent, or employee to represent OWNER at the Site, then the responsibilities and authority of such individual or entity will be as provided in the Supplementary Conditions.

10.04 *ENGINEER's Authority*

A. ENGINEER has the authority to reject Work in accordance with Article 14.

B. ENGINEER's authority as to Submittals is set forth in Paragraph 7.16.

C. ENGINEER's authority as to design drawings, calculations, specifications, certifications and other Submittals from CONTRACTOR in response to OWNER's delegation (if any) to CONTRACTOR of professional design services, is set forth in Paragraph 7.19.

D. ENGINEER's authority as to changes in the Work is set forth in Article 11.

E. ENGINEER's authority as to Applications for Payment is set forth in Article 15.

10.05 *Determinations for Unit Price Work*

A. ENGINEER will determine the actual quantities and classifications of Unit Price Work performed by CONTRACTOR as set forth in Paragraph 13.03.

10.06 *Decisions on Requirements of Contract Documents and Acceptability of Work*

A. ENGINEER will render decisions regarding the requirements of the Contract Documents, and judge the acceptability of the Work, pursuant to the specific procedures set forth herein for initial interpretations, Change Proposals, and acceptance of the Work. In rendering such decisions and judgments, ENGINEER will not show partiality to OWNER or CONTRACTOR, and will not be liable to OWNER, CONTRACTOR, or others in connection with any proceedings, interpretations, decisions, or judgments conducted or rendered in good faith.

10.07 *Limitations on ENGINEER's Authority and Responsibilities*

A. Neither ENGINEER's authority or responsibility under this Article 10 or under any other provision of the Contract, nor any decision made by ENGINEER in good faith either to exercise or not exercise such authority or responsibility or the undertaking, exercise, or performance of any authority or responsibility by ENGINEER, will create, impose, or give rise to any duty in contract, tort, or otherwise owed by ENGINEER to CONTRACTOR, any Subcontractor, any Supplier, any other individual or entity, or to any surety for or employee or agent of any of them.

B. ENGINEER will not supervise, direct, control, or have authority over or be responsible for CONTRACTOR's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of CONTRACTOR to comply with Laws and Regulations applicable to the performance of the Work. ENGINEER will not be responsible for CONTRACTOR's failure to perform the Work in accordance with the Contract Documents.

C. ENGINEER will not be responsible for the acts or omissions of CONTRACTOR or of any Subcontractor, any Supplier, or of any other individual or entity performing any of the Work.

D. ENGINEER's review of the final Application for Payment and accompanying documentation, and all maintenance and operating instructions, schedules, guarantees, bonds, certificates of inspection, tests and approvals, and other documentation required to be delivered by CONTRACTOR under Paragraph 15.06.A, will only be to determine generally that their content complies with the requirements of, and in the case of certificates of inspections, tests, and approvals, that the results certified indicate compliance with the Contract Documents.

E. The limitations upon authority and responsibility set forth in this Paragraph 10.07 also apply to the Resident Project Representative, if any.

10.08 *Compliance with Safety Program*

A. While at the Site, ENGINEER's employees and representatives will comply with the specific applicable requirements of OWNER's and CONTRACTOR's safety programs of which ENGINEER has been informed.

ARTICLE 11—CHANGES TO THE CONTRACT

11.01 *Amending and Supplementing the Contract*

A. The Contract may be amended or supplemented by a Change Order, a Work Change Directive, or a Field Order.

B. If an amendment or supplement to the Contract includes a change in the Contract Price or the Contract Times, such amendment or supplement must be set forth in a Change Order.

C. All changes to the Contract that involve (1) the performance or acceptability of the Work, (2) the design (as set forth in the Drawings, Specifications, or otherwise), or (3) other ENGINEERing or technical matters, must be supported by ENGINEER's recommendation. OWNER and CONTRACTOR may amend other terms and conditions of the Contract without the recommendation of the ENGINEER.

11.02 *Change Orders*

A. OWNER and CONTRACTOR shall execute appropriate Change Orders covering:

1. Changes in Contract Price or Contract Times which are agreed to by the parties, including any undisputed sum or amount of time for Work actually performed in accordance with a Work Change Directive;

2. Changes in Contract Price resulting from an OWNER set-off, unless CONTRACTOR has duly contested such set-off;

3. Changes in the Work which are: (a) ordered by OWNER pursuant to Paragraph 11.05, (b) required because of OWNER's acceptance of defective Work under Paragraph 14.04 or OWNER's correction of defective Work under Paragraph 14.07, or (c) agreed to by the parties, subject to the need for ENGINEER's recommendation if the change in the Work involves the design (as set forth in the Drawings, Specifications, or otherwise) or other ENGINEERing or technical matters; and

4. Changes that embody the substance of any final and binding results under: Paragraph 11.03.B, resolving the impact of a Work Change Directive; Paragraph 11.09, concerning Change Proposals; Article 12, Claims; Paragraph 13.02.D, final adjustments resulting from allowances; Paragraph 13.03.D, final adjustments relating to determination of quantities for Unit Price Work; and similar provisions.

B. If OWNER or CONTRACTOR refuses to execute a Change Order that is required to be executed under the terms of Paragraph 11.02.A, it will be deemed to be of full force and effect, as if fully executed.

11.03 *Work Change Directives*

A. A Work Change Directive will not change the Contract Price or the Contract Times but is evidence that the parties expect that the modification ordered or documented by a Work Change Directive will be incorporated in a subsequently issued Change Order, following negotiations by the parties as to the Work Change Directive's effect, if any, on the Contract Price and Contract Times; or, if negotiations are unsuccessful, by a determination under the terms of the Contract Documents governing adjustments, expressly including Paragraph 11.07 regarding change of Contract Price.

B. If OWNER has issued a Work Change Directive and:

1. CONTRACTOR believes that an adjustment in Contract Times or Contract Price is necessary, then CONTRACTOR shall submit any Change Proposal seeking such an adjustment no later than 30 days after the completion of the Work set out in the Work Change Directive.

2. OWNER believes that an adjustment in Contract Times or Contract Price is necessary, then OWNER shall submit any Claim seeking such an adjustment no later than 60 days after issuance of the Work Change Directive.

11.04 *Field Orders*

A. ENGINEER may authorize minor changes in the Work if the changes do not involve an adjustment in the Contract Price or the Contract Times and are compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. Such changes will be accomplished by a Field Order and will be binding on OWNER and also on CONTRACTOR, which shall perform the Work involved promptly.

B. If CONTRACTOR believes that a Field Order justifies an adjustment in the Contract Price or Contract Times, then before proceeding with the Work at issue, CONTRACTOR shall submit a Change Proposal as provided herein.

11.05 *OWNER-Authorized Changes in the Work*

A. Without invalidating the Contract and without notice to any surety, OWNER may, at any time or from time to time, order additions, deletions, or revisions in the Work. Changes involving the design (as set forth in the Drawings, Specifications, or otherwise) or other ENGINEERing or technical matters will be supported by ENGINEER's recommendation.

B. Such changes in the Work may be accomplished by a Change Order, if OWNER and CONTRACTOR have agreed as to the effect, if any, of the changes on Contract Times or Contract Price; or by a Work Change Directive. Upon receipt of any such document, CONTRACTOR shall promptly proceed with the Work involved; or, in the case of a deletion in the Work, promptly cease construction activities with respect to such deleted Work. Added or revised Work must be performed under the applicable conditions of the Contract Documents.

C. Nothing in this Paragraph 11.05 obligates CONTRACTOR to undertake work that CONTRACTOR reasonably concludes cannot be performed in a manner consistent with CONTRACTOR's safety obligations under the Contract Documents or Laws and Regulations.

11.06 *Unauthorized Changes in the Work*

A. CONTRACTOR shall not be entitled to an increase in the Contract Price or an extension of the Contract Times with respect to any work performed that is not required by the Contract Documents, as amended, modified, or supplemented, except in the case of an emergency as provided in Paragraph 7.15 or in the case of uncovering Work as provided in Paragraph 14.05.C.2.

11.07 *Change of Contract Price*

A. The Contract Price may only be changed by a Change Order. Any Change Proposal for an adjustment in the Contract Price must comply with the provisions of Paragraph 11.09. Any Claim for an adjustment of Contract Price must comply with the provisions of Article 12.

B. An adjustment in the Contract Price will be determined as follows:

1. Where the Work involved is covered by unit prices contained in the Contract Documents, then by application of such unit prices to the quantities of the items involved (subject to the provisions of Paragraph 13.03);

2. Where the Work involved is not covered by unit prices contained in the Contract Documents, then by a mutually agreed lump sum (which may include an allowance for overhead and profit not necessarily in accordance with Paragraph 11.07.C.2); or

3. Where the Work involved is not covered by unit prices contained in the Contract Documents and the parties do not reach mutual agreement to a lump sum, then on the basis of the Cost of the Work (determined as provided in Paragraph 13.01) plus a CONTRACTOR's fee for overhead and profit (determined as provided in Paragraph 11.07.C).

C. *CONTRACTOR's Fee*: When applicable, the CONTRACTOR's fee for overhead and profit will be determined as follows:

1. A mutually acceptable fixed fee; or

2. If a fixed fee is not agreed upon, then a fee based on the following percentages of the various portions of the Cost of the Work:

a. For costs incurred under Paragraphs 13.01.B.1 and 13.01.B.2, the CONTRACTOR's fee will be 15 percent;

b. For costs incurred under Paragraph 13.01.B.3, the CONTRACTOR's fee will be 5 percent;

c. Where one or more tiers of subcontracts are on the basis of Cost of the Work plus a fee and no fixed fee is agreed upon, the intent of Paragraphs 11.07.C.2.a and 11.07.C.2.b is that the CONTRACTOR's fee will be based on: (1) a fee of 15 percent of the costs incurred under Paragraphs 13.01.B.1 and 13.01.B.2 by the Subcontractor that actually performs the Work, at whatever tier, and (2) with respect to CONTRACTOR itself and to any Subcontractors of a tier higher than that of the Subcontractor that actually performs the Work, a fee of 5 percent of the amount (fee plus underlying costs incurred) attributable to the next lower tier Subcontractor; provided, however, that for any such subcontracted Work the maximum total fee to be paid by OWNER will be no greater than 27 percent of the costs incurred by the Subcontractor that actually performs the Work;

d. No fee will be payable on the basis of costs itemized under Paragraphs 13.01.B.4, 13.01.B.5, and 13.01.C;

e. The amount of credit to be allowed by CONTRACTOR to OWNER for any change which results in a net decrease in Cost of the Work will be the amount of the actual net decrease in Cost of the Work and a deduction of an additional amount equal to 5 percent of such actual net decrease in Cost of the Work; and

f. When both additions and credits are involved in any one change or Change Proposal, the adjustment in CONTRACTOR's fee will be computed by determining the sum of the costs in each of the cost categories in Paragraph 13.01.B (specifically, payroll costs, Paragraph 13.01.B.1; incorporated materials and equipment costs, Paragraph 13.01.B.2; Subcontract costs, Paragraph 13.01.B.3; special consultants costs, Paragraph 13.01.B.4; and other costs, Paragraph 13.01.B.5) and applying to each such cost category sum the appropriate fee from Paragraphs 11.07.C.2.a through 11.07.C.2.e, inclusive.

11.08 *Change of Contract Times*

A. The Contract Times may only be changed by a Change Order. Any Change Proposal for an adjustment in the Contract Times must comply with the provisions of Paragraph 11.09. Any Claim for an adjustment in the Contract Times must comply with the provisions of Article 12.

B. Delay, disruption, and interference in the Work, and any related changes in Contract Times, are addressed in and governed by Paragraph 4.05.

11.09 *Change Proposals*

A. *Purpose and Content*: CONTRACTOR shall submit a Change Proposal to ENGINEER to request an adjustment in the Contract Times or Contract Price; contest an initial decision by ENGINEER concerning the requirements of the Contract Documents or relating to the acceptability of the Work under the Contract Documents; challenge a set-off against payment due; or seek other relief under the Contract. The Change Proposal will specify any proposed change in Contract Times or Contract Price, or other proposed relief, and explain the reason for the proposed change, with citations to any governing or applicable provisions of the Contract Documents. Each Change Proposal will address only one issue, or a set of closely related issues.

B. *Change Proposal Procedures*

1. *Submittal*: CONTRACTOR shall submit each Change Proposal to ENGINEER within 30 days after the start of the event giving rise thereto, or after such initial decision.

2. *Supporting Data*: The CONTRACTOR shall submit supporting data, including the proposed change in Contract Price or Contract Time (if any), to the ENGINEER and OWNER within 15 days after the submittal of the Change Proposal.

    a. Change Proposals based on or related to delay, interruption, or interference must comply with the provisions of Paragraphs 4.05.D and 4.05.E.

    b. Change proposals related to a change of Contract Price must include full and detailed accounts of materials incorporated into the Work and labor and equipment used for the subject Work.

    The supporting data must be accompanied by a written statement that the supporting data are accurate and complete, and that any requested time or price adjustment is the entire adjustment to which CONTRACTOR believes it is entitled as a result of said event.

3. *ENGINEER's Initial Review*: ENGINEER will advise OWNER regarding the Change Proposal, and consider any comments or response from OWNER regarding the Change Proposal. If in its discretion ENGINEER concludes that additional supporting data is needed before conducting a full review and making a decision regarding the Change Proposal, then ENGINEER may request that CONTRACTOR submit such additional supporting data by a date specified by ENGINEER, prior to ENGINEER beginning its full review of the Change Proposal.

4. *ENGINEER's Full Review and Action on the Change Proposal*: Upon receipt of CONTRACTOR's supporting data (including any additional data requested by ENGINEER), ENGINEER will conduct a full review of each Change Proposal and, within 30 days after such receipt of the CONTRACTOR's supporting data, either approve the Change Proposal in whole, deny it in whole, or approve it in part and

deny it in part. Such actions must be in writing, with a copy provided to OWNER and CONTRACTOR. If ENGINEER does not take action on the Change Proposal within 30 days, then either OWNER or CONTRACTOR may at any time thereafter submit a letter to the other party indicating that as a result of ENGINEER's inaction the Change Proposal is deemed denied, thereby commencing the time for appeal of the denial under Article 12.

5. *Binding Decision*: ENGINEER's decision is final and binding upon OWNER and CONTRACTOR, unless OWNER or CONTRACTOR appeals the decision by filing a Claim under Article 12.

C. *Resolution of Certain Change Proposals*: If the Change Proposal does not involve the design (as set forth in the Drawings, Specifications, or otherwise), the acceptability of the Work, or other ENGINEERing or technical matters, then ENGINEER will notify the parties in writing that the ENGINEER is unable to resolve the Change Proposal. For purposes of further resolution of such a Change Proposal, such notice will be deemed a denial, and CONTRACTOR may choose to seek resolution under the terms of Article 12.

D. *Post-Completion*: CONTRACTOR shall not submit any Change Proposals after ENGINEER issues a written recommendation of final payment pursuant to Paragraph 15.06.B.

11.10 *Notification to Surety*

A. If the provisions of any bond require notice to be given to a surety of any change affecting the general scope of the Work or the provisions of the Contract Documents (including, but not limited to, Contract Price or Contract Times), the giving of any such notice will be CONTRACTOR's responsibility. The amount of each applicable bond will be adjusted to reflect the effect of any such change.

ARTICLE 12—CLAIMS

12.01 *Claims*

A. *Claims Process*: The following disputes between OWNER and CONTRACTOR are subject to the Claims process set forth in this article:

1. Appeals by OWNER or CONTRACTOR of ENGINEER's decisions regarding Change Proposals;

2. OWNER demands for adjustments in the Contract Price or Contract Times, or other relief under the Contract Documents;

3. Disputes that ENGINEER has been unable to address because they do not involve the design (as set forth in the Drawings, Specifications, or otherwise), the acceptability of the Work, or other ENGINEERing or technical matters; and

4. Subject to the waiver provisions of Paragraph 15.07, any dispute arising after ENGINEER has issued a written recommendation of final payment pursuant to Paragraph 15.06.B.

B. *Submittal of Claim*: The party submitting a Claim shall deliver it directly to the other party to the Contract promptly (but in no event later than 30 days) after the start of the event giving rise thereto; in the case of appeals regarding Change Proposals within 30 days of the decision under appeal. The party submitting the Claim shall also furnish a copy to the ENGINEER, for its information only. The responsibility to substantiate a

Claim rests with the party making the Claim. In the case of a Claim by CONTRACTOR seeking an increase in the Contract Times or Contract Price, CONTRACTOR shall certify that the Claim is made in good faith, that the supporting data are accurate and complete, and that to the best of CONTRACTOR's knowledge and belief the amount of time or money requested accurately reflects the full amount to which CONTRACTOR is entitled.

C. *Review and Resolution*: The party receiving a Claim shall review it thoroughly, giving full consideration to its merits. The two parties shall seek to resolve the Claim through the exchange of information and direct negotiations. The parties may extend the time for resolving the Claim by mutual agreement. All actions taken on a Claim will be stated in writing and submitted to the other party, with a copy to ENGINEER.

D. *Mediation*

1. At any time after initiation of a Claim, OWNER and CONTRACTOR may mutually agree to mediation of the underlying dispute. The agreement to mediate will stay the Claim submittal and response process.

2. If OWNER and CONTRACTOR agree to mediation, then after 60 days from such agreement, either OWNER or CONTRACTOR may unilaterally terminate the mediation process, and the Claim submittal and decision process will resume as of the date of the termination. If the mediation proceeds but is unsuccessful in resolving the dispute, the Claim submittal and decision process will resume as of the date of the conclusion of the mediation, as determined by the mediator.

3. OWNER and CONTRACTOR shall each pay one-half of the mediator's fees and costs.

E. *Partial Approval*: If the party receiving a Claim approves the Claim in part and denies it in part, such action will be final and binding unless within 30 days of such action the other party invokes the procedure set forth in Article 17 for final resolution of disputes.

F. *Denial of Claim*: If efforts to resolve a Claim are not successful, the party receiving the Claim may deny it by giving written notice of denial to the other party. If the receiving party does not take action on the Claim within 90 days, then either OWNER or CONTRACTOR may at any time thereafter submit a letter to the other party indicating that as a result of the inaction, the Claim is deemed denied, thereby commencing the time for appeal of the denial. A denial of the Claim will be final and binding unless within 30 days of the denial the other party invokes the procedure set forth in Article 17 for the final resolution of disputes.

G. *Final and Binding Results*: If the parties reach a mutual agreement regarding a Claim, whether through approval of the Claim, direct negotiations, mediation, or otherwise; or if a Claim is approved in part and denied in part, or denied in full, and such actions become final and binding; then the results of the agreement or action on the Claim will be incorporated in a Change Order or other written document to the extent they affect the Contract, including the Work, the Contract Times, or the Contract Price.

ARTICLE 13—COST OF THE WORK; ALLOWANCES; UNIT PRICE WORK

13.01 *Cost of the Work*

A. *Purposes for Determination of Cost of the Work*: The term Cost of the Work means the sum of all costs necessary for the proper performance of the Work at issue, as

further defined below. The provisions of this Paragraph 13.01 are used for two distinct purposes:

1. To determine Cost of the Work when Cost of the Work is a component of the Contract Price, under cost-plus-fee, time-and-materials, or other cost-based terms; or
2. When needed to determine the value of a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price. When the value of any such adjustment is determined on the basis of Cost of the Work, CONTRACTOR is entitled only to those additional or incremental costs required because of the change in the Work or because of the event giving rise to the adjustment.

B. *Costs Included*: Except as otherwise may be agreed to in writing by OWNER, costs included in the Cost of the Work will be in amounts no higher than those commonly incurred in the locality of the Project, will not include any of the costs itemized in Paragraph 13.01.C, and will include only the following items:

1. Payroll costs for employees in the direct employ of CONTRACTOR in the performance of the Work under schedules of job classifications agreed upon by OWNER and CONTRACTOR in advance of the subject Work. Such employees include, without limitation, superintendents, foremen, safety managers, safety representatives, and other personnel employed full time on the Work. Payroll costs for employees not employed full time on the Work will be apportioned on the basis of their time spent on the Work. Payroll costs include, but are not limited to, salaries and wages plus the cost of fringe benefits, which include social security contributions, unemployment, excise, and payroll taxes, workers' compensation, health and retirement benefits, sick leave, and vacation and holiday pay applicable thereto. The expenses of performing Work outside of regular working hours, on Saturday, Sunday, or legal holidays, will be included in the above to the extent authorized by OWNER.
2. Cost of all materials and equipment furnished and incorporated in the Work, including costs of transportation and storage thereof, and Suppliers' field services required in connection therewith. All cash discounts accrue to CONTRACTOR unless OWNER deposits funds with CONTRACTOR with which to make payments, in which case the cash discounts will accrue to OWNER. All trade discounts, rebates, and refunds and returns from sale of surplus materials and equipment will accrue to OWNER, and CONTRACTOR shall make provisions so that they may be obtained.
3. Payments made by CONTRACTOR to Subcontractors for Work performed by Subcontractors. If required by OWNER, CONTRACTOR shall obtain competitive bids from Subcontractors acceptable to OWNER and CONTRACTOR and shall deliver such bids to OWNER, which will then determine, with the advice of ENGINEER, which bids, if any, will be acceptable. If any subcontract provides that the Subcontractor is to be paid on the basis of Cost of the Work plus a fee, the Subcontractor's Cost of the Work and fee will be determined in the same manner as CONTRACTOR's Cost of the Work and fee as provided in this Paragraph 13.01.
4. Costs of special consultants (including but not limited to ENGINEERs, architects, testing laboratories, surveyors, attorneys, and accountants) employed or retained for services specifically related to the Work.

5. Other costs consisting of the following:

    a. The proportion of necessary transportation, travel, and subsistence expenses of CONTRACTOR's employees incurred in discharge of duties connected with the Work.

    b. Cost, including transportation and maintenance, of all materials, supplies, equipment, machinery, appliances, office, and temporary facilities at the Site, which are consumed in the performance of the Work, and cost, less market value, of such items used but not consumed which remain the property of CONTRACTOR.

        1) In establishing included costs for materials such as scaffolding, plating, or sheeting, consideration will be given to the actual or the estimated life of the material for use on other projects; or rental rates may be established on the basis of purchase or salvage value of such items, whichever is less. CONTRACTOR will not be eligible for compensation for such items in an amount that exceeds the purchase cost of such item.

    c. *Construction Equipment Rental*

        1) Rentals of all construction equipment and machinery, and the parts thereof, in accordance with rental agreements approved by OWNER as to price (including any surcharge or special rates applicable to overtime use of the construction equipment or machinery), and the costs of transportation, loading, unloading, assembly, dismantling, and removal thereof. All such costs will be in accordance with the terms of said rental agreements. The rental of any such equipment, machinery, or parts must cease when the use thereof is no longer necessary for the Work.

        2) Costs for equipment and machinery owned by CONTRACTOR or a CONTRACTOR-related entity will be paid at a rate shown for such equipment in the equipment rental rate book specified in the Supplementary Conditions. An hourly rate will be computed by dividing the monthly rates by 176. These computed rates will include all operating costs.

        3) With respect to Work that is the result of a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price ("changed Work"), included costs will be based on the time the equipment or machinery is in use on the changed Work and the costs of transportation, loading, unloading, assembly, dismantling, and removal when directly attributable to the changed Work. The cost of any such equipment or machinery, or parts thereof, must cease to accrue when the use thereof is no longer necessary for the changed Work.

    d. Sales, consumer, use, and other similar taxes related to the Work, and for which CONTRACTOR is liable, as imposed by Laws and Regulations.

    e. Deposits lost for causes other than negligence of CONTRACTOR, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, and royalty payments and fees for permits and licenses.

    f. Losses and damages (and related expenses) caused by damage to the Work, not compensated by insurance or otherwise, sustained by CONTRACTOR in

connection with the performance of the Work (except losses and damages within the deductible amounts of builder's risk or other property insurance established in accordance with Paragraph 6.04), provided such losses and damages have resulted from causes other than the negligence of CONTRACTOR, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable. Such losses include settlements made with the written consent and approval of OWNER. No such losses, damages, and expenses will be included in the Cost of the Work for the purpose of determining CONTRACTOR's fee.

g. The cost of utilities, fuel, and sanitary facilities at the Site.

h. Minor expenses such as communication service at the Site, express and courier services, and similar petty cash items in connection with the Work.

i. The costs of premiums for all bonds and insurance that CONTRACTOR is required by the Contract Documents to purchase and maintain.

C. *Costs Excluded*: The term Cost of the Work does not include any of the following items:

1. Payroll costs and other compensation of CONTRACTOR's officers, executives, principals, general managers, ENGINEERs, architects, estimators, attorneys, auditors, accountants, purchasing and contracting agents, expediters, timekeepers, clerks, and other personnel employed by CONTRACTOR, whether at the Site or in CONTRACTOR's principal or branch office for general administration of the Work and not specifically included in the agreed upon schedule of job classifications referred to in Paragraph 13.01.B.1 or specifically covered by Paragraph 13.01.B.4. The payroll costs and other compensation excluded here are to be considered administrative costs covered by the CONTRACTOR's fee.

2. The cost of purchasing, renting, or furnishing small tools and hand tools.

3. Expenses of CONTRACTOR's principal and branch offices other than CONTRACTOR's office at the Site.

4. Any part of CONTRACTOR's capital expenses, including interest on CONTRACTOR's capital employed for the Work and charges against CONTRACTOR for delinquent payments.

5. Costs due to the negligence of CONTRACTOR, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, including but not limited to, the correction of defective Work, disposal of materials or equipment wrongly supplied, and making good any damage to property.

6. Expenses incurred in preparing and advancing Claims.

7. Other overhead or general expense costs of any kind and the costs of any item not specifically and expressly included in Paragraph 13.01.B.

D. *CONTRACTOR's Fee*

1. When the Work as a whole is performed on the basis of cost-plus-a-fee, then:

a. CONTRACTOR's fee for the Work set forth in the Contract Documents as of the Effective Date of the Contract will be determined as set forth in the Agreement.

b. for any Work covered by a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price on the basis of Cost of the Work, CONTRACTOR's fee will be determined as follows:

1) When the fee for the Work as a whole is a percentage of the Cost of the Work, the fee will automatically adjust as the Cost of the Work changes.

2) When the fee for the Work as a whole is a fixed fee, the fee for any additions or deletions will be determined in accordance with Paragraph 11.07.C.2.

2. When the Work as a whole is performed on the basis of a stipulated sum, or any other basis other than cost-plus-a-fee, then CONTRACTOR's fee for any Work covered by a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price on the basis of Cost of the Work will be determined in accordance with Paragraph 11.07.C.2.

E. *Documentation and Audit*: Whenever the Cost of the Work for any purpose is to be determined pursuant to this Article 13, CONTRACTOR and pertinent Subcontractors will establish and maintain records of the costs in accordance with generally accepted accounting practices. Subject to prior written notice, OWNER will be afforded reasonable access, during normal business hours, to all CONTRACTOR's accounts, records, books, correspondence, instructions, drawings, receipts, vouchers, memoranda, and similar data relating to the Cost of the Work and CONTRACTOR's fee. CONTRACTOR shall preserve all such documents for a period of three years after the final payment by OWNER. Pertinent Subcontractors will afford such access to OWNER, and preserve such documents, to the same extent required of CONTRACTOR.

13.02 *Allowances*

A. It is understood that CONTRACTOR has included in the Contract Price all allowances so named in the Contract Documents and shall cause the Work so covered to be performed for such sums and by such persons or entities as may be acceptable to OWNER and ENGINEER.

B. *Cash Allowances*: CONTRACTOR agrees that:

1. the cash allowances include the cost to CONTRACTOR (less any applicable trade discounts) of materials and equipment required by the allowances to be delivered at the Site, and all applicable taxes; and

2. CONTRACTOR's costs for unloading and handling on the Site, labor, installation, overhead, profit, and other expenses contemplated for the cash allowances have been included in the Contract Price and not in the allowances, and no demand for additional payment for any of the foregoing will be valid.

C. *OWNER's Contingency Allowance*: CONTRACTOR agrees that an OWNER's contingency allowance, if any, is for the sole use of OWNER to cover unanticipated costs.

D. Prior to final payment, an appropriate Change Order will be issued as recommended by ENGINEER to reflect actual amounts due CONTRACTOR for Work covered by allowances, and the Contract Price will be correspondingly adjusted.

13.03 *Unit Price Work*

A. Where the Contract Documents provide that all or part of the Work is to be Unit Price Work, initially the Contract Price will be deemed to include for all Unit Price Work an

amount equal to the sum of the unit price for each separately identified item of Unit Price Work times the estimated quantity of each item as indicated in the Agreement.

B. The estimated quantities of items of Unit Price Work are not guaranteed and are solely for the purpose of comparison of Bids and determining an initial Contract Price. Payments to CONTRACTOR for Unit Price Work will be based on actual quantities.

C. Each unit price will be deemed to include an amount considered by CONTRACTOR to be adequate to cover CONTRACTOR's overhead and profit for each separately identified item.

D. ENGINEER will determine the actual quantities and classifications of Unit Price Work performed by CONTRACTOR. ENGINEER will review with CONTRACTOR the ENGINEER's preliminary determinations on such matters before rendering a written decision thereon (by recommendation of an Application for Payment or otherwise). ENGINEER's written decision thereon will be final and binding (except as modified by ENGINEER to reflect changed factual conditions or more accurate data) upon OWNER and CONTRACTOR, and the final adjustment of Contract Price will be set forth in a Change Order, subject to the provisions of the following paragraph.

E. *Adjustments in Unit Price*

1. CONTRACTOR or OWNER shall be entitled to an adjustment in the unit price with respect to an item of Unit Price Work if:

a. the quantity of the item of Unit Price Work performed by CONTRACTOR differs materially and significantly from the estimated quantity of such item indicated in the Agreement; and

b. CONTRACTOR's unit costs to perform the item of Unit Price Work have changed materially and significantly as a result of the quantity change.

2. The adjustment in unit price will account for and be coordinated with any related changes in quantities of other items of Work, and in CONTRACTOR's costs to perform such other Work, such that the resulting overall change in Contract Price is equitable to OWNER and CONTRACTOR.

3. Adjusted unit prices will apply to all units of that item.

ARTICLE 14—TESTS AND INSPECTIONS; CORRECTION, REMOVAL, OR ACCEPTANCE OF DEFECTIVE WORK

14.01 *Access to Work*

A. OWNER, ENGINEER, their consultants and other representatives and personnel of OWNER, independent testing laboratories, and authorities having jurisdiction have access to the Site and the Work at reasonable times for their observation, inspection, and testing. CONTRACTOR shall provide them proper and safe conditions for such access and advise them of CONTRACTOR's safety procedures and programs so that they may comply with such procedures and programs as applicable.

14.02 *Tests, Inspections, and Approvals*

A. CONTRACTOR shall give ENGINEER timely notice of readiness of the Work (or specific parts thereof) for all required inspections and tests, and shall cooperate with inspection and testing personnel to facilitate required inspections and tests.

B. OWNER shall retain and pay for the services of an independent inspector, testing laboratory, or other qualified individual or entity to perform all inspections and tests expressly required by the Contract Documents to be furnished and paid for by OWNER, except that costs incurred in connection with tests or inspections of covered Work will be governed by the provisions of Paragraph 14.05.

C. If Laws or Regulations of any public body having jurisdiction require any Work (or part thereof) specifically to be inspected, tested, or approved by an employee or other representative of such public body, CONTRACTOR shall assume full responsibility for arranging and obtaining such inspections, tests, or approvals, pay all costs in connection therewith, and furnish ENGINEER the required certificates of inspection or approval.

D. CONTRACTOR shall be responsible for arranging, obtaining, and paying for all inspections and tests required:

1. by the Contract Documents, unless the Contract Documents expressly allocate responsibility for a specific inspection or test to OWNER;
2. to attain OWNER's and ENGINEER's acceptance of materials or equipment to be incorporated in the Work;
3. by manufacturers of equipment furnished under the Contract Documents;
4. for testing, adjusting, and balancing of mechanical, electrical, and other equipment to be incorporated into the Work; and
5. for acceptance of materials, mix designs, or equipment submitted for approval prior to CONTRACTOR's purchase thereof for incorporation in the Work.

Such inspections and tests will be performed by independent inspectors, testing laboratories, or other qualified individuals or entities acceptable to OWNER and ENGINEER.

E. If the Contract Documents require the Work (or part thereof) to be approved by OWNER, ENGINEER, or another designated individual or entity, then CONTRACTOR shall assume full responsibility for arranging and obtaining such approvals.

F. If any Work (or the work of others) that is to be inspected, tested, or approved is covered by CONTRACTOR without written concurrence of ENGINEER, CONTRACTOR shall, if requested by ENGINEER, uncover such Work for observation. Such uncovering will be at CONTRACTOR's expense unless CONTRACTOR had given ENGINEER timely notice of CONTRACTOR's intention to cover the same and ENGINEER had not acted with reasonable promptness in response to such notice.

14.03 *Defective Work*

A. *CONTRACTOR's Obligation*: It is CONTRACTOR's obligation to assure that the Work is not defective.

B. *ENGINEER's Authority*: ENGINEER has the authority to determine whether Work is defective, and to reject defective Work.

C. *Notice of Defects*: Prompt written notice of all defective Work of which OWNER or ENGINEER has actual knowledge will be given to CONTRACTOR.

D. *Correction, or Removal and Replacement*: Promptly after receipt of written notice of defective Work, CONTRACTOR shall correct all such defective Work, whether or not

fabricated, installed, or completed, or, if ENGINEER has rejected the defective Work, remove it from the Project and replace it with Work that is not defective.

E. *Preservation of Warranties*: When correcting defective Work, CONTRACTOR shall take no action that would void or otherwise impair OWNER's special warranty and guarantee, if any, on said Work.

F. *Costs and Damages*: In addition to its correction, removal, and replacement obligations with respect to defective Work, CONTRACTOR shall pay all claims, costs, losses, and damages arising out of or relating to defective Work, including but not limited to the cost of the inspection, testing, correction, removal, replacement, or reconstruction of such defective Work, fines levied against OWNER by governmental authorities because the Work is defective, and the costs of repair or replacement of work of others resulting from defective Work. Prior to final payment, if OWNER and CONTRACTOR are unable to agree as to the measure of such claims, costs, losses, and damages resulting from defective Work, then OWNER may impose a reasonable set-off against payments due under Article 15.

14.04 *Acceptance of Defective Work*

A. If, instead of requiring correction or removal and replacement of defective Work, OWNER prefers to accept it, OWNER may do so (subject, if such acceptance occurs prior to final payment, to ENGINEER's confirmation that such acceptance is in general accord with the design intent and applicable ENGINEERing principles, and will not endanger public safety). CONTRACTOR shall pay all claims, costs, losses, and damages attributable to OWNER's evaluation of and determination to accept such defective Work (such costs to be approved by ENGINEER as to reasonableness), and for the diminished value of the Work to the extent not otherwise paid by CONTRACTOR. If any such acceptance occurs prior to final payment, the necessary revisions in the Contract Documents with respect to the Work will be incorporated in a Change Order. If the parties are unable to agree as to the decrease in the Contract Price, reflecting the diminished value of Work so accepted, then OWNER may impose a reasonable set-off against payments due under Article 15. If the acceptance of defective Work occurs after final payment, CONTRACTOR shall pay an appropriate amount to OWNER.

14.05 *Uncovering Work*

A. ENGINEER has the authority to require additional inspection or testing of the Work, whether or not the Work is fabricated, installed, or completed.

B. If any Work is covered contrary to the written request of ENGINEER, then CONTRACTOR shall, if requested by ENGINEER, uncover such Work for ENGINEER's observation, and then replace the covering, all at CONTRACTOR's expense.

C. If ENGINEER considers it necessary or advisable that covered Work be observed by ENGINEER or inspected or tested by others, then CONTRACTOR, at ENGINEER's request, shall uncover, expose, or otherwise make available for observation, inspection, or testing as ENGINEER may require, that portion of the Work in question, and provide all necessary labor, material, and equipment.

1. If it is found that the uncovered Work is defective, CONTRACTOR shall be responsible for all claims, costs, losses, and damages arising out of or relating to such uncovering, exposure, observation, inspection, and testing, and of

satisfactory replacement or reconstruction (including but not limited to all costs of repair or replacement of work of others); and pending CONTRACTOR's full discharge of this responsibility the OWNER shall be entitled to impose a reasonable set-off against payments due under Article 15.

2. If the uncovered Work is not found to be defective, CONTRACTOR shall be allowed an increase in the Contract Price or an extension of the Contract Times, directly attributable to such uncovering, exposure, observation, inspection, testing, replacement, and reconstruction. If the parties are unable to agree as to the amount or extent thereof, then CONTRACTOR may submit a Change Proposal within 30 days of the determination that the Work is not defective.

14.06 *OWNER May Stop the Work*

A. If the Work is defective, or CONTRACTOR fails to supply sufficient skilled workers or suitable materials or equipment, or fails to perform the Work in such a way that the completed Work will conform to the Contract Documents, then OWNER may order CONTRACTOR to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, this right of OWNER to stop the Work will not give rise to any duty on the part of OWNER to exercise this right for the benefit of CONTRACTOR, any Subcontractor, any Supplier, any other individual or entity, or any surety for, or employee or agent of any of them.

14.07 *OWNER May Correct Defective Work*

A. If CONTRACTOR fails within a reasonable time after written notice from ENGINEER to correct defective Work, or to remove and replace defective Work as required by ENGINEER, then OWNER may, after 7 days' written notice to CONTRACTOR, correct or remedy any such deficiency.

B. In exercising the rights and remedies under this Paragraph 14.07, OWNER shall proceed expeditiously. In connection with such corrective or remedial action, OWNER may exclude CONTRACTOR from all or part of the Site, take possession of all or part of the Work and suspend CONTRACTOR's services related thereto, and incorporate in the Work all materials and equipment stored at the Site or for which OWNER has paid CONTRACTOR but which are stored elsewhere. CONTRACTOR shall allow OWNER, OWNER's representatives, agents and employees, OWNER's other CONTRACTORs, and ENGINEER and ENGINEER's consultants access to the Site to enable OWNER to exercise the rights and remedies under this paragraph.

C. All claims, costs, losses, and damages incurred or sustained by OWNER in exercising the rights and remedies under this Paragraph 14.07 will be charged against CONTRACTOR as set-offs against payments due under Article 15. Such claims, costs, losses and damages will include but not be limited to all costs of repair, or replacement of work of others destroyed or damaged by correction, removal, or replacement of CONTRACTOR's defective Work.

D. CONTRACTOR shall not be allowed an extension of the Contract Times because of any delay in the performance of the Work attributable to the exercise by OWNER of OWNER's rights and remedies under this Paragraph 14.07.

ARTICLE 15—PAYMENTS TO CONTRACTOR; SET-OFFS; COMPLETION; CORRECTION PERIOD

15.01 *Progress Payments*

A. *Basis for Progress Payments*: The Schedule of Values established as provided in Article 2 will serve as the basis for progress payments and will be incorporated into a form of Application for Payment acceptable to ENGINEER. Progress payments for Unit Price Work will be based on the number of units completed during the pay period, as determined under the provisions of Paragraph 13.03. Progress payments for cost-based Work will be based on Cost of the Work completed by CONTRACTOR during the pay period.

B. *Applications for Payments*

1. At least 20 days before the date established in the Agreement for each progress payment (but not more often than once a month), CONTRACTOR shall submit to ENGINEER for review an Application for Payment filled out and signed by CONTRACTOR covering the Work completed as of the date of the Application and accompanied by such supporting documentation as is required by the Contract Documents.

2. If payment is requested on the basis of materials and equipment not incorporated in the Work but delivered and suitably stored at the Site or at another location agreed to in writing, the Application for Payment must also be accompanied by: (a) a bill of sale, invoice, copies of subcontract or purchase order payments, or other documentation establishing full payment by CONTRACTOR for the materials and equipment; (b) at OWNER's request, documentation warranting that OWNER has received the materials and equipment free and clear of all Liens; and (c) evidence that the materials and equipment are covered by appropriate property insurance, a warehouse bond, or other arrangements to protect OWNER's interest therein, all of which must be satisfactory to OWNER.

3. Beginning with the second Application for Payment, each Application must include an affidavit of CONTRACTOR stating that all previous progress payments received by CONTRACTOR have been applied to discharge CONTRACTOR's legitimate obligations associated with prior Applications for Payment.

4. The amount of retainage with respect to progress payments will be as stipulated in the Agreement.

C. *Review of Applications*

1. ENGINEER will, within 10 days after receipt of each Application for Payment, including each resubmittal, either indicate in writing a recommendation of payment and present the Application to OWNER, or return the Application to CONTRACTOR indicating in writing ENGINEER's reasons for refusing to recommend payment. In the latter case, CONTRACTOR may make the necessary corrections and resubmit the Application.

2. ENGINEER's recommendation of any payment requested in an Application for Payment will constitute a representation by ENGINEER to OWNER, based on ENGINEER's observations of the executed Work as an experienced and qualified design professional, and on ENGINEER's review of the Application for Payment

and the accompanying data and schedules, that to the best of ENGINEER's knowledge, information and belief:

a. the Work has progressed to the point indicated;

b. the quality of the Work is generally in accordance with the Contract Documents (subject to an evaluation of the Work as a functioning whole prior to or upon Substantial Completion, the results of any subsequent tests called for in the Contract Documents, a final determination of quantities and classifications for Unit Price Work under Paragraph 13.03, and any other qualifications stated in the recommendation); and

c. the conditions precedent to CONTRACTOR's being entitled to such payment appear to have been fulfilled in so far as it is ENGINEER's responsibility to observe the Work.

3. By recommending any such payment ENGINEER will not thereby be deemed to have represented that:

a. inspections made to check the quality or the quantity of the Work as it has been performed have been exhaustive, extended to every aspect of the Work in progress, or involved detailed inspections of the Work beyond the responsibilities specifically assigned to ENGINEER in the Contract; or

b. there may not be other matters or issues between the parties that might entitle CONTRACTOR to be paid additionally by OWNER or entitle OWNER to withhold payment to CONTRACTOR.

4. Neither ENGINEER's review of CONTRACTOR's Work for the purposes of recommending payments nor ENGINEER's recommendation of any payment, including final payment, will impose responsibility on ENGINEER:

a. to supervise, direct, or control the Work;

b. for the means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto;

c. for CONTRACTOR's failure to comply with Laws and Regulations applicable to CONTRACTOR's performance of the Work;

d. to make any examination to ascertain how or for what purposes CONTRACTOR has used the money paid by OWNER; or

e. to determine that title to any of the Work, materials, or equipment has passed to OWNER free and clear of any Liens.

5. ENGINEER may refuse to recommend the whole or any part of any payment if, in ENGINEER's opinion, it would be incorrect to make the representations to OWNER stated in Paragraph 15.01.C.2.

6. ENGINEER will recommend reductions in payment (set-offs) necessary in ENGINEER's opinion to protect OWNER from loss because:

a. the Work is defective, requiring correction or replacement;

b. the Contract Price has been reduced by Change Orders;

c. OWNER has been required to correct defective Work in accordance with Paragraph 14.07, or has accepted defective Work pursuant to Paragraph 14.04;

d. OWNER has been required to remove or remediate a Hazardous Environmental Condition for which CONTRACTOR is responsible; or

e. ENGINEER has actual knowledge of the occurrence of any of the events that would constitute a default by CONTRACTOR and therefore justify termination for cause under the Contract Documents.

D. *Payment Becomes Due*

1. Ten days after presentation of the Application for Payment to OWNER with ENGINEER's recommendation, the amount recommended (subject to any OWNER set-offs) will become due, and when due will be paid by OWNER to CONTRACTOR.

E. *Reductions in Payment by OWNER*

1. In addition to any reductions in payment (set-offs) recommended by ENGINEER, OWNER is entitled to impose a set-off against payment based on any of the following:

a. Claims have been made against OWNER based on CONTRACTOR's conduct in the performance or furnishing of the Work, or OWNER has incurred costs, losses, or damages resulting from CONTRACTOR's conduct in the performance or furnishing of the Work, including but not limited to claims, costs, losses, or damages from workplace injuries, adjacent property damage, non-compliance with Laws and Regulations, and patent infringement;

b. CONTRACTOR has failed to take reasonable and customary measures to avoid damage, delay, disruption, and interference with other work at or adjacent to the Site;

c. CONTRACTOR has failed to provide and maintain required bonds or insurance;

d. OWNER has been required to remove or remediate a Hazardous Environmental Condition for which CONTRACTOR is responsible;

e. OWNER has incurred extra charges or ENGINEERing costs related to submittal reviews, evaluations of proposed substitutes, tests and inspections, or return visits to manufacturing or assembly facilities;

f. The Work is defective, requiring correction or replacement;

g. OWNER has been required to correct defective Work in accordance with Paragraph 14.07, or has accepted defective Work pursuant to Paragraph 14.04;

h. The Contract Price has been reduced by Change Orders;

i. An event has occurred that would constitute a default by CONTRACTOR and therefore justify a termination for cause;

j. Liquidated or other damages have accrued as a result of CONTRACTOR's failure to achieve Milestones, Substantial Completion, or final completion of the Work;

k. Liens have been filed in connection with the Work, except where CONTRACTOR has delivered a specific bond satisfactory to OWNER to secure the satisfaction and discharge of such Liens; or

l. Other items entitle OWNER to a set-off against the amount recommended.

2. If OWNER imposes any set-off against payment, whether based on its own knowledge or on the written recommendations of ENGINEER, OWNER will give CONTRACTOR immediate written notice (with a copy to ENGINEER) stating the reasons for such action and the specific amount of the reduction, and promptly pay CONTRACTOR any amount remaining after deduction of the amount so withheld. OWNER shall promptly pay CONTRACTOR the amount so withheld, or any adjustment thereto agreed to by OWNER and CONTRACTOR, if CONTRACTOR remedies the reasons for such action. The reduction imposed will be binding on CONTRACTOR unless it duly submits a Change Proposal contesting the reduction.

3. Upon a subsequent determination that OWNER's refusal of payment was not justified, the amount wrongfully withheld will be treated as an amount due as determined by Paragraph 15.01.D.1 and subject to interest as provided in the Agreement.

15.02 *CONTRACTOR's Warranty of Title*

A. CONTRACTOR warrants and guarantees that title to all Work, materials, and equipment furnished under the Contract will pass to OWNER free and clear of (1) all Liens and other title defects, and (2) all patent, licensing, copyright, or royalty obligations, no later than 7 days after the time of payment by OWNER.

15.03 *Substantial Completion*

A. When CONTRACTOR considers the entire Work ready for its intended use CONTRACTOR shall notify OWNER and ENGINEER in writing that the entire Work is substantially complete and request that ENGINEER issue a certificate of Substantial Completion. CONTRACTOR shall at the same time submit to OWNER and ENGINEER an initial draft of punch list items to be completed or corrected before final payment.

B. Promptly after CONTRACTOR's notification, OWNER, CONTRACTOR, and ENGINEER shall make an inspection of the Work to determine the status of completion. If ENGINEER does not consider the Work substantially complete, ENGINEER will notify CONTRACTOR in writing giving the reasons therefor.

C. If ENGINEER considers the Work substantially complete, ENGINEER will deliver to OWNER a preliminary certificate of Substantial Completion which will fix the date of Substantial Completion. ENGINEER shall attach to the certificate a punch list of items to be completed or corrected before final payment. OWNER shall have 7 days after receipt of the preliminary certificate during which to make written objection to ENGINEER as to any provisions of the certificate or attached punch list. If, after considering the objections to the provisions of the preliminary certificate, ENGINEER concludes that the Work is not substantially complete, ENGINEER will, within 14 days after submission of the preliminary certificate to OWNER, notify CONTRACTOR in writing that the Work is not substantially complete, stating the reasons therefor. If OWNER does not object to the provisions of the certificate, or if despite consideration of OWNER's objections ENGINEER concludes that the Work is substantially complete, then ENGINEER will, within said 14 days, execute and deliver to OWNER and CONTRACTOR a final certificate of Substantial Completion (with a revised punch list of items to be completed or corrected) reflecting such changes from the preliminary

certificate as ENGINEER believes justified after consideration of any objections from OWNER.

D. At the time of receipt of the preliminary certificate of Substantial Completion, OWNER and CONTRACTOR will confer regarding OWNER's use or occupancy of the Work following Substantial Completion, review the builder's risk insurance policy with respect to the end of the builder's risk coverage, and confirm the transition to coverage of the Work under a permanent property insurance policy held by OWNER. Unless OWNER and CONTRACTOR agree otherwise in writing, OWNER shall bear responsibility for security, operation, protection of the Work, property insurance, maintenance, heat, and utilities upon OWNER's use or occupancy of the Work.

E. After Substantial Completion the CONTRACTOR shall promptly begin work on the punch list of items to be completed or corrected prior to final payment. In appropriate cases CONTRACTOR may submit monthly Applications for Payment for completed punch list items, following the progress payment procedures set forth above.

F. OWNER shall have the right to exclude CONTRACTOR from the Site after the date of Substantial Completion subject to allowing CONTRACTOR reasonable access to remove its property and complete or correct items on the punch list.

15.04 *Partial Use or Occupancy*

A. Prior to Substantial Completion of all the Work, OWNER may use or occupy any substantially completed part of the Work which has specifically been identified in the Contract Documents, or which OWNER, ENGINEER, and CONTRACTOR agree constitutes a separately functioning and usable part of the Work that can be used by OWNER for its intended purpose without significant interference with CONTRACTOR's performance of the remainder of the Work, subject to the following conditions:

1. At any time, OWNER may request in writing that CONTRACTOR permit OWNER to use or occupy any such part of the Work that OWNER believes to be substantially complete. If and when CONTRACTOR agrees that such part of the Work is substantially complete, CONTRACTOR, OWNER, and ENGINEER will follow the procedures of Paragraph 15.03.A through 15.03.E for that part of the Work.

2. At any time, CONTRACTOR may notify OWNER and ENGINEER in writing that CONTRACTOR considers any such part of the Work substantially complete and request ENGINEER to issue a certificate of Substantial Completion for that part of the Work.

3. Within a reasonable time after either such request, OWNER, CONTRACTOR, and ENGINEER shall make an inspection of that part of the Work to determine its status of completion. If ENGINEER does not consider that part of the Work to be substantially complete, ENGINEER will notify OWNER and CONTRACTOR in writing giving the reasons therefor. If ENGINEER considers that part of the Work to be substantially complete, the provisions of Paragraph 15.03 will apply with respect to certification of Substantial Completion of that part of the Work and the division of responsibility in respect thereof and access thereto.

4. No use or occupancy or separate operation of part of the Work may occur prior to compliance with the requirements of Paragraph 6.04 regarding builder's risk or other property insurance.

15.05 *Final Inspection*

A. Upon written notice from CONTRACTOR that the entire Work or an agreed portion thereof is complete, ENGINEER will promptly make a final inspection with OWNER and CONTRACTOR and will notify CONTRACTOR in writing of all particulars in which this inspection reveals that the Work, or agreed portion thereof, is incomplete or defective. CONTRACTOR shall immediately take such measures as are necessary to complete such Work or remedy such deficiencies.

15.06 *Final Payment*

A. *Application for Payment*

1. After CONTRACTOR has, in the opinion of ENGINEER, satisfactorily completed all corrections identified during the final inspection and has delivered, in accordance with the Contract Documents, all maintenance and operating instructions, schedules, guarantees, bonds, certificates or other evidence of insurance, certificates of inspection, annotated record documents (as provided in Paragraph 7.12), and other documents, CONTRACTOR may make application for final payment.

2. The final Application for Payment must be accompanied (except as previously delivered) by:

   a. all documentation called for in the Contract Documents;

   b. consent of the surety, if any, to final payment;

   c. satisfactory evidence that all title issues have been resolved such that title to all Work, materials, and equipment has passed to OWNER free and clear of any Liens or other title defects, or will so pass upon final payment.

   d. a list of all duly pending Change Proposals and Claims; and

   e. complete and legally effective releases or waivers (satisfactory to OWNER) of all Lien rights arising out of the Work, and of Liens filed in connection with the Work.

3. In lieu of the releases or waivers of Liens specified in Paragraph 15.06.A.2 and as approved by OWNER, CONTRACTOR may furnish receipts or releases in full and an affidavit of CONTRACTOR that: (a) the releases and receipts include all labor, services, material, and equipment for which a Lien could be filed; and (b) all payrolls, material and equipment bills, and other indebtedness connected with the Work for which OWNER might in any way be responsible, or which might in any way result in liens or other burdens on OWNER's property, have been paid or otherwise satisfied. If any Subcontractor or Supplier fails to furnish such a release or receipt in full, CONTRACTOR may furnish a bond or other collateral satisfactory to OWNER to indemnify OWNER against any Lien, or OWNER at its option may issue joint checks payable to CONTRACTOR and specified Subcontractors and Suppliers.

B. *ENGINEER's Review of Final Application and Recommendation of Payment*: If, on the basis of ENGINEER's observation of the Work during construction and final inspection, and ENGINEER's review of the final Application for Payment and accompanying documentation as required by the Contract Documents, ENGINEER is satisfied that the Work has been completed and CONTRACTOR's other obligations under the Contract have been fulfilled, ENGINEER will, within 10 days after receipt of the final

Application for Payment, indicate in writing ENGINEER's recommendation of final payment and present the final Application for Payment to OWNER for payment. Such recommendation will account for any set-offs against payment that are necessary in ENGINEER's opinion to protect OWNER from loss for the reasons stated above with respect to progress payments. Otherwise, ENGINEER will return the Application for Payment to CONTRACTOR, indicating in writing the reasons for refusing to recommend final payment, in which case CONTRACTOR shall make the necessary corrections and resubmit the Application for Payment.

C. *Notice of Acceptability*: In support of its recommendation of payment of the final Application for Payment, ENGINEER will also give written notice to OWNER and CONTRACTOR that the Work is acceptable, subject to stated limitations in the notice and to the provisions of Paragraph 15.07.

D. *Completion of Work*: The Work is complete (subject to surviving obligations) when it is ready for final payment as established by the ENGINEER's written recommendation of final payment and issuance of notice of the acceptability of the Work.

E. *Final Payment Becomes Due*: Upon receipt from ENGINEER of the final Application for Payment and accompanying documentation, OWNER shall set off against the amount recommended by ENGINEER for final payment any further sum to which OWNER is entitled, including but not limited to set-offs for liquidated damages and set-offs allowed under the provisions of this Contract with respect to progress payments. OWNER shall pay the resulting balance due to CONTRACTOR within 30 days of OWNER's receipt of the final Application for Payment from ENGINEER.

15.07 *Waiver of Claims*

A. By making final payment, OWNER waives its claim or right to liquidated damages or other damages for late completion by CONTRACTOR, except as set forth in an outstanding Claim, appeal under the provisions of Article 17, set-off, or express reservation of rights by OWNER. OWNER reserves all other claims or rights after final payment.

B. The acceptance of final payment by CONTRACTOR will constitute a waiver by CONTRACTOR of all claims and rights against OWNER other than those pending matters that have been duly submitted as a Claim, or appealed under the provisions of Article 17.

15.08 *Correction Period*

A. If within one year after the date of Substantial Completion (or such longer period of time as may be prescribed by the Supplementary Conditions or the terms of any applicable special guarantee required by the Contract Documents), OWNER gives CONTRACTOR written notice that any Work has been found to be defective, or that CONTRACTOR's repair of any damages to the Site or adjacent areas has been found to be defective, then after receipt of such notice of defect CONTRACTOR shall promptly, without cost to OWNER and in accordance with OWNER's written instructions:

1. correct the defective repairs to the Site or such adjacent areas;
2. correct such defective Work;
3. remove the defective Work from the Project and replace it with Work that is not defective, if the defective Work has been rejected by OWNER, and

4. satisfactorily correct or repair or remove and replace any damage to other Work, to the work of others, or to other land or areas resulting from the corrective measures.

B. OWNER shall give any such notice of defect within 60 days of the discovery that such Work or repairs is defective. If such notice is given within such 60 days but after the end of the correction period, the notice will be deemed a notice of defective Work under Paragraph 7.17.B.

C. If, after receipt of a notice of defect within 60 days and within the correction period, CONTRACTOR does not promptly comply with the terms of OWNER's written instructions, or in an emergency where delay would cause serious risk of loss or damage, OWNER may have the defective Work corrected or repaired or may have the rejected Work removed and replaced. CONTRACTOR shall pay all costs, losses, and damages (including but not limited to all fees and charges of ENGINEERs, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such correction or repair or such removal and replacement (including but not limited to all costs of repair or replacement of work of others). CONTRACTOR's failure to pay such costs, losses, and damages within 10 days of invoice from OWNER will be deemed the start of an event giving rise to a Claim under Paragraph 12.01.B, such that any related Claim must be brought within 30 days of the failure to pay.

D. In special circumstances where a particular item of equipment is placed in continuous service before Substantial Completion of all the Work, the correction period for that item may start to run from an earlier date if so provided in the Specifications.

E. Where defective Work (and damage to other Work resulting therefrom) has been corrected or removed and replaced under this paragraph, the correction period hereunder with respect to such Work will be extended for an additional period of one year after such correction or removal and replacement has been satisfactorily completed.

F. CONTRACTOR's obligations under this paragraph are in addition to all other obligations and warranties. The provisions of this paragraph are not to be construed as a substitute for, or a waiver of, the provisions of any applicable statute of limitation or repose.

ARTICLE 16—SUSPENSION OF WORK AND TERMINATION

16.01 *OWNER May Suspend Work*

A. At any time and without cause, OWNER may suspend the Work or any portion thereof for a period of not more than 90 consecutive days by written notice to CONTRACTOR and ENGINEER. Such notice will fix the date on which Work will be resumed. CONTRACTOR shall resume the Work on the date so fixed. CONTRACTOR shall be entitled to an adjustment in the Contract Price or an extension of the Contract Times directly attributable to any such suspension. Any Change Proposal seeking such adjustments must be submitted no later than 30 days after the date fixed for resumption of Work.

16.02 *OWNER May Terminate for Cause*

A. The occurrence of any one or more of the following events will constitute a default by CONTRACTOR and justify termination for cause:

1. CONTRACTOR's persistent failure to perform the Work in accordance with the Contract Documents (including, but not limited to, failure to supply sufficient skilled workers or suitable materials or equipment, or failure to adhere to the Progress Schedule);

2. Failure of CONTRACTOR to perform or otherwise to comply with a material term of the Contract Documents;

3. CONTRACTOR's disregard of Laws or Regulations of any public body having jurisdiction; or

4. CONTRACTOR's repeated disregard of the authority of OWNER or ENGINEER.

B. If one or more of the events identified in Paragraph 16.02.A occurs, then after giving CONTRACTOR (and any surety) 10 days' written notice that OWNER is considering a declaration that CONTRACTOR is in default and termination of the Contract, OWNER may proceed to:

1. declare CONTRACTOR to be in default, and give CONTRACTOR (and any surety) written notice that the Contract is terminated; and

2. enforce the rights available to OWNER under any applicable performance bond.

C. Subject to the terms and operation of any applicable performance bond, if OWNER has terminated the Contract for cause, OWNER may exclude CONTRACTOR from the Site, take possession of the Work, incorporate in the Work all materials and equipment stored at the Site or for which OWNER has paid CONTRACTOR but which are stored elsewhere, and complete the Work as OWNER may deem expedient.

D. OWNER may not proceed with termination of the Contract under Paragraph 16.02.B if CONTRACTOR within 7 days of receipt of notice of intent to terminate begins to correct its failure to perform and proceeds diligently to cure such failure.

E. If OWNER proceeds as provided in Paragraph 16.02.B, CONTRACTOR shall not be entitled to receive any further payment until the Work is completed. If the unpaid balance of the Contract Price exceeds the cost to complete the Work, including all related claims, costs, losses, and damages (including but not limited to all fees and charges of ENGINEERs, architects, attorneys, and other professionals) sustained by OWNER, such excess will be paid to CONTRACTOR. If the cost to complete the Work including such related claims, costs, losses, and damages exceeds such unpaid balance, CONTRACTOR shall pay the difference to OWNER. Such claims, costs, losses, and damages incurred by OWNER will be reviewed by ENGINEER as to their reasonableness and, when so approved by ENGINEER, incorporated in a Change Order. When exercising any rights or remedies under this paragraph, OWNER shall not be required to obtain the lowest price for the Work performed.

F. Where CONTRACTOR's services have been so terminated by OWNER, the termination will not affect any rights or remedies of OWNER against CONTRACTOR then existing or which may thereafter accrue, or any rights or remedies of OWNER against CONTRACTOR or any surety under any payment bond or performance bond. Any retention or payment of money due CONTRACTOR by OWNER will not release CONTRACTOR from liability.

G. If and to the extent that CONTRACTOR has provided a performance bond under the provisions of Paragraph 6.01.A, the provisions of that bond will govern over any inconsistent provisions of Paragraphs 16.02.B and 16.02.D.

16.03 *OWNER May Terminate for Convenience*

A. Upon 7 days' written notice to CONTRACTOR and ENGINEER, OWNER may, without cause and without prejudice to any other right or remedy of OWNER, terminate the Contract. In such case, CONTRACTOR shall be paid for (without duplication of any items):

1. completed and acceptable Work executed in accordance with the Contract Documents prior to the effective date of termination, including fair and reasonable sums for overhead and profit on such Work;

2. expenses sustained prior to the effective date of termination in performing services and furnishing labor, materials, or equipment as required by the Contract Documents in connection with uncompleted Work, plus fair and reasonable sums for overhead and profit on such expenses; and

3. other reasonable expenses directly attributable to termination, including costs incurred to prepare a termination for convenience cost proposal.

B. CONTRACTOR shall not be paid for any loss of anticipated profits or revenue, post-termination overhead costs, or other economic loss arising out of or resulting from such termination.

16.04 *CONTRACTOR May Stop Work or Terminate*

A. If, through no act or fault of CONTRACTOR, (1) the Work is suspended for more than 90 consecutive days by OWNER or under an order of court or other public authority, or (2) ENGINEER fails to act on any Application for Payment within 30 days after it is submitted, or (3) OWNER fails for 30 days to pay CONTRACTOR any sum finally determined to be due, then CONTRACTOR may, upon 7 days' written notice to OWNER and ENGINEER, and provided OWNER or ENGINEER do not remedy such suspension or failure within that time, terminate the contract and recover from OWNER payment on the same terms as provided in Paragraph 16.03.

B. In lieu of terminating the Contract and without prejudice to any other right or remedy, if ENGINEER has failed to act on an Application for Payment within 30 days after it is submitted, or OWNER has failed for 30 days to pay CONTRACTOR any sum finally determined to be due, CONTRACTOR may, 7 days after written notice to OWNER and ENGINEER, stop the Work until payment is made of all such amounts due CONTRACTOR, including interest thereon. The provisions of this paragraph are not intended to preclude CONTRACTOR from submitting a Change Proposal for an adjustment in Contract Price or Contract Times or otherwise for expenses or damage directly attributable to CONTRACTOR's stopping the Work as permitted by this paragraph.

ARTICLE 17—FINAL RESOLUTION OF DISPUTES

17.01 *Methods and Procedures*

A. *Disputes Subject to Final Resolution*: The following disputed matters are subject to final resolution under the provisions of this article:

1. A timely appeal of an approval in part and denial in part of a Claim, or of a denial in full, pursuant to Article 12; and

2. Disputes between OWNER and CONTRACTOR concerning the Work, or obligations under the Contract Documents, that arise after final payment has been made.

B. *Final Resolution of Disputes*: For any dispute subject to resolution under this article, OWNER or CONTRACTOR may:

1. elect in writing to invoke the dispute resolution process provided for in the Supplementary Conditions;

2. agree with the other party to submit the dispute to another dispute resolution process; or

3. if no dispute resolution process is provided for in the Supplementary Conditions or mutually agreed to, give written notice to the other party of the intent to submit the dispute to a court of competent jurisdiction.

ARTICLE 18—MISCELLANEOUS

18.01 *Giving Notice*

A. Whenever any provision of the Contract requires the giving of written notice to OWNER, ENGINEER, or CONTRACTOR, it will be deemed to have been validly given only if delivered:

1. in person, by a commercial courier service or otherwise, to the recipient's place of business;

2. by registered or certified mail, postage prepaid, to the recipient's place of business; or

3. by e-mail to the recipient, with the words "Formal Notice" or similar in the e-mail's subject line.

18.02 *Computation of Times*

A. When any period of time is referred to in the Contract by days, it will be computed to exclude the first and include the last day of such period. If the last day of any such period falls on a Saturday or Sunday or on a day made a legal holiday by the law of the applicable jurisdiction, such day will be omitted from the computation.

18.03 *Cumulative Remedies*

A. The duties and obligations imposed by these General Conditions and the rights and remedies available hereunder to the parties hereto are in addition to, and are not to be construed in any way as a limitation of, any rights and remedies available to any or all of them which are otherwise imposed or available by Laws or Regulations, by special warranty or guarantee, or by other provisions of the Contract. The provisions of this paragraph will be as effective as if repeated specifically in the Contract

Documents in connection with each particular duty, obligation, right, and remedy to which they apply.

18.04 *Limitation of Damages*

A. With respect to any and all Change Proposals, Claims, disputes subject to final resolution, and other matters at issue, neither OWNER nor ENGINEER, nor any of their officers, directors, members, partners, employees, agents, consultants, or Subcontractors, shall be liable to CONTRACTOR for any claims, costs, losses, or damages sustained by CONTRACTOR on or in connection with any other project or anticipated project.

18.05 *No Waiver*

A. A party's non-enforcement of any provision will not constitute a waiver of that provision, nor will it affect the enforceability of that provision or of the remainder of this Contract.

18.06 *Survival of Obligations*

A. All representations, indemnifications, warranties, and guarantees made in, required by, or given in accordance with the Contract, as well as all continuing obligations indicated in the Contract, will survive final payment, completion, and acceptance of the Work or termination of the Contract or of the services of CONTRACTOR.

18.07 *Controlling Law*

A. This Contract is to be governed by the law of the state in which the Project is located.

18.08 *Assignment of Contract*

A. Unless expressly agreed to elsewhere in the Contract, no assignment by a party to this Contract of any rights under or interests in the Contract will be binding on the other party without the written consent of the party sought to be bound; and, specifically but without limitation, money that may become due and money that is due may not be assigned without such consent (except to the extent that the effect of this restriction may be limited by law), and unless specifically stated to the contrary in any written consent to an assignment, no assignment will release or discharge the assignor from any duty or responsibility under the Contract.

18.09 *Successors and Assigns*

A. OWNER and CONTRACTOR each binds itself, its successors, assigns, and legal representatives to the other party hereto, its successors, assigns, and legal representatives in respect to all covenants, agreements, and obligations contained in the Contract Documents.

18.10 *Headings*

A. Article and paragraph headings are inserted for convenience only and do not constitute parts of these General Conditions.

SECTION 00 80 00
SUPPLEMENTARY CONDITIONS

These Supplementary Conditions amend or supplement the Standard General Conditions of the Construction Contract Section 00 72 00 (No. EJCDC C-700, 2013 Edition) and other provisions of the Contract Documents as indicated below. All provisions which are not so amended or supplemented remain in full force and effect.

ARTICLE 1 – DEFINITIONS AND TERMINOLOGY

The terms used in these supplementary conditions which are defined in the Standard General Conditions of the Construction Contract Section 00 72 00 (EJCDC C-700, 2013 edition) have the meanings assigned to them in the general conditions.

ARTICLE 2 – PRELIMINARY MATTERS

SC-2.01 Delete Paragraphs 2.01 B. and C. in their entirety and insert the following in their place:

B. Evidence of Contractor's Insurance: When Contractor delivers the executed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner copies of the policies of insurance (including all endorsements, and identification of applicable self-insured retentions and deductibles) required to be provided by Contractor in Article 6. Contractor may block out (redact) any confidential premium or pricing information contained in any policy or endorsement furnished under this provision.

C. Evidence of Owner's Insurance: After receipt from Contractor of the executed counterparts of the Agreement and all required bonds and insurance documentation, Owner shall promptly deliver to Contractor copies of the policies of insurance to be provided by Owner under Article 6 (if any). Owner may block out (redact) any confidential premium or pricing information contained in any policy or endorsement furnished under this provision.

SC-2.02.A. Amend the first sentence of Paragraph 2.02.A. to read as follows:

Owner shall furnish to Contractor up to 5 copies of the Contract Documents which may include bound reduced drawings. Additional quantities of the Contract Documents will be furnished at reproduction cost.

ARTICLE 3 – DOCUMENTS INTENT, REQUIREMENTS, REUSE

Add the following new paragraph immediately after paragraph 3.03.B:

C. In the event of an inconsistency between provisions in any of the contract documents, the order of precedence shall be established by the most stringent of the criteria and conditions.

ARTICLE 4 – COMMENCEMENT AND PROGRESS OF THE WORK

SC-4.01.A Delete paragraph 4.01.A of the General Conditions and insert the following in its place:

A. The Contract Times will commence to run on the day indicated in the Notice to Proceed. Any Work undertaken by CONTRACTOR prior to the date indicated in the Notice to Proceed will be entirely at his own risk.

SC-4.03.A Delete paragraph 4.03.A of the General Conditions and insert the following in its place:

A. Owner shall provide engineering survey control (which in Engineer's judgment are necessary to enable Contractor to proceed with the Work) with which the Contractor shall establish reference points for construction. Contractor shall be responsible for laying out the Work, shall protect and preserve the established reference points and property monuments, and shall make no changes or relocations without the prior written approval of Owner. Contractor shall report to Engineer whenever any reference point or property monument is lost or destroyed or requires relocation because of necessary changes in grades or locations, and shall be responsible for the accurate replacement or relocation of such reference points or property monuments by professionally qualified personnel.

ARTICLE 5 – AVAILABILITY OF LANDS; SUBSURFACE AND PHYSICAL CONDITIONS; HAZARDOUS ENVIRONMENTAL CONDITIONS

SC-5.03 Add the following new paragraphs immediately after Paragraph 5.03.B:

C. The following report of explorations and tests of subsurface conditions at or adjacent to the Site are known to Owner:

1. Report dated January 2, 2019, prepared by Applied Geotechnical Engineering Consultants, Inc. (AGEC), Sandy, Utah, entitled: "Geotechnical Investigation - Proposed Booster Pump Station, 660 South Afterglow Lane, West Valley City, Utah" consisting of 22 pages. The Technical Data contained in such report upon whose accuracy Contractor may rely are those indicated in the definition of Technical Data in the General Conditions.

SC 5.06 Delete Paragraphs 5.06.A and 5.06.B in their entirety and insert the following:

A. No reports or drawings related to Hazardous Environmental Conditions at the Site are known to Owner.

B. Not Used.

ARTICLE 6 – BONDS AND INSURANCE

SC 6.03 Add the following sentence to Paragraph 6.03.D:

Automobile liability insurance shall be comprehensive form and shall cover owned, hired, and non-owned vehicles.

SC 6.03 Add the following new paragraph immediately after Paragraph 6.03.J:

K. The limits of liability for the insurance required by Paragraph 6.03 of the General Conditions shall provide coverage for not less than the following amounts or greater where required by Laws and Regulations:

1. Workers' Compensation, and related coverages under Paragraphs 6.03.A.1 and A.2 of the General Conditions:

State: Statutory

Federal, if applicable (e.g., Longshoreman's): Statutory

Jones Act coverage, if applicable:

Bodily injury by accident, each accident $ _____

Bodily injury by disease, aggregate $ _____

Employer's Liability:

Bodily injury, each accident $ 1,000,000

Bodily injury by disease, each employee $ _____

Bodily injury/disease aggregate $ _____

For work performed in monopolistic states, stop-gap liability coverage shall be endorsed to either the worker's compensation or commercial general liability policy with a minimum limit of: $ _____

Foreign voluntary worker compensation Statutory

2. Contractor's Commercial General Liability under Paragraphs 6.03.B and 6.03.C of the General Conditions:

General Aggregate (except products completed operations) $ 1,000,000

Products - Completed Operations Aggregate $ 1,000,000

Personal and Advertising Injury $ 1,000,000

Each Occurrence (Bodily Injury and Property Damage) $ 1,000,000

Property Damage Liability Insurance will provide Explosion, Collapse, and Underground coverages where applicable.

3. Excess Liability in Umbrella form:

Each Occurrence $ 1,000,000

General Aggregate $ 2,000,000

4. Automobile Liability under Paragraph 6.03.D. of the General Conditions:

Bodily Injury:

Each person $ 1,000,000

Each accident $ 1,000,000

Property Damage

Each Accident $ 1,000,000

Combined Single Limit (Bodly Injury, Property Damage)
Each accident) $ 1,000,000

5. Contractor's Pollution Liability:

Each Occurrence	$ NA
General Aggregate	$ NA

☒ If box is checked, Contractor is not required to provide Contractor's Pollution Liability insurance under this Contract

6. Other person, or entities (other than those already listed in the General Conditions) to be included on the policy as additional insureds shall include:

(1) Granger-Hunter Improvement District, Utah, its officers, employees, agents and volunteers.

(2) Hansen, Allen & Luce, Inc. and its' subconsultants

(3) Other Engineering or testing groups employed by OWNER for work at the site or this Project.

7. Contractor's Professional Liability:

Each Claim	$ NA
Annual Aggregate	$ NA

SC-6.05. Add the following to the list of requirements in Paragraph 6.05.A, as a numbered item:

13. include by express endorsement coverage of damage to Contractor's equipment.

ARTICLE 7 – CONTRACTOR'S RESPONSIBILITIES

SC-7.02.B. Amend the first and second sentences of Paragraph 7.02.B to state "…all Work at the Site shall be performed during regular working hours, Monday through Friday. Contractor shall not perform Work on a Saturday, Sunday, or any legal holiday without written authorization from Granger-Hunter Improvement District."

SC-7.02.C. Add the following new paragraph immediately after Paragraph 7.02.B:

Contractor shall be responsible for the cost of any overtime pay or other expense incurred by the Owner for Engineer's services (including those of the Resident Project Representative, if any), Owner's representative, and construction observation services, occasioned by the performance of Work on Saturday, Sunday, any legal holiday, or as overtime on any regular work day. If Contractor is responsible but does not pay, or if the parties are unable to agree as to the amount owed, then Owner may impose a reasonable set-off against payments due under Article 15.

SC-7.02.C. Add the following new subparagraph immediately after Paragraph 7.02.C:

1. For purposes of administering the foregoing requirement, additional overtime costs are defined as any hours over 8 hours on any regular work day and any hours worked on Saturday, Sunday, and any legal holiday.

ARTICLE 8 – OTHER WORK AT THE SITE

Add a new paragraph immediately after paragraph 7.02 of the General Conditions which is to read as follows:

C. Should CONTRACTOR cause damage to the work or property of any separate contractor at the site, or should any claim arising out of CONTRACTOR's performance of the Work at the site be made by any separate contractor against CONTRACTOR, OWNER, ENGINEER, ENGINEER's Consultants, the Construction Coordinator or any other person, CONTRACTOR shall promptly attempt to settle with such other contractor by agreement, or otherwise resolve the dispute by arbitration or at law. CONTRACTOR shall, to the fullest extent permitted by Laws and Regulations, indemnify and hold OWNER, ENGINEER, ENGINEER's Consultants and the Construction Coordinator harmless from and against all claims, damages, losses and expenses (including, but not limited to, fees of engineers, architects, attorneys and other professionals and court and arbitration costs) arising directly, indirectly or consequentially out of any action, legal or equitable, brought by any separate contractor against OWNER, ENGINEER, ENGINEER's Consultants or the Construction Coordinator to the extent based on a claim arising out of CONTRACTOR's performance of the Work. Should a separate contractor cause damage to the Work or property of CONTRACTOR or should the performance of Work by any separate contractor at the site give rise to any other claim, CONTRACTOR shall not institute any action, legal or equitable, against OWNER, ENGINEER, ENGINEER's Consultants or the Construction Coordinator or permit any action against any of them to be maintained and continued in its name or for its benefit in any court or before any arbiter which seeks to impose liability on or to recover damages from OWNER, ENGINEER, ENGINEER's Consultants or the Construction Coordinator on account of any such damage or claim. If CONTRACTOR is delayed at any time in performing or furnishing Work by any act or neglect of a separate contractor and OWNER and CONTRACTOR are unable to agree as to the extent of any adjustment in Contract Times attributable thereto, CONTRACTOR may make a claim for an extension of times in accordance with Article 11. An extension of the Contract Times shall be CONTRACTOR's exclusive remedy with respect to OWNER, ENGINEER, ENGINEER's Consultants and Construction Coordinator for any delay, disruption, interference or hinderance caused by any separate contractor. This paragraph does not prevent recovery from OWNER, ENGINEER, ENGINEER's Consultant or Construction Coordinator for activities that are their respective responsibilities.

ARTICLE 10 – ENGINEER'S STATUS DURING CONSTRUCTION

SC-10.03 Project Representative

Add the following new paragraphs immediately after Paragraph 10.03.A:

B. The Resident Project Representative (RPR) will be Engineer's representative at the Site, will act as directed by and under the supervision of Engineer, and will confer with Engineer regarding RPR's actions.

1. General: RPR's dealings in matters pertaining to the Work in general shall be with Engineer and Contractor. RPR's dealings with Subcontractors shall only be through or with the full knowledge and approval of Contractor. RPR shall generally communicate with Owner only with the knowledge of and under the direction of Engineer.

2. Schedules: Review the progress schedule, schedule of Shop Drawing and Sample submittals, and Schedule of Values prepared by Contractor and consult with Engineer concerning acceptability.

3. Conferences and Meetings: Attend meetings with Contractor, such as preconstruction conferences, progress meetings, job conferences, and other Project-related meetings, and prepare and circulate copies of minutes thereof.

4. Liaison:

    a. Serve as Engineer's liaison with Contractor. Working principally through Contractor's authorized representative or designee, assist in providing information regarding the provisions and intent of the Contract Documents.

    b. Assist Engineer in serving as Owner's liaison with Contractor when Contractor's operations affect Owner's on-Site operations.

    c. Assist in obtaining from Owner additional details or information, when required for proper execution of the Work.

5. Interpretation of Contract Documents: Report to Engineer when clarifications and interpretations of the Contract Documents are needed and transmit to Contractor clarifications and interpretations as issued by Engineer.

6. Shop Drawings and Samples:

    a. Record date of receipt of Samples and Contractor-approved Shop Drawings.

    b. Receive Samples which are furnished at the Site by Contractor, and notify Engineer of availability of Samples for examination.

    c. Advise Engineer and Contractor of the commencement of any portion of the Work requiring a Shop Drawing or Sample submittal for which RPR believes that the submittal has not been approved by Engineer.

7. Modifications: Consider and evaluate Contractor's suggestions for modifications in Drawings or Specifications and report such suggestions, together with RPR's recommendations, if any, to Engineer. Transmit to Contractor in writing decisions as issued by Engineer.

8. Review of Work and Rejection of Defective Work:

    a. Conduct on-Site observations of Contractor's work in progress to assist Engineer in determining if the Work is in general proceeding in accordance with the Contract Documents.

    b. Report to Engineer whenever RPR believes that any part of Contractor's work in progress is defective, will not produce a completed Project that conforms generally to the Contract Documents, or will imperil the integrity of the design concept of the completed Project as a functioning whole as indicated in the Contract Documents, or has been damaged, or does not meet the requirements of any inspection, test or approval required to be made; and advise Engineer of that part of work in progress that RPR believes should be corrected or rejected or should be uncovered for observation, or requires special testing, inspection or approval.

9. Inspections, Tests, and System Start-ups:

    a. Verify that tests, equipment, and systems start-ups and operating and maintenance training are conducted in the presence of appropriate Owner's personnel, and that Contractor maintains adequate records thereof.

b. Observe, record, and report to Engineer appropriate details relative to the test procedures and systems start-ups.

10. Records:

    a. Prepare a daily report or keep a diary or log book, recording Contractor's hours on the Site, Subcontractors present at the Site, weather conditions, data relative to questions of Change Orders, Field Orders, Work Change Directives, or changed conditions, Site visitors, deliveries of equipment or materials, daily activities, decisions, observations in general, and specific observations in more detail as in the case of observing test procedures; and send copies to Engineer.

    b. Record names, addresses, fax numbers, e-mail addresses, web site locations, and telephone numbers of all Contractors, Subcontractors, and major Suppliers of materials and equipment.

    c. Maintain records for use in preparing Project documentation.

11. Reports:

    a. Furnish to Engineer periodic reports as required of progress of the Work and of Contractor's compliance with the Progress Schedule and schedule of Shop Drawing and Sample submittals.

    b. Draft and recommend to Engineer proposed Change Orders, Work Change Directives, and Field Orders. Obtain backup material from Contractor.

    c. Immediately notify Engineer of the occurrence of any Site accidents, emergencies, acts of God endangering the Work, force majeure or delay events, damage to property by fire or other causes, or the discovery of any Constituent of Concern or Hazardous Environmental Condition.

12. Payment Requests: Review applications for payment with Contractor for compliance with the established procedure for their submission and forward with recommendations to Engineer, noting particularly the relationship of the payment requested to the Schedule of Values, Work completed, and materials and equipment delivered at the Site but not incorporated in the Work.

13. Certificates, Operation and Maintenance Manuals: During the course of the Work, verify that materials and equipment certificates, operation and maintenance manuals and other data required by the Contract Documents to be assembled and furnished by Contractor are applicable to the items actually installed and in accordance with the Contract Documents, and have these documents delivered to Engineer for review and forwarding to Owner prior to payment for that part of the Work.

14. Completion:

    a. Participate in Engineer's visits to the Site to determine Substantial Completion, assist in the determination of Substantial Completion and the preparation of a punch list of items to be completed or corrected.

    b. Participate in Engineer's final visit to the Site to determine completion of the Work, in the company of Owner and Contractor, and prepare a final punch list of items to be completed and deficiencies to be remedied.

    c. Observe whether all items on the final list have been completed or corrected and make recommendations to Engineer concerning acceptance and issuance of the notice of acceptability of the work.

C. The RPR shall not:

1. Authorize any deviation from the Contract Documents or substitution of materials or equipment (including “or-equal” items).
2. Exceed limitations of Engineer’s authority as set forth in the Contract Documents.
3. Undertake any of the responsibilities of Contractor, Subcontractors, or Suppliers.
4. Advise on, issue directions relative to, or assume control over any aspect of the means, methods, techniques, sequences or procedures of Contractor’s work.
5. Advise on, issue directions regarding, or assume control over security or safety practices, precautions, and programs in connection with the activities or operations of Owner or Contractor.
6. Participate in specialized field or laboratory tests or inspections conducted off-site by others except as specifically authorized by Engineer.
7. Accept Shop Drawing or Sample submittals from anyone other than Contractor.
8. Authorize Owner to occupy the Project in whole or in part.

ARTICLE 13 – COST OF THE WORK; ALLOWANCES; UNIT PRICE WORK

SC 13.01.B.5.c Delete Paragraph 13.01.B.5.c in its entirety and insert the following in its place:

c. Construction Equipment and Machinery:

1) Rentals of all construction equipment and machinery, and the parts thereof, in accordance with rental agreements approved by Owner with the advice of Engineer, and the costs of transportation, loading, unloading, assembly, dismantling, and removal thereof. All such costs shall be in accordance with the terms of said rental agreements. The rental of any such equipment, machinery, or parts shall cease when the use thereof is no longer necessary for the Work.

2) Costs for equipment and machinery owned by Contractor will be paid at a rate shown for such equipment in the Rental Rate Blue Book. An hourly rate will be computed by dividing the monthly rates by 176. These computed rates will include all operating costs. Costs will include the time the equipment or machinery is in use on the changed Work and the costs of transportation, loading, unloading, assembly, dismantling, and removal when directly attributable to the changed Work. The cost of any such equipment or machinery, or parts thereof, shall cease to accrue when the use thereof is no longer necessary for the changed Work. Equipment or machinery with a value of less than $1,000 will be considered small tools.

SC 13.03.E Delete Paragraph 13.03.E in its entirety and insert the following in its place:

E. The unit price of an item of Unit Price Work shall be subject to reevaluation and adjustment under the following conditions:

1. if the extended price of a particular item of Unit Price Work amounts to 25 percent or more of the Contract Price (based on estimated quantities at the time of Contract formation) and the variation in the quantity of that particular item of Unit Price Work actually furnished or performed by Contractor differs by more than 25 percent from the estimated quantity of such item indicated in the Agreement; and
2. if there is no corresponding adjustment with respect to any other item of Work; and

3. if Contractor believes that Contractor has incurred additional expense as a result thereof, Contractor may submit a Change Proposal, or if Owner believes that the quantity variation entitles Owner to an adjustment in the unit price, Owner may make a Claim, seeking an adjustment in the Contract Price.

ARTICLE 15 – PAYMENTS TO CONTRACTOR; SET-OFFS; COMPLETION; CORRECTION PERIOD

SC 15.01.B.1 The first sentence of paragraph 15.01.B.1 of the general conditions is hereby deleted in its entirety and the following is substituted in lieu thereof:

1. At least thirty (30) days before the date established in the Agreement for each progress payment (but not more often than once a month), Contractor shall submit to engineer for review an Application for Payment filled out and signed by Contractor covering the Work completed as of the date of the Application and accompanied by such supporting documentation as is required by the Contract Documents.SC 15.01.D.1 The first sentence of paragraph 15.01.D.1 of the general conditions is hereby deleted in its entirety and the following is substituted in lieu thereof:

SC 15.03.B Add the following new subparagraph to Paragraph 15.03.B:

1. If some or all of the Work has been determined not to be at a point of Substantial Completion and will require re-inspection or re-testing by Engineer, the cost of such re-inspection or re-testing, including the cost of time, travel and living expenses, shall be paid by Contractor to Owner. If Contractor does not pay, or the parties are unable to agree as to the amount owed, then Owner may impose a reasonable set-off against payments due under Article 15.

SC 15.01.B.4 Add the following:

Interest on Retainage: If the Contractor seeks to obtain interest on the retainage held by the Owner, it shall be the responsibility of the Contractor to establish an escrow account in the name of the Owner for said retainage. This account shall be established prior to the issuance of notice to proceed. If no account is established by this time, the Contractor hereby waives and forfeits any claim to interest on retainage against the Owner.

As partial payments are made, two checks will be issued by the Owner: one check to the Contractor for the requested amount less retainage and a second check to the escrow account for retainage. At the time of final payment the escrow amount will be released to the Contractor by the Owner. If the Contractor has set up an interest bearing account as described, the accrued interest, if any, will also be paid to the Contractor by the Owner as part of the final payment.

SC15.01.D.1. The first sentence of paragraph 15.01.D.1 of the general conditions is hereby deleted in its entirety and the following is substituted in lieu thereof:

1. Twenty days after presentation of the Application for Payment to Owner with Engineer's recommendation, the amount recommended (subject to any Owner set-offs) will become due, and when due will be paid by Owner to Contractor.

SC 15.03.B Add the following new subparagraph to Paragraph 15.03.B:

1. If some or all of the Work has been determined not to be at a point of Substantial Completion and will require re-inspection or re-testing by Engineer, the cost of such re-inspection or re-testing, including the cost of time, travel and living expenses, shall be paid by Contractor to Owner. If Contractor does not pay, or the parties are unable

to agree as to the amount owed, then Owner may impose a reasonable set-off against payments due under Article 15.

ARTICLE 17 – FINAL RESOLUTION OF DISPUTES

SC-17.02 Add the following new paragraph immediately after Paragraph 17.01.

SC-17.02 Arbitration

A. All matters subject to final resolution under this Article will be decided by arbitration in accordance with the rules of the State of Utah, subject to the conditions and limitations of this paragraph. This agreement to arbitrate and any other agreement or consent to arbitrate entered into will be specifically enforceable under the prevailing law of any court having jurisdiction.

B. The demand for arbitration will be filed in writing with the other party to the Contract and with the selected arbitrator or arbitration provider, and a copy will be sent to Engineer for information. The demand for arbitration will be made within the specific time required in this Article, or if no specified time is applicable within a reasonable time after the matter in question has arisen, and in no event shall any such demand be made after the date when institution of legal or equitable proceedings based on such matter in question would be barred by the applicable statute of limitations. The demand for arbitration should include specific reference to Paragraph SC-17.02.D below.

C. No arbitration arising out of or relating to the Contract shall include by consolidation, joinder, or in any other manner any other individual or entity (including Engineer, and Engineer's consultants and the officers, directors, partners, agents, employees or consultants of any of them) who is not a party to this Contract unless:

   1. the inclusion of such other individual or entity is necessary if complete relief is to be afforded among those who are already parties to the arbitration; and

   2. such other individual or entity is substantially involved in a question of law or fact which is common to those who are already parties to the arbitration and which will arise in such proceedings.

D. The award rendered by the arbitrator(s) shall be consistent with the agreement of the parties, in writing, and include a concise breakdown of the award, and a written explanation of the award specifically citing the Contract provisions deemed applicable and relied on in making the award.

E. The award will be final. Judgment may be entered upon it in any court having jurisdiction thereof, and it will not be subject to modification or appeal, subject to provisions of the Laws and Regulations relating to vacating or modifying an arbitral award.

F. The fees and expenses of the arbitrators and any arbitration service shall be shared equally by Owner and Contractor.

SC-17.03 Attorneys' Fees: For any matter subject to final resolution under this Article, the prevailing party shall be entitled to an award of its attorneys' fees incurred in the final resolution proceedings, in an equitable amount to be determined in the discretion of the court, arbitrator, arbitration panel, or other arbiter of the matter subject to final resolution, taking into account the parties' initial demand or defense positions in comparison with the final result.

- END OF DOCUMENT -

SECTION 00 94 10
CHANGE ORDER FORM

Owner: **Vineyard City**
Engineer: **Hansen, Allen & Luce**
Contractor:
Project: **Lift Station #2 Upgrades**
Contract Name: **Lift Station #2 Upgrades**
Date Issued:

Owner's Project No.:
Engineer's Project No.: 319.13.100
Contractor's Project No.:

Effective Date of Change Order:

The Contract is modified as follows upon execution of this Change Order:

Description:

[Description of the change]

Attachments:

[List documents related to the change]

Change in Contract Price	**Change in Contract Times [State Contract Times as either a specific date or a number of days]**
Original Contract Price: $ _____	Original Contract Times: Substantial Completion: _____ Ready for final payment: _____
[Increase] [Decrease] from previously approved Change Orders No. 1 to No. **[Number of previous Change Order]**: $ _____	**[Increase] [Decrease]** from previously approved Change Orders No.1 to No. **[Number of previous Change Order]**: Substantial Completion: _____ Ready for final payment: _____
Contract Price prior to this Change Order: $ _____	Contract Times prior to this Change Order: Substantial Completion: _____ Ready for final payment: _____
[Increase] [Decrease] this Change Order: $ _____	**[Increase] [Decrease]** this Change Order: Substantial Completion: _____ Ready for final payment: _____
Contract Price incorporating this Change Order: $ _____	Contract Times with all approved Change Orders: Substantial Completion: _____ Ready for final payment: _____

Recommended by Engineer (if required)	Authorized by Owner
By: _____	_____
Title: _____	_____
Date: _____	_____

Authorized by Owner	Approved by Funding Agency (if applicable)
By: _____	_____
Title: _____	_____
Date: _____	_____

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SECTION 00 94 20
FIELD ORDER NO.: [Number of Field Order]

Owner:	Vineyard City	Owner's Project No.:	
Engineer:	Hansen, Allen & Luce, Inc.	Engineer's Project No.:	319.13.100
Contractor:		Contractor's Project No.:	
Project: Contract Name:	Lift Station #2 Upgrades		
Date Issued:		Effective Date of Field Order:	

CONTRACTOR is hereby directed to promptly perform the Work described in this Field Order, issued in accordance with Paragraph 11.04 of the General Conditions, for minor changes in the Work without changes in Contract Price or Contract Times. If CONTRACTOR considers that a change in Contract Price or Contract Times is required, submit a Change Proposal before proceeding with this Work.

Reference:

Specification Section(s):

Drawing(s) / Details (s):

Description:

[Description of the change to the Work]

Attachments:

[List documents supporting change]

Issued by ENGINEER

By: _____

Title: _____

Date: _____

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PART 4
TECHNICAL SPECIFICATIONS

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SECTION 01 11 00
SUMMARY OF WORK

PART 1 GENERAL

1.1 GENERAL

A. The Work to be performed under this Project shall consist of furnishing all labor, materials, and equipment necessary or required to complete the work in all respects as shown on the Contract Drawings and as herein specified. All work, materials, and services not expressly shown or called for in the Contract Documents which may be necessary to complete the construction of the Work in good faith shall be performed, furnished, and installed by CONTRACTOR as though originally so specified or shown, at no increase in cost to OWNER.

1.2 WORK COVERED BY CONTRACT DOCUMENTS

A. The Work includes the removal of two (2) existing dry-pit chopper pumps and VFDs, furnishing and installing four (4) new dry-pit chopper pumps and VFDs, two (2) new concrete pedestals, two new mag flow meters, new valves and ductile iron piping and fittings, replacement of an existing plug valve, pipe supports, pipeline coating, removal of existing wet well mixer, removal and replacement of existing wet ultrasonic level sensor with new radar level sensor, replacement of existing exhaust fan, electrical modifications, and replacement of main control panel/RTU back panel.

B. The work is located at approximately 273 West 1600 North, Vineyard, Utah.

1.3 CONTRACT METHOD

A. The Work hereunder will be constructed under a single lump sum contract.

1.4 CONTRACTOR USE OF PROJECT SITE

A. CONTRACTOR's use of the Project Site shall be limited to its construction operations, including on-site storage of materials and on-site fabrication facilities.

1.5 PROJECT SECURITY

A. CONTRACTOR shall make all necessary provisions to protect the Project and CONTRACTOR's facilities from fire, theft, and vandalism, and the public from exposure to injury.

1.6 CHANGES IN THE WORK

A. It is mutually understood that it is inherent in public works construction that some changes in the Contract Drawings and Specifications may be necessary during construction to adjust them to unforeseen field conditions, and that it is of the essence of the Contract to recognize a normal and expected margin of change. ENGINEER shall have the right to make such changes, from time to time, in the Contract Drawings, in the character of the Work, and in the scope of the Project as may be necessary or desirable to ensure the completion of the Work in the most satisfactory manner without invalidating the Contract.

PART 2 PRODUCTS (Not Used)

PART 3 EXECUTION (Not Used)

- END OF SECTION –

SECTION 01 22 00
MEASUREMENT AND PAYMENT

PART 1 GENERAL

1.1 General

A. All work completed under this contract shall be in accordance with the Contract Drawings and Specifications and will be measured by ENGINEER/OWNER. The quantities appearing on the Bid Schedule are approximate only and are prepared for the comparison of bids. Payment to CONTRACTOR on bid items with unit prices other than "Lump Sum" will be made for actual quantities of work performed and accepted, or material furnished in accordance with the Contract. The scheduled quantities of work to be done and materials to be furnished may be increased or decreased in accordance with the General Conditions.

B. The term "Lump Sum" when used as an item of payment will mean complete payment for the work described in the contract. When a complete structure, portion of work, or unit is specified "Lump Sum" as the unit of measurement, the unit will include fittings, accessories, and all work necessary to complete the work as shown on the Drawings and as specified.

C. When the accepted quantities of work vary from the quantities in the Bid Schedule, CONTRACTOR shall accept as payment in full, so far as contract items are concerned, payment at the original contract unit prices for the work done. OWNER reserves the right to add to or delete from quantities listed in the bid schedule in order to match the total bid with the budgeted money available.

1.2 BASE BID SCHEDULE

A. BID ITEM NO. 1 - "MOBILIZATION/DEMOBILIZATION"

1. **GENERAL** This bid item is provided to cover CONTRACTOR's cost for general and miscellaneous responsibilities and operations not normally attributed to any other single bid item within this schedule. This shall include, but is not limited to, work described or enumerated in Section 01 71 13 - Mobilization.

2. **METHOD OF MEASUREMENT "**Mobilization" shall not be measured but shall be paid for on a lump sum basis for the completion of the work as required in Section 01 71 13 - Mobilization.

3. **BASIS OF PAYMENT** Payment for "Mobilization" will be made at the contract lump sum bid price. Payments will be made in accordance with the following schedule:

   a. When 5% of the original contract amount is earned, 25% of the amount bid for mobilization will be paid.
   b. When 25% of the original contract amount is earned, an additional 25% for a total of 50% of the amount bid for mobilization will be paid.
   c. When 50% of the original contract amount is earned, an additional 25% for a total of 75% of the amount bid for mobilization will be paid.
   d. When 75% of the original contract amount is earned, an additional 25% for a total of 100% of the amount bid for mobilization will be paid.

B. **BID ITEM NO. 2 – "REMOVAL OF TWO EXISTING PUMPS AND MOTORS"**

1. **METHOD OF MEASUREMENT** Removal of Two Existing Pumps and Motors shall not be measured but shall be paid for on a lump sum basis for removal of the two existing pumps and motors according to the amount defined in the Bid Schedule and as completed by CONTRACTOR.
2. **BASIS OF PAYMENT** Work completed under this bid shall be made at the contract lump sum bid price for removing and salvaging the pumps and motors as shown on the Contract Drawings and as specified herein. Payment shall include, but not be limited to, all labor, materials, and equipment required to remove the pumps and deliver them to the public works building across the street as shown on the Contract Drawings and in the Specifications.

C. **BID ITEM NO. 3 – "FURNISH AND INSTALL FOUR NEW PUMPS AND MOTORS"**

1. **METHOD OF MEASUREMENT** Furnish and Install Four New Pumps and Motors shall not be measured but shall be paid for on a lump sum basis for furnishing and installing the pumps and motors according to the amount defined in the Bid Schedule and as completed by CONTRACTOR.
2. **BASIS OF PAYMENT** Work completed under this bid item shall be made at the contract lump sum bid price for furnishing, installing, and testing the pumps and motors as shown on the Contract Drawings and as specified herein. Payment shall include, but not be limited to, all labor, materials, and equipment for furnishing and installing the dry-pit chopper pumps and motors; concrete forming, reinforcement, anchor bolts, concrete placement and testing for two new concrete pedestals, materials testing, testing of the pumps and motors, and all other pump related items not paid elsewhere as shown on the Contract Drawings and in the Specifications. (Electrical gear and connections paid elsewhere.)

D. **BID ITEM NO. 4 – "PIPING SYSTEM MODIFICATIONS COMPLETE"**

1. **METHOD OF MEASUREMENT** Piping System Modifications Complete shall not be measured but shall be paid for on a lump sum basis for removing of existing piping, furnishing and installing new piping according to the amount defined in the Bid Schedule and as completed by CONTRACTOR.
2. **BASIS OF PAYMENT** Work completed under this bid item shall be made at the contract lump sum bid price for removal of existing piping, furnishing, installing, and new piping as shown on the Contract Drawings and as specified herein. Payment shall include, but not be limited to, all labor, materials, and equipment for removal and disposal of existing plug valve and pipe spool, furnishing new ductile iron pipe (Class 53), valves, fittings, magnetic flow meter, dismantling joints, pipe supports, anchor bolts, grout, pipe coating, materials testing, pressure testing, and all other piping related items not paid elsewhere as shown on the Contract Drawings and in the Specifications.

E. **BID ITEM NO. 5 – "WET WELL EQUIPMENT MODIFICATIONS"**

1. **METHOD OF MEASUREMENT** Wet Well Equipment Modifications shall not be measured but shall be paid for on a lump sum basis for removing of existing wet well mixer and ultrasonic level sensor, and furnishing and installing new radar level sensor according to the amount defined in the Bid Schedule and as completed by CONTRACTOR.

2. **BASIS OF PAYMENT** Work completed under this bid item shall be made at the contract lump sum bid price for removal of existing wet well mixer and ultrasonic level sensor and furnishing and installing new radar level sensor as shown on the Contract Drawings and as specified herein. Payment shall include, but not be limited to, all labor, materials, and equipment for removal and disposal of existing wet well mixer and ultrasonic level sensor, furnishing new radar level sensor, level sensor support modifications, anchor bolts, testing, and all other related items not paid elsewhere as shown on the Contract Drawings and in the Specifications.

F. **BID ITEM NO. 6 – "ELECTRICAL SYSTEMS COMPLETE"**

1. **METHOD OF MEASUREMENT** Electrical Systems Complete shall not be measured but shall be paid for on a lump sum basis for removing and disposal of existing electrical equipment and furnishing and installing new electrical according to the amount defined in the Bid Schedule and as completed by CONTRACTOR.
2. **BASIS OF PAYMENT** Work completed under this bid item shall be made at the contract lump sum bid price for removal of existing electrical equipment and furnishing and installing new electrical equipment as shown on the Contract Drawings and as specified herein. Payment shall include, but not be limited to, all labor, materials, and equipment for removal and disposal of existing electrical equipment, furnishing four (4) new VFDs, concrete equipment pad, materials testing, anchor bolts, conduits, conductors, testing, and all other related items not paid elsewhere as shown on the Contract Drawings and in the Specifications.

G. **BID ITEM NO. 7 – "CONTROL PANEL MODIFICATIONS COMPLETE"**

1. **METHOD OF MEASUREMENT** Control Panel Modifications Complete shall not be measured but shall be paid for on a lump sum basis for removing of existing control back panel and furnishing and installing new back panel according to the amount defined in the Bid Schedule and as completed by CONTRACTOR.
2. **BASIS OF PAYMENT** Work completed under this bid item shall be made at the contract lump sum bid price for removal of existing control panel and furnishing and installing new control panel as shown on the Contract Drawings and as specified herein. Payment shall include, but not be limited to, all labor, materials, and equipment for removal and disposal of existing back panel and coordination of new control back panel installation, testing, and all other related items not paid elsewhere as shown on the Contract Drawings and in the Specifications. Furnishing and programming of the Control Panel shall be completed by SKM, Inc. Cost of furnishing the new back panel shall be included in CONTRACTOR's bid per the cost provided by SKM, Inc. Cost of programming shall be provided by ENGINEER.

PART 2 PRODUCTS (Not Used)

PART 3 EXECUTION (Not Used)

- END OF SECTION -

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SECTION 01 30 00
ADMINISTRATIVE REQUIREMENTS

PART 1 GENERAL

1.1 COORDINATION AND PROJECT CONDITIONS

A. Coordinate scheduling, Submittals, and Work of various sections of Project Manual to ensure efficient and orderly sequence of installation of interdependent construction elements.

B. Coordinate completion and clean-up of Work of separate sections in preparation for Substantial Completion.

C. After OWNER occupancy of premises, coordinate access to site for correction of defective Work and Work not in accordance with Contract Documents, to minimize disruption of OWNER's activities.

1.2 PRECONSTRUCTION MEETING

A. Prior to the commencement of work at the site, a preconstruction conference will be held at a mutually agreed time and place which shall be attended by CONTRACTOR's Project Manager, its superintendent, and its subcontractors as appropriate. Other attendees will be:

1. ENGINEER
2. Representatives of OWNER
3. Governmental representatives as appropriate
4. Others as requested by CONTRACTOR, OWNER, or ENGINEER.

B. Unless previously submitted to ENGINEER, CONTRACTOR shall bring to the conference one copy of each of the following:

1. Progress schedule
2. Procurement schedule of major equipment and materials and items requiring long lead time
3. Shop Drawings/Sample/Substitute or "Or Equal" submittal schedule.

C. The purpose of the conference is to designate responsible personnel and establish a working relationship. Matters requiring coordination will be discussed and procedures for handling such matters established. The agenda may include the following:

1. CONTRACTOR's tentative schedules
2. Transmittal, review, and distribution of CONTRACTOR's submittals
3. Processing applications for payment
4. Maintaining record documents
5. Critical work sequencing
6. Field decisions and Change Orders
7. Use of project site, office and storage areas, security, housekeeping, and OWNER's needs
8. Major equipment deliveries and priorities
9. CONTRACTOR's assignments for safety and first aid

D. ENGINEER will preside at the preconstruction conference and will arrange for keeping the minutes and distributing the minutes to all persons in attendance.

E. CONTRACTOR should plan on the conference taking no less than 2 hours.

1.3 PROGRESS MEETINGS

A. CONTRACTOR shall schedule and hold regular on-site progress meetings at least bi-weekly and at other times as required by ENGINEER or as required by progress of the work. CONTRACTOR, ENGINEER, and all subcontractors active on the site shall be represented at each meeting. CONTRACTOR may at its discretion request attendance by representatives of its suppliers, manufacturers', and other subcontractors.

B. ENGINEER shall preside at the meetings and provide for keeping and distribution of the minutes. The purpose of the meetings will be to review the progress of the work, maintain coordination of efforts, discuss changes in scheduling, and resolve other problems which may develop.

C. At each construction progress meeting a progress report shall be presented by CONTRACTOR containing an updated Progress Schedule. Where the delayed completion date of a project phase is noted, CONTRACTOR shall describe the anticipated delays or problems and outline the action plan being taken to resolve the issues.

PART 2 PRODUCTS (Not Used)

PART 3 EXECUTION (Not Used)

- END OF SECTION –

SECTION 01 33 00
SUBMITTAL PROCEDURES

PART 1 GENERAL

1.1 GENERAL

A. This Section outlines the general terms that CONTRACTOR must follow for preparing and providing Submittals to ENGINEER for review.

B. CONTRACTOR shall anticipate resubmitting Submittals for major equipment or complex systems.

C. If CONTRACTOR has questions about submittal requirements, CONTRACTOR is encouraged to communicate with ENGINEER to discuss requirements prior to submitting the Submittal.

D. Substitutions shall be clearly identified on the Submittal transmittal form and shall include all the information required per Section 01 60 00 – Product Requirements.

1.2 DEFINITIONS

A. Shop Drawings: Drawings, diagrams, schedules, and other data specially prepared for the Work by CONTRACTOR to illustrate some portion of the Work.

B. Product Data: Illustrations, standard schedules, performance charts, instructions, brochures, diagrams, and other information furnished by CONTRACTOR to illustrate materials or equipment for some portion of the Work. Product data is typically collected from catalogs, technical data sheets, or other materials supplied by manufacturers and are not specifically prepared for the project. Product data shall be marked up and/or highlighted to show the model, style, or options of a product to be incorporated in the Work.

C. Samples: Physical examples that illustrate materials, equipment, workmanship, or colors, and establish standards by which the Work will be judged.

D. Submittal Dispositions shall be defined as follows:

1. No Exception Taken: ENGINEER and/or OWNER has reviewed the Submittal with skill, care, and judgement consistent with the applicable standard of care and, in accordance with the General Conditions, has determined the submittal appears to be consistent with the contract documents and the design professional's design intent for the completed project.
2. Make Corrections Noted: ENGINEER and/or OWNER has reviewed the Submittal and approval is conditioned on CONTRACTOR, subcontractor, or supplier complying fully with ENGINEER's written comments on the Submittal. Failure of the CONTRACTOR, subcontractor, or supplier to comply fully with the written comments nullifies the approval.
3. Revise and Resubmit: ENGINEER and/or OWNER has reviewed the Submittal and believes the Submittal, as furnished, cannot be approved without revisions and resubmittal. "Revise and Resubmit" does not constitute an approval.

4. Rejected: ENGINEER and/or OWNER has reviewed the Submittal and determined that it cannot be approved because it is incomplete, does not meet the product requirements or specifications, or does not meet the Submittal Procedure requirements as noted below.
5. For Information Only: Submittal is for record only and was not reviewed by ENGINEER and/or OWNER.

1.3 SUBMITTAL PROCEDURES

A. Wherever Submittals are required by the Contract Documents, transmit 5 copies of each Submittal or a single electronic PDF file to ENGINEER with a Submittal transmittal form which is acceptable to ENGINEER.

B. Sequentially number transmittal forms. Mark revised Submittals with original number and sequential alphabetic or numeric suffix, i.e., Submittal 1, Submittal 1.A, Submittal 1.1, etc.

C. Identify Project, Contractor, subcontractor and/or supplier, pertinent drawing and detail number, and Specification section number, appropriate to Submittal.

D. Each Submittal shall contain material pertaining to no more than one equipment or material item.

E. Each Submittal shall have the Specification section and applicable paragraph number clearly identified on the front of the Submittal transmittal form. A copy of the Specification section and applicable paragraph shall be included with the Submittal and items included shall be clearly mark as either in compliance or not in compliance. For items not in compliance a description shall be provided explaining the reason for non-compliance.

F. CONTRACTOR shall review Submittals prior to submission to ENGINEER. Apply Contractor's stamp, signed and dated, certifying that review, approval, verification of products required, field dimensions, adjacent construction Work, and coordination of information is in accordance with requirements of the Work and Contract Documents. Identify any deviations from the Contract Documents on the Submittal transmittal form.

G. Schedule Submittals to expedite Project and deliver to ENGINEER at their business address. Coordinate submission of related items.

H. Submittals shall be submitted sufficiently in advance to allow ENGINEER not less than ten regular working days for examining the drawings. These drawings shall be accurate, distinct, and complete and shall contain all required information, including satisfactory identification of items and unit assemblies in relation to the Contract Drawings and/or specifications.

I. Identify variations from Contract Documents and product or system limitations which may adversely affect successful performance of completed Work.

J. If a Submittal is returned to CONTRACTOR marked “NO EXCEPTIONS TAKEN”, or similar notification, formal revision and resubmission will not be required.

K. If a Submittal is returned marked “MAKE CORRECTIONS NOTED”, or similar notification, CONTRACTOR shall make the corrections on the Submittal, however, formal revision and resubmission will not be required.

L. Resubmittals

1. If a Submittal is returned marked “REVISE AND RESUBMIT”, or similar notification, CONTRACTOR shall revise the Submittal and resubmit the required number of copies.
2. Identify changes made since the previous submission.

M. Rejected Submittals

1. If a Submittal is returned marked “REJECTED”, or similar notification, it shall mean either that the proposed material or product does not satisfy the specification, the Submittal is so incomplete that it cannot be reviewed or is a substitution request not submitted in accordance with Section 01 60 00 – Product Requirements.
2. CONTRACTOR shall prepare a new Submittal or submit a substitution request according to Section 01 60 00 – Product Requirements and shall submit the required number of copies.

N. Distribute copies of reviewed Submittals as appropriate. Instruct parties to promptly report inability to comply with requirements.

O. Submittals not requested will not be recognized or processed.

P. Unless noted otherwise, corrections indicated on Submittals shall be considered as changes necessary to meet the requirements of the Contract Documents and shall not be taken as changes to the Contract requirements.

Q. Fabrication or purchase of an item may only commence after ENGINEER has reviewed the pertinent Submittals and returned copies to CONTRACTOR marked either “NO EXCEPTIONS TAKEN” or “MAKE CORRECTIONS NOTED”.

R. ENGINEER's review of CONTRACTOR Submittals shall not relieve CONTRACTOR of the entire responsibility for the corrections of details and dimensions. CONTRACTOR shall assume all responsibility and risk for any misfits due to any errors in CONTRACTOR Submittals. CONTRACTOR shall be responsible for dimensions and quantities, coordinating with all trades, the design of adequate connections and details, and satisfactory and safe performance of the work.

1.4 CONSTRUCTION PROGRESS SCHEDULES

A. Submit initial schedules within 15 days after date of Owner-Contractor Agreement. After review comments on the initial schedule are received from ENGINEER and OWNER, CONTRACTOR shall resubmit required revised data within ten days.

B. Submit revised Progress Schedules with each Application for Payment.

C. Distribute copies of reviewed schedules to Project site file, subcontractors, suppliers, and other concerned parties. Instruct recipients to promptly report, in writing, problems anticipated by projections indicated in schedules.

D. Submit computer generated horizontal bar chart with separate line for each major portion of Work or operation, identifying first workday of each week.

E. Show complete sequence of construction by activity, identifying Work of separate stages and other logically grouped activities. Indicate early and late start, early and late finish, float dates, and duration.

F. Indicate estimated percentage of completion for each item of Work at each submission.

G. Submit separate schedule of submittal dates for shop drawings, product data, and samples.

1.5 PRODUCT DATA

A. Product Data: Submit to ENGINEER for review for limited purpose of checking for conformance with information given and design concept expressed in Contract Documents.

B. Mark each copy to identify applicable products, models, options, and other data. Supplement manufacturers' standard data to provide information specific to this Project.

C. After review, produce copies and distribute in accordance with SUBMITTAL PROCEDURES article and for record documents described in Section 01 78 50 - Project Closeout.

1.6 SHOP DRAWINGS

A. Shop Drawings: Submit to ENGINEER for review for limited purpose of checking for conformance with information given and design concept expressed in Contract Documents.

B. Fabrication of an item may be commenced only after ENGINEER has reviewed the pertinent submittals and returned copies to CONTRACTOR marked either "NO EXCEPTIONS TAKEN", or "MAKE CORRECTIONS NOTED". Corrections indicated on submittals shall be considered as changes necessary to meet the requirements of the Contract Documents and shall not be taken as the basis of claims for extra work.

C. When required by individual specification sections, provide shop drawings signed and sealed by professional engineer responsible for designing components shown on shop drawings.

1. Include signed and sealed calculations to support design.
2. Submit drawings and calculations in form suitable for submission to and approval by authorities having jurisdiction.
3. Make revisions and provide additional information when required by authorities having jurisdiction.

D. After review, produce copies and distribute in accordance with SUBMITTAL PROCEDURES article and for record documents described in Section 01 78 50 - Project Closeout.

1.7 SAMPLES

A. Whenever indicated in the Specifications or requested by ENGINEER, CONTRACTOR shall submit at least 1 sample of each item or material to ENGINEER for acceptance at no additional cost to OWNER.

B. Samples, as required herein, shall be submitted for acceptance prior to ordering such material for delivery to the jobsite, and shall be submitted in an orderly sequence so that dependent materials or equipment can be assembled and reviewed without causing delay in the Work.

C. Unless otherwise specified, all colors and textures of specified items will be selected by ENGINEER from the manufacturer's standard colors and standard materials, products, or equipment lines.

1.8 CERTIFICATES

A. When specified in individual Specification sections, submit certification by manufacturer, installation/application subcontractor, or CONTRACTOR to ENGINEER, in quantities specified for Product Data.

B. Indicate material or product conforms to or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.

C. Certificates may be recent or previous test results on material or Product but must be acceptable to ENGINEER.

1.9 NSF CERTIFICATION

A. Where NSF/ANSI 61 and/or NSF/ANSI 600 approval is required, submit ANSI/NSF 61/600 certification letter from the testing agency, i.e., NSF International (NSF), ALS - Truesdail Laboratories, UL Solutions, Water Quality Association (WQA), etc., for each item indicating the product fabrication location and application limits such as plant location, size of tank or diameter of piping, or other limitations.

B. See example NSF certificate below in Exhibit A.

1.10 MANUFACTURER'S INSTRUCTIONS

A. When specified in individual Specification sections, submit printed instructions for delivery, storage, assembly, installation, start-up, adjusting, and finishing, to ENGINEER for delivery to OWNER in quantities specified for Product Data.

B. Indicate special procedures, perimeter conditions requiring special attention, and special environmental criteria required for application or installation.

1.11 MANUFACTURER'S FIELD REPORTS

A. When required in individual sections, have Manufacturer or Supplier provide qualified representative to observe field conditions, conditions of surfaces and installation, quality of workmanship, start-up of equipment, test, adjust, and balance of equipment as applicable and to make written report of observations and recommendations to ENGINEER.

1.12 OPERATIONS AND MAINTENANCE MANUAL SUBMITTAL

A. CONTRACTOR shall furnish to ENGINEER two (2) identical sets of Operations and Maintenance Manuals. Each set shall consist of one or more volumes, each of which shall be bound in a standard size, 3-ring, loose-leaf, vinyl, hard-cover binder suitable for bookshelf storage. Binder ring size shall not exceed 2.5 inches. A Table of Contents shall be provided which indicates all equipment and suppliers in the Operations and Maintenance Manuals.

B. CONTRACTOR shall also furnish ENGINEER one copy of the Operations and Maintenance Manuals in PDF electronic format.

C. CONTRACTOR shall include in the Operations and Maintenance manuals full details for care and maintenance for all visible surfaces as well as the following for each item of mechanical, electrical, and instrumentation equipment (except for equipment furnished by OWNER):

1. Complete operating instructions, including location of controls, special tools or other equipment required, related instrumentation, and other equipment needed for operation.
2. Preventative maintenance procedures and schedules
3. A description of proper maintenance activities
4. Complete parts lists, by generic title, identification number, and catalog number, complete with exploded views of each assembly.
5. Disassembly and reassembly instruction
6. Name and location of nearest supplier and spare parts warehouse
7. Name and location of manufacturer
8. Recommended troubleshooting and start-up procedures
9. Prints of the record drawings, including diagrams and schematics, as required under the electrical and instrumentation portions of these specifications.

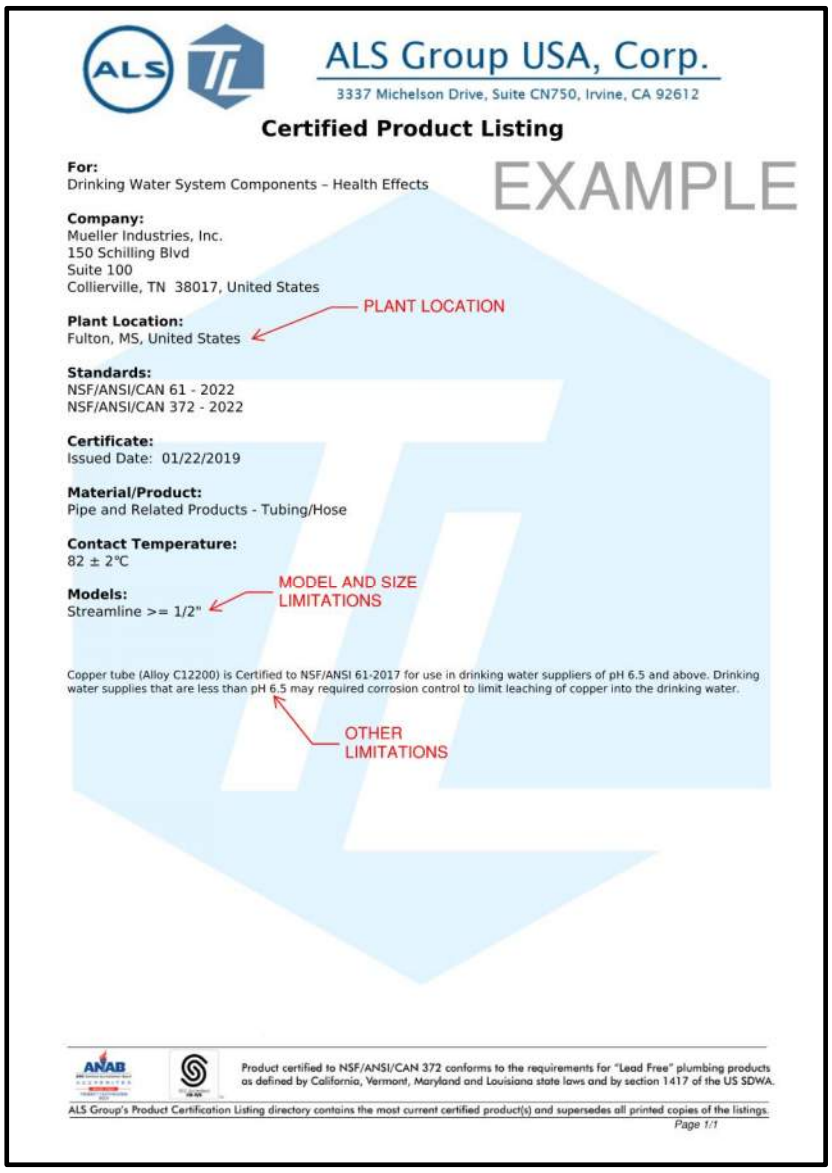
D. All Operations and Maintenance manuals shall be submitted in final form to ENGINEER not later than the 75 percent of construction completion date. All discrepancies found by ENGINEER in the Operations and Maintenance manuals shall be corrected by CONTRACTOR prior to final acceptance of the project.

PART 2 PRODUCTS (Not Used)

PART 3 EXECUTION (Not Used)

- END OF SECTION –

Exhibit A - Example NSF 61 Certification



ALS Group USA, Corp.
3337 Michelson Drive, Suite CN750, Irvine, CA 92612

Certified Product Listing

EXAMPLE

For:
Drinking Water System Components – Health Effects

Company:
Mueller Industries, Inc.
150 Schilling Blvd
Suite 100
Collierville, TN 38017, United States

Plant Location:
Fulton, MS, United States

PLANT LOCATION

Standards:
NSF/ANSI/CAN 61 - 2022
NSF/ANSI/CAN 372 - 2022

Certificate:
Issued Date: 01/22/2019

Material/Product:
Pipe and Related Products - Tubing/Hose

Contact Temperature:
82 ± 2°C

Models:
Streamline >= 1/2"

MODEL AND SIZE LIMITATIONS

Copper tube (Alloy C12200) is Certified to NSF/ANSI 61-2017 for use in drinking water suppliers of pH 6.5 and above. Drinking water supplies that are less than pH 6.5 may required corrosion control to limit leaching of copper into the drinking water.

OTHER LIMITATIONS

Product certified to NSF/ANSI/CAN 372 conforms to the requirements for "Lead Free" plumbing products as defined by California, Vermont, Maryland and Louisiana state laws and by section 1417 of the US SDWA.

ALS Group's Product Certification Listing directory contains the most current certified product(s) and supersedes all printed copies of the listings.

Page 1/1

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SECTION 01 42 13
ABBREVIATIONS

PART 1 GENERAL

1.1 DESCRIPTION

A. Wherever in these Specifications references are made to the standards, specifications, or other published data of the various national, regional, or local organizations, such organizations may be referred to by their acronym or abbreviation only. As a guide to the user of these Specifications, the following acronyms or abbreviations which may appear in these Specifications shall have the meanings indicated herein.

1.2 ABBREVIATIONS AND ACRONYMS

AASHTO	American Association of the State Highway and Transportation Officials
ABMA	American Bearing Manufacturers Association (formerly AFBMA)
ACI	American Concrete Institute
AGA	American Gas Association
AGC	American General Contractors
AI	The Asphalt Institute
AIA	American Institute of Architects
AISC	American Institute of Steel Construction
AISI	American Iron and Steel Institute
ANSI	American Nation Standards Institute, Inc.
APA	American Plywood Association
API	American Petroleum Institute
APWA	American Public Works Association
ASCE	American Society of Civil Engineers
ASHRAE	American Society of Heating, Refrigerating, and Air-Conditioning Engineers
ASME	American Society of Mechanical Engineers
ASOC	American Society of Quality Control
ASSE	American Society of Sanitary Engineers
ASTM	American Society for Testing and Materials
AWS	American Welding Society
AWWA	American Water Works Association
AWPB	American Wood Preservers Bureau
BBC	Basic Building Code, Building Officials and Code Administrators International
CEMA	Conveyors Equipment Manufacturer's Association
CGA	Compressed Gas Association
CLFMI	Chain Link Fence Manufacturer's Institute
CMA	Concrete Masonry Association
CRSI	Concrete Reinforcing Steel Institute
DIPRA	Ductile Iron Pipe Research Association
DWQ	Department of Water Quality
DWR	Drinking Water Regulations
ECTC	Erosion Control Technology Council
EIA	Electronic Industries Association
EPA	Environmental Protection Agency

ETC	Electrical Test Laboratories
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FM	Factory Mutual System
HI	Hydraulic Institute
IBC	International Building Code
ICBO	International Conference of Building Officials
ICC	International Code Council
ICC-ES	International Code Council Evaluation Service
IEEE	Institute of Electrical and Electronics Engineers
IES	Illuminating Engineering Society
IFC	International Fire Code
IMC	International Mechanical Code
IME	Institute of Makers of Explosives
IPC	International Plumbing Code
ISA	Instrument Society of America
ISO	International Organization of Standardization
ITE	Institute of Traffic Engineers
LPI	Lightning Protection Institute
MBMA	Metal Building Manufacturer's Association
MSS	Manufacturers Standardization Society
NAAMM	National Association of Architectural Metal Manufacturers
NACE	National Association of Corrosion Engineers
NBS	National Bureau of Standards
NEC	National Electrical Code
NEMA	National Electrical Manufacturer's Association
NFPA	National Fire Protection Association
NFPA	National Forest Products Association
NISO	National Information Standards Organization
NSF	NSF International (formerly National Sanitation Foundation)
OSHA	Occupational Safety and Health Administration
PCA	Portland Cement Association
PCI	Precast/Prestressed Concrete Institute
RCRA	Resource Conservation and Recovery Act
RMA	Rubber Manufacturers Association
RWMA	Resistance Welder Manufacturer's Association
SAE	Society of Automotive Engineers
SSPC	Society for Protective Coating (formerly Steel Structure Painting Council)
SSPWC	Standard Specification for Public Works Construction
UBC	Uniform Building Code
UL	Underwriters Laboratories, Inc.
WCRSI	Western Concrete Reinforcing Steel Institute
WRI	Wire Reinforcements Institute, Inc.
WWPA	Western Wood Products Association

PART 2 PRODUCTS (Not Used)

PART 3 EXECUTION (Not Used)

- END OF SECTION –

SECTION 01 42 19
REFERENCE STANDARDS

PART 1 GENERAL

1.1 QUALITY ASSURANCE

A. TITLES OF SECTIONS AND PARAGRAPHS. Captions accompanying Specifications sections and paragraphs are for convenience of reference only, and do not form a part of the Specification.

B. APPLICABLE PUBLICATIONS. Whenever in these Specifications references are made to published specifications, codes, standards, or other requirements, it shall be understood that wherever no date is specified, only the latest specifications, standards or requirements of the respective issuing agencies which have been published as of the date that the work is advertised for bids, shall apply; except to the extent that said standards or requirements may be in conflict with applicable laws, ordinances, or governing codes. No requirements set forth herein or shown on the drawings shall be waived because of any provision of, or omission from, said standards or requirements.

C. SPECIALISTS, ASSIGNMENTS. In certain instances, specifications test requires (or implies) that specific work is to be assigned to specialists or expert entities, who must be engaged for the performance of that work. Such assignments shall be recognized as special requirements and shall not be interpreted so as to conflict with the enforcement of building codes and similar regulations governing the work; also they are not intended to interfere with local union jurisdiction settlements and similar conventions. Such assignments are intended to establish which party or entity involved in a specific unit of work is recognized as "expert" for the indicated construction processes or operations. Nevertheless, the final responsibility for fulfillment of the entire set of contract requirements remains with CONTRACTOR.

1.2 REFERENCE SPECIFICATIONS, CODES, AND STANDARDS

A. Without limiting the generality of other requirements of the Specifications, all Work specified herein shall conform to or exceed the requirements of all applicable codes and the applicable requirements of the following documents to the extent that the provisions of such documents are not in conflict with the requirements of these Specifications nor the applicable codes.

B. Reference herein to "Building Code" or “Uniform Building Code” shall mean the International Building Code of the International Code Council. The latest edition of the code as approved and used by the local agency as of the date of award, as adopted by the agency having jurisdiction, shall apply to the Work herein, including all addenda, modifications, amendments, or other lawful changes thereto.

C. In case of conflict between codes, reference standards, drawings and the other Contract Document, the most stringent requirements shall govern. All conflicts shall be brought to the attention of ENGINEER for clarification and directions prior to ordering or providing any materials or labor. CONTRACTOR shall bid the most stringent requirements.

D. APPLICABLE STANDARD SPECIFICATIONS. CONTRACTOR shall construct the Work specified herein in accordance with the requirements of the Contract Documents

and the referenced portions of those referenced codes, standards, and Specifications listed herein; except, that wherever references to "Standard Specifications" are made, the provisions therein for measurement and payment shall not apply.

E. References in the Contract Documents to "Standard Specifications" shall mean the Contract Documents including all current supplements, addenda, and revisions thereof.

F. References herein to "OSHA Regulations for Construction" shall mean Title 29, Part 1926, Construction Safety and Health Regulations, Code of Federal Regulations (OSHA), including all changes and amendments thereto.

G. References herein to "OSHA Standards" shall mean Title 29, Part 1910, Occupational Safety and Health Standards, Code of Federal Regulations (OSHA), including changes and amendments thereto.

H. UTAH DEPARTMENT OF ENVIRONMENTAL QUALITY. Wells, tanks, pumping stations and culinary water pipelines shall conform to the requirements of Utah Administrative Code Rule R 309. Water and sewer pipeline installation shall conform to the requirements of Utah Administrative Code Rule R 317-3-2.9 “Protection of Water Supplies” for horizontal and vertical separation.

I. UTAH DEPARTMENT OF TRANSPORTATION (UDOT) REQUIREMENTS. CONTRACTOR's work on UDOT property or right-of-way shall conform to UDOT’s latest edition of Standard Specifications For Road and Bridge Construction.

J. U.S. ARMY CORPS OF ENGINEERS (COE) REQUIREMENTS. CONTRACTOR's work shall conform to COE Specifications in accordance with Section 404 of the Clean Water Act for excavation in wetlands.

K. Reference herein to APWA shall mean the 2017 edition of the “Manual of Standard Specifications” and “Manual of Standard Plans” as prepared by the American Public Works Association and the Associated General Contractors of America.

L. All provisions of the Manual of Standard Specifications, Latest Edition and Manual of Standard Plans, Latest Edition both published by the Utah Chapter of the American Public Works Association are hereby made a part of the Contract Documents by reference. The publications may be purchased separately from the Utah Technology Transfer Center, Utah State University, 4111 Old Main Hill, Logan, UT 84322-4111. Any conflicts, between the technical specifications, drawings, and other provisions or documents contained in the Contract Form or Contract Documents versus provisions contained in the Manual of Standard Specifications, Latest Edition and Manual of Standard Plans, Latest Edition published by the Utah Chapter of the American Public Works Association, shall be resolved in favor of the technical specifications, drawing, and provisions contained in the Contract form or Contract Documents.

PART 2 PRODUCTS (Not Used)

PART 3 EXECUTION (Not Used)

- END OF SECTION –

SECTION 01 45 00
QUALITY CONTROL AND MATERIALS TESTING

PART 1 GENERAL

1.1 SUMMARY

A. This Section outlines responsibilities for controlling the quality of materials, products, and workmanship.

1.2 MATERIALS

A. All materials incorporated in the project shall be new and shall fully comply with the Specifications. Unless otherwise clearly provided in the Specifications, all workmanship, equipment, materials, and articles incorporated in the Work covered by the Contract are to be of the best available grade of their respective kinds. Whenever, in the specifications, any material, article, device, product, fixture, form, type of construction, or process indicated or specified by patent or proprietary name, by name of manufacturer, or by catalog number, such specifications shall be deemed to be used for the purpose of establishing a standard of quality and facilitating the description of the material or process desired and shall be deemed to be followed by the words "or approved equal" and CONTRACTOR may in such case, upon receiving ENGINEER's approval, purchase and use any item, type, or process which shall be substantially equal in every respect to that indicated or specified.

B. Materials and equipment may be used in the Work based upon receipt of a Supplier's certificate of compliance. Certificate must be in possession of CONTRACTOR and reviewed by ENGINEER prior to use.

C. Quality Assurance Testing by OWNER and/or ENGINEER shall not relieve CONTRACTOR of responsibility to furnish materials and work in full compliance with Contract Documents.

1.3 MANUFACTURER'S INSTRUCTIONS

A. Should instructions conflict with Contract Documents, request clarification before proceeding.

B. When required in individual sections, submit manufacturer's instructions in the quantity required for product data, delivery, handling, storage, assembly, installation, start-up, adjusting, balancing, and finishing, as appropriate.

1.4 WORKMANSHIP

A. Maintain performance control and supervision over Subcontractors, Suppliers, manufacturers, products, services, workmanship, and site conditions, to produce work in accordance with Contract Documents.

B. Comply with industry standards except when more restrictive tolerances or specified requirements indicate more rigid standards or more precise workmanship.

C. Provide suitable qualified personnel to produce specified quality.

D. Ensure finishes match approved samples.

1.5 TOLERANCES

A. Monitor fabrication and installation tolerance control of products to produce acceptable Work. Do not permit tolerance to accumulate.

B. Comply with manufacturers' tolerances. When manufacturers' tolerances conflict with Contract Documents, request clarification from ENGINEER before proceeding.

C. Adjust products to appropriate dimensions; position before securing products in place.

1.6 TESTING AND INSPECTION SERVICES

A. The testing agency and testing for quality control and material testing shall be furnished by CONTRACTOR as part of the project. Results of testing shall be reported to CONTRACTOR and ENGINEER on site. Reports of the testing shall be transmitted directly to ENGINEER.

B. Materials to be supplied under this contract will be tested and/or inspected either at their place of origin or at the site of the work by the testing agency. CONTRACTOR shall give ENGINEER written notification well in advance of actual readiness of materials to be tested and/or inspected at point of origin so ENGINEER may witness testing by the testing agency. Satisfactory tests and inspections at the point of origin shall not be construed as a final acceptance of the material nor shall it preclude retesting or reinspection at the site of the work.

C. CONTRACTOR shall furnish such samples of materials as requested by the ENGINEER, without charge. No material shall be used until reports from the testing agency have been reviewed and accepted by ENGINEER. See Section 01 33 00 - Submittal Procedures.

1.7 UNSATISFACTORY CONDITIONS

A. Examine areas and conditions under which materials and products are to be installed. Do not proceed with work until unsatisfactory conditions have been corrected in a manner acceptable to the Installer.

1.8 AUTHORITY AND DUTIES OF PROJECT REPRESENTATIVE

A. Refer to Section 00 80 00 "Supplementary Conditions" sub-section SC 10.03 "Resident Project Representative".

1.9 QUALITY CONTROL TESTING

A. ENGINEER’s failure to detect any defective Work or materials does not prevent later rejection when such defect is discovered nor does it obligate ENGINEER for acceptance.

B. CONTRACTOR shall provide 24-hours minimum notice to ENGINEER for all testing required by these specifications so ENGINEER may coordinate or be present during testing.

1.10 TESTING ACCEPTANCE AND FREQUENCY

A. Minimum Quality Control Testing Frequency: As defined in Table 01 45 00-1, CONTRACTOR shall be responsible to ensure that all testing is performed at the frequencies shown. CONTRACTOR shall uncover any work at no cost to OWNER to allow the testing agency to perform required testing at the frequency shown.

B. Acceptance of Defective Work: As defined in Article 14.04 of the General Conditions.

PART 2 PRODUCTS (Not Used)

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify existing site conditions and substrate surfaces are acceptable for subsequent Work. Beginning new Work means acceptance of existing conditions.

B. Verify existing substrate is capable of structural support or attachment of new Work being applied or attached.

C. Examine and verify specific conditions described in individual specification sections.

D. Verify utility services are available, of correct characteristics, and in correct locations.

3.2 PREPARATION

A. Clean substrate surfaces prior to applying the next material or substance.

B. Seal cracks or openings of substrate prior to applying the next material or substance.

C. Apply manufacturer required or recommended substrate primer, sealer, or conditioner prior to applying new material or substance in contact or bond.

TABLE 01 45 00-1: QUALITY CONTROL TESTING FREQUENCY

SYSTEM or MATERIAL	TESTS	MINIMUM REQUIRED FREQUENCY
SUBGRADE AND BACKFILL MATERIALS		
Section 31 23 15 Excavation and Backfill for Buried Pipelines	Field Density	1 test per 200 linear feet per 1.5 feet of backfill thickness placed.
	Laboratory	1 test for each material type which includes proctor, classification, and gradation.
Section 31 22 00 Site Grading	Field Density	Embankment Fills – 1 test per lift for every 10,000 square feet of embankment
	Laboratory	1 test for each material type which includes proctor, classification, and gradation.
Section 31 23 23 Excavation and Backfill for Structures	Field Density	Footing and Wall Backfill – 1 test per every other lift for each 50 linear feet
		Under Structures – 1 test per lift for every 1,000 square feet of structure
		Around Structures – 1 test per lift for every 1,500 square feet of structure
		Unimproved Area – 1 test per lift for every 25,000 square feet of unimproved area
	Laboratory	1 test for each material type which includes proctor, classification, and gradation.
Section 32 11 23 Road Base - Untreated Base Course	Field Density	Base course subgrade: 1 test per 2,000 square feet of area. Base course: 1 test per 2,000 square feet of area.
	Laboratory	Base course: 1 test for each material type which includes proctor, classification, and gradation.
ASPHALT		
Section 32 12 16 Hot-Mix Asphalt Concrete Paving	Mix Design	Marshall Test Method: 1 test initially per each type of material and each change in target, and for each day of production thereafter. Specific Gravity: 1 per each Marshall Test Extraction: 1 test per each Marshall Test
	Field Density	Bituminous surfaces: 1 test per 2,000 square feet placed or part thereof.
	Asphalt Thickness and Core Density	Bituminous surfaces: 1 test sample every 300 linear feet of completed roadway.

SYSTEM or MATERIAL	TESTS	MINIMUM REQUIRED FREQUENCY
PORTLAND CEMENT CONCRETE		
Section 3 30 00 Cast-in-Place Concrete	Slump	1 test every day of placement (if less than 100 cubic yards in a day), 1 test for every 100 cubic yards, or 1 test for each 3,000 square feet of surface area for slabs and more frequently if batching appears inconsistent.
	Entrained air	1 test with slump test.
	Ambient and concrete temperatures	1 test with slump test.
	Water cement ratio.	to be verified and provided with batch tickets.
	Compressive strength	1 set of 5 cylinders (See Note 5). 1 test every day of placement (if less than 100 cubic yards in a day), 1 test for every 100 cubic yards, or 1 test for each 3,000 square feet of surface area for slabs, and more frequently if batching appears inconsistent. (See Section 03 30 00-3.5.A.3 for additional requirements.) Each sample used to mold strength test specimens shall be tested for slump, air content, and temperature.

NOTES:

1 Additional tests shall be conducted when variations occur due to CONTRACTOR's operations, weather conditions, site conditions, etc.
2 Classification, moisture content, Atterberg limits and specific gravity tests shall be conducted for each compaction test, if applicable.
3 Tests can substitute for same tests required under "Aggregates" (from bins or source), although gradations will be required when blending aggregates.
4 Aggregate moisture tests are to be conducted in conjunction with concrete strength tests for water/cement calculations.
5 Strength tests shall be the average of the strengths of at least two (2) 6-inch diameter by 12-inch high cylinders. If 4-inch diameter cylinders are used, collect an additional cylinder (6 total) and the strength test shall be the average of the strengths of at least three (3) 4-inch by 8-inch high cylinders.

- END OF SECTION –

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SECTION 01 45 23
TESTING AGENCY SERVICES

PART 1 GENERAL

1.1 SUMMARY

A. CONTRACTOR shall be responsible for providing Construction Quality Control Testing of all concrete, etc. as required by the various sections of these Specifications. This section includes the following:

1. Use of independent testing agency
2. Control testing report submittal requirements
3. Responsibilities of testing agency

1.2 RELATED WORK

A. Related Work specified in other Sections includes, but is not limited to:

1. Section 01 33 00 Submittal Procedures

1.3 REFERENCES

A. Work covered by this Specification shall meet or exceed the provisions of the latest editions of the following Codes and Standards in effect at the time of award of the Contract. The publication is referred to in the text by basic designation only.

B. AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

1. ASTM D 3740 Standard Practice for Minimum Requirements for Agencies Engaged in Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction.
2. ASTM D 4561 Standard Practice for Quality Control Systems for Organizations Producing and Applying Bituminous Paving Materials
3. ASTM E 329 Standard Specification for Agencies Engaged in Construction Inspection, Testing, or Special Inspection.

1.4 DEFINITIONS

A. Independent Testing Agency: A testing agency NOT owned by CONTRACTOR, and an agency that does not have any preferential affiliation or association with CONTRACTOR, or any of CONTRACTOR's Subcontractors and Suppliers other than entering into a contract with CONTRACTOR to perform the duties defined in these Specifications.

B. Professional Engineer: An engineer who complies with Utah licensing law and is acceptable to the authority having jurisdiction.

1.5 QUALITY ASSURANCE

A. CONTRACTOR shall employ and pay for services of an independent testing agency which complies with ASTM D 3740, ASTM D 4561, and ASTM E 329 to test materials for contract compliance.

1.6 CONTRACTOR SUBMITTALS

A. Provide submittals in accordance with Section 01 33 00 – Submittal Procedures

B. If CONTRACTOR is employing and paying for an independent testing agency, prior to start of Work, submit testing agency's name, address, telephone number and the following:

1. Concrete Technician: Approved by ENGINEER or ACI certified.
2. Person charged with engineering managerial responsibility
3. Professional engineer on staff to review services
4. Level of certification of technicians

1.7 TESTING AGENCY SUBMITTALS

A. Field Test Report: Submit report no later than the end of the current day.

B. Laboratory Test Report: Submit original report within 48 hours after test results are determined.

C. Final Summary Report: Submit prior to final payment

D. All reports include:

1. Project title, number and date of the report
2. Date, time and location of test
3. Name and address of material Supplier
4. Identification of product being tested and type of test performed
5. Identify whether test is initial test or retest
6. Results of testing and interpretation of results
7. Name of technician who performed the testing

1.8 RESPONSIBILITIES OF TESTING AGENCY

A. Calibrate testing equipment at least annually with devices with an accuracy traceable to either National Bureau of Standards or acceptable values of natural physical constraints.

B. Provide sufficient personnel at site and cooperate with CONTRACTOR, ENGINEER and OWNER's Representative in performance of testing service.

C. Secure samples using procedures specified in the applicable testing code.

D. Perform testing of products in accordance with applicable sections of the Contract Documents.

E. Immediately report any compliance or noncompliance of materials and mixes to CONTRACTOR, ENGINEER, and OWNER's Representative.

F. When an out-of-tolerance condition exists, perform additional inspections and testing until the specified tolerance is attained, and identify retesting on test reports.

1.9 LIMITS ON TESTING AGENCY AUTHORITY

A. Agency may not release, revoke, alter, or enlarge on requirements of Contract Documents.

B. Agency may not suspend Work.

C. Agency has no authority to accept Work for OWNER.

PART 2 PRODUCTS (Not Used)

PART 3 EXECUTION (Not Used)

- END OF SECTION –

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SECTION 01 50 00
TEMPORARY CONSTRUCTION UTILITIES AND ENVIRONMENTAL CONTROLS

PART 1 GENERAL

1.1 DESCRIPTION

A. This section covers temporary utilities, including electricity, lighting, telephone service, water, and sanitary facilities; temporary controls, including barriers, protection of work, and water control; and construction facilities, including parking, progress cleaning, and temporary buildings.

1.2 TEMPORARY UTILITIES

A. Temporary Electricity: CONTRACTOR shall provide, maintain, and pay for all power required by CONTRACTOR, including electrical service to CONTRACTOR's and OWNER/ENGINEER's field offices.

B. Temporary Lighting: CONTRACTOR shall provide all temporary lighting required for execution of his work and for employee and public safety. As a minimum, lighting levels during working hours shall meet the requirements of OSHA Subsection 1926.56 illumination.

C. Temporary Heating and Cooling

1. Provide heating and cooling devices as needed to maintain specified conditions for construction operations.

D. Temporary Ventilation

1. Ventilate enclosed areas to achieve curing of materials, to dissipate humidity, and to prevent accumulation of dust, fumes, vapors, or gases.

E. Temporary Water Service

1. CONTRACTOR shall provide for all his workers on the project, adequate and reasonably convenient uncontaminated drinking water supply. All facilities shall comply with the regulations of the local and State Departments of Health.
2. CONTRACTOR shall be responsible for arranging for water, both potable and non-potable water.
3. When water is taken from a city water system or any other potable water supply source for construction purposes, suitable precautions shall be taken to prevent cross connections and contamination of the water supply.

F. Temporary Sanitary Facilities: CONTRACTOR shall provide and maintain sanitary facilities for his employees and his subcontractors' employees that will comply with the regulations of the local and State Departments of Health.

1.3 TEMPORARY CONTROLS

A. Barriers: Provide barriers as necessary to prevent unauthorized entry to construction areas and to protect existing facilities and adjacent properties from damage from

construction operations. Protect non-owned vehicular traffic, stored materials, site, and structures from damage.

B. Project Security

1. CONTRACTOR shall make all necessary provisions to protect the project and CONTRACTOR's facilities from fire, theft, and vandalism, and the public from unnecessary exposure to injury.
2. Entry Control:
   a. Restrict entrance of persons and vehicles into Project site.
   b. Allow entrance only to authorized persons.

C. Dust Control: Execute Work by methods to minimize raising dust from construction operations. Provide positive means to prevent air-borne dust from dispersing into the atmosphere. Give all unpaved streets, roads, detours, or haul roads used in the construction area an approved dust-preventive treatment or periodically water to prevent dust. Applicable environmental regulations for dust prevention shall be strictly enforced.

D. Pest Control: Provide methods, means, and facilities to prevent rodents, pests, and insects from damaging the Work.

E. Pollution Control: Provide methods, means, and facilities to prevent contamination of soil, water, and atmosphere from discharge of noxious, toxic substances, and pollutants produced by construction operations. All chemicals used during construction or furnished for project operation whether defoliant, soil sterilant, herbicide, pesticide, disinfectant, polymer, reactant or of other classification, shall show approval of the U.S. Department of Agriculture. Use of all such chemicals and disposal of residues shall be in strict accordance with the printed instruction of the manufacturer.

F. Protection of Work: CONTRACTOR shall protect installed work and provide special protection where specified in individual specifications sections. CONTRACTOR shall provide temporary and removable protection for installed products and shall control activity in immediate work area to minimize damage.

G. Open Burning: No open burning of waste materials will be allowed.

H. Explosives and Blasting: The use of explosives on the work will not be permitted.

I. Noise Abatement: In inhabited areas, particularly residential, operations shall be performed in a manner to minimize unnecessary noise generation.

1.4 CONSTRUCTION FACILITIES

A. VEHICULAR ACCESS

1. Construct temporary access roads from public thoroughfares to serve construction area, of width and load bearing capacity to accommodate unimpeded traffic for construction purposes.
2. Extend and relocate vehicular access as Work progress requires, provide detours as necessary for unimpeded traffic flow.
3. Location of temporary access roads and detours shall be approved by ENGINEER.

4. Provide unimpeded access for emergency vehicles.
5. Provide and maintain access to fire hydrants and control valves free of obstructions.
6. Provide means of removing mud from vehicle wheels before entering streets.
7. When possible, use existing on-site roads for construction traffic.

B. Progress Cleaning

1. CONTRACTOR shall maintain areas free of waste materials, debris, and rubbish. Maintain the site in a clean and orderly condition. Upon completion of work, repair all damage caused by equipment and leave the project site free of rubbish or excess materials of any kind.
2. Thoroughly clean all spilled dirt, gravel, or other foreign materials caused by the construction operations from all streets and roads at the conclusion of each day's operation.
3. It shall be the responsibility of CONTRACTOR to promptly clean up and remove any oil and/or fuel spills caused by CONTRACTOR or his Sub-contractors during the project. Contaminated soil shall be properly disposed of by CONTRACTOR in accordance with all applicable laws. CONTRACTOR shall be responsible for any damages to OWNER resulting from CONTRACTOR's negligence in promptly cleaning up said spills.

1.5 REMOVAL OF UTILITIES, FACILITIES, AND CONTROLS

A. Prior to Final Application for Payment, CONTRACTOR shall remove temporary above grade or buried utilities, equipment, facilities, and materials; clean and repair damage caused by installation or use of temporary work; and restore existing facilities used during construction to original condition.

1.6 CULTURAL RESOURCES

A. CONTRACTOR's attention is directed to the National Historic Preservation Act of 1966 (16 U.S.C. 470) and 36 CFR 800 which provides for the preservation of potential historical architectural, archeological, or cultural resources (hereinafter called "cultural resources").

B. CONTRACTOR shall conform to the applicable requirements of the National Historic Preservation Act of 1966 as it relates to the preservation of cultural resources.

C. If a suspected or unsuspected historical, archaeological, or paleontological item, feature, or site or other cultural resource is encountered during subsurface excavations at the site of construction, the following procedures shall be instituted:

1. Construction operations shall be immediately stopped in the vicinity of the discovery and ENGINEER and OWNER shall be notified of the nature and exact location of the finding. CONTRACTOR shall not damage the discovered objects and shall provide written confirmation of the discovery to ENGINEER within two (2) calendar days.
2. OWNER and ENGINEER will then immediately notify the State Historical Preservation Office (SHPO) and the Utah Geological Survey (UGS).
3. SHPO and UGS will investigate the finding and determine if the resource requires protection and the disposition of the said resource.

D. If SHPO and UGS determine that the potential find is a bona fide cultural resource, CONTRACTOR shall suspend work at the location of the find under the provisions for changes contained in Articles 11, 12, and 13 of Section 00 72 00 – General Conditions.

PART 2 PRODUCTS (Not Used)

PART 3 EXECUTION (Not Used)

- END OF SECTION –

SECTION 01 60 00
PRODUCT REQUIREMENTS

PART 1 GENERAL

1.1 PRODUCTS

A. Furnish products of qualified manufacturers suitable for intended use. Furnish products of each type by single manufacturer unless specified otherwise.

B. Do not use materials and equipment removed from existing premises, except as specifically permitted by Contract Documents.

C. Furnish interchangeable components from same manufacturer for components being replaced.

1.2 PRODUCT DELIVERY REQUIREMENTS

A. Transport and handle products in accordance with manufacturer's instructions.

B. Promptly inspect shipments to ensure products comply with requirements, quantities are correct, and products are undamaged.

C. Provide equipment and personnel to handle products by methods to prevent soiling, disfigurement, or damage.

1.3 PRODUCT STORAGE AND HANDLING REQUIREMENTS

A. Store and protect products in accordance with manufacturers' instructions.

B. Store with seals and labels intact and legible.

C. Store sensitive products in weather tight, climate controlled, enclosures in an environment favorable to product.

D. For exterior storage of fabricated products, place on sloped supports above ground.

E. Cover products subject to deterioration with impervious sheet covering. Provide ventilation to prevent condensation and degradation of products.

F. Store loose granular materials on solid flat surfaces in well-drained area. Prevent mixing with foreign matter.

G. Provide equipment and personnel to store products by methods to prevent soiling, disfigurement, or damage.

H. Arrange storage of products to permit access for inspection. Periodically inspect to verify products are undamaged and are maintained in acceptable condition.

1.4 PRODUCT OPTIONS

A. Products Specified by Reference Standards or by Description Only: Any product meeting those standards or description.

B. Products Specified by Naming One or More Manufacturers: Products of one of manufacturers named and meeting specifications, no options or substitutions allowed.

C. Products Specified by Naming One or More Manufacturers with Provision for Substitutions: Submit request for substitution for any manufacturer not named in accordance with the following article.

1.5 PRODUCT SUBSTITUTION PROCEDURES

A. ENGINEER will consider requests for Substitutions only after Notice of Award.

B. Substitutions may be considered when a product becomes unavailable through no fault of CONTRACTOR.

C. Document each request with complete data substantiating compliance of proposed Substitution with Contract Documents.

D. A request constitutes a representation that CONTRACTOR:

1. Has investigated proposed product and determined that it meets or exceeds quality level of specified product.
2. Will provide same warranty for Substitution as for specified product.
3. Will coordinate installation and make changes to other Work which may be required for the Work to be complete with no additional cost to OWNER.
4. Waives claims for additional costs or time extension which may subsequently become apparent.
5. Will reimburse OWNER for review or redesign services associated with re-approval by authorities having jurisdiction.

E. Substitutions will not be considered when they are indicated or implied on Shop Drawing or Product Data submittals, without separate written request, or when acceptance will require revision to Contract Documents.

F. Substitution Submittal Procedure:

1. Submit four copies of request for Substitution for consideration to ENGINEER.
2. Submit Shop Drawings, Product Data, and certified test results attesting to proposed product equivalence. Burden of proof is on proposer.
3. ENGINEER may require CONTRACTOR to provide additional data about the proposed substitution.
4. ENGINEER will be the sole judge as to the type, function, and quality of any such substitution and ENGINEER’s decision shall be final.
5. ENGINEER will notify CONTRACTOR in writing of decision to accept or reject request.
6. Acceptance by ENGINEER of a substitution proposed by CONTRACTOR shall not relieve CONTRACTOR of the responsibility for full compliance with the Contract Documents and for the adequacy of the substitution.

PART 2 PRODUCTS (Not Used)

PART 3 EXECUTION (Not Used)

- END OF SECTION –

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SECTION 01 71 13
MOBILIZATION

PART 1 GENERAL

1.1 DESCRIPTION

A. This Section is provided to cover CONTRACTOR's cost of general and miscellaneous responsibilities and operations not normally attributed to, or included in, any other single bid item. This shall include, but not necessarily be limited to, work described or enumerated in this section under the following subsections.

1.2 MOVING TO AND FROM THE JOB SITE

A. This shall include CONTRACTOR's preliminary arrangement for starting and stopping construction operations, work schedules, and transportation of equipment and personnel to and from the project.

1.3 CLEAN-UP

A. The cost of all clean-up work as specified and not covered under other items shall be included in the Bid. Values shall be included in the Bid Schedule, lump-sum price, for "Mobilization/Demobilization".

1.4 TEMPORARY UTILITIES

A. The cost of water, power, etc. required by CONTRACTOR in performing the Work specified in the Contract shall be included in the Bid. Values shall be included in the Bid Schedule, lump-sum price, for "Mobilization/Demobilization".

1.5 PERFORMANCE BOND, PAYMENT BOND, AND INSURANCE

A. The cost of the Performance Bond, Payment Bond, and any required insurance and/or other miscellaneous cost associated with this Project shall be included with the Bid. Values shall be included in the Bid Schedule, lump-sum price, for "Mobilization/Demobilization".

1.6 PERMITS

A. CONTRACTOR shall provide all necessary permits for completion of the Work. Values shall be included in the Bid Schedule, lump-sum price, for "Mobilization/Demobilization".

1.7 PRE-CONSTRUCTION VIDEO RECORDS

A. CONTRACTOR is required to produce a preconstruction video recording of areas where Work is to be performed. The video record shall be of professional quality and the coverage shall be such, as to allow accurate determination of location, size, and conditions, etc. of existing features and improvements within the rights-of-way. CONTRACTOR shall provide OWNER with a copy of the rights-of-way video in electronic format on a digital video disc (DVD) or solid-state drive (USB or Thumb Drive) before construction begins.

PART 2 PRODUCTS (Not Used)

PART 3 EXECUTION (Not Used)

- END OF SECTION –

SECTION 01 75 16
STARTUP AND TESTING

PART 1 GENERAL

1.1 DESCRIPTION

A. CONTRACTOR shall be responsible for testing and demonstrating the proper operation of all equipment, controls, alarms, and appurtenances to the satisfaction of OWNER and ENGINEER per the requirements outlined below.

1.2 RELATED WORK

A. Related work specified in other Sections includes, but is not limited to:

1. Section 01 33 00 Submittal Procedures

1.3 SUBMITTALS

A. Submit the following in accordance with Section 01 33 00 Submittal Procedures:

1. Test reports shall be submitted in accordance with paragraphs entitled, “Factory Tests”, “Functional Test”, and “Final Acceptance Test,” of this Section.
2. Test procedures and the recording forms shall be submitted according to paragraph entitled, “Test Procedures.
3. Submittal material for each system shall consist of the following:
   a. A complete description of CONTRACTOR’s plan for documenting the results from the test program including sample forms for documenting the results of field pressure and performance tests.
   b. Pre-operational check-out procedures, reviewed and approved by the respective equipment manufacturers.
   c. Detailed testing plans, setting forth step-by-step descriptions of the procedures proposed by CONTRACTOR for the systematic testing of all equipment and systems installed under this Contract.
   d. A schedule and subsequent updates, presenting CONTRACTOR’s plan for testing the equipment and systems installed under this Contract.

B. TEST PLANS: CONTRACTOR shall develop test plans detailing the coordinated, sequential testing of each item of equipment and system installed under this Contract. Each test plan shall be specific to the item of equipment or system to be tested. Test plans shall identify by specific item of equipment, each device or control station to be manipulated or observed during the test procedure and the specific results to be observed or obtained. Test plans shall also be specific as to support systems required to complete the test work, temporary systems required during the test work, subcontractors’ and manufacturers’ representatives are to be present through the expected test duration. As a minimum, the test plans shall include the following features:

1. Step-by-step proving procedure for all control and electrical circuits by imposing low voltage currents and using appropriate indicators to affirm that the circuit is properly identified and connected to the proper device.
2. Calibration of all analysis instruments and control sensors.

3. Performance testing of each individual item of mechanical, electrical, and instrumentation equipment. Performance tests shall be selected to duplicate the operating conditions described in the project manual.
4. System tests designed to duplicate, as closely as possible, operating conditions described in the Project Manual.

C. Test plans shall contain a complete description of the procedures to be employed to achieve the desired test environment.

D. Tests Required

1. Tests shall be performed to verify proper functioning of the following items:
   a. (4) Dry Pit Chopper Pumps
   b. (2) Flowmeters
   c. Radar Level Transducer
   d. Exhaust Fan

2. If under test, any portion of the Work should fail to fulfill the Contract requirements and is adjusted, altered, renewed, or replaced, tests on that portion when so adjusted, altered, removed, or replaced, together with all other portions of the Work as are affected thereby, shall unless otherwise directed by OWNER, be repeated within reasonable time and in accordance with the specified conditions. CONTRACTOR shall pay to OWNER all reasonable expenses incurred by OWNER, including the costs of OWNER, as a result of repeating such tests.

C. Factory Tests

1. Tests shall be performed at the factory to verify proper build. Provide letter from manufacturer indicating test performance was within acceptable limits. These test results will be used in the "Final Acceptance Test" section to verify no shipping damage and proper installation.

D. Functional Test

1. CONTRACTOR shall perform "in-house" tests to verify that the systems and components have been properly installed and are functioning properly. Tests shall be performed in the presence of ENGINEER. Tests shall be completed and found acceptable when system has performed per other sections and referenced industry standards.

E. Final Acceptance Test

1. CONTRACTOR shall perform a formal test at each site with full documentation using the approved recording form. ENGINEER will witness this test and issue a written final acceptance. Final test data shall be provided to ENGINEER. Data shall have a cover letter/sheet clearly marked with the system name, date, and the words "Final Test Data - Forward to the Systems Operator for inclusion in the Maintenance Database."

E. Test Procedures

1. Test procedure and recording forms that document the test steps shall be submitted for approval to ENGINEER ten (10) calendar days prior to the proposed test date.

Procedure shall consist of step-by-step instruction to verify system parameters, components, and functions.

1.4 COMMISSIONING

A. After completion of all testing, CONTRACTOR shall make written application to ENGINEER for permission to demonstrate compliance of the equipment and systems furnished and installed under this Contract with all requirements of the Project Manual. Such application shall be furnished to ENGINEER not less than ten (10) days prior to startup of completed portions of the facility. Upon receipt of written permission from ENGINEER, and on the agreed upon date, CONTRACTOR shall do all things necessary to permit adequate operation of the facilities.

B. CONTRACTOR shall allow for a commissioning period as set forth in Part 3 to satisfy ENGINEER that the Contract requirements have been fulfilled. The commissioning period may be broken into several segments comprising complete systems at the discretion of ENGINEER.

C. During the commissioning period, OWNER will provide a full-time (8 hours daily) staff for operation and maintenance of the facility. CONTRACTOR shall provide on-call (24 hours, 7 days per week) coordinator to coordinate other CONTRACTOR personnel including equipment manufacturer service representatives for troubleshooting, training of OWNER personnel, or repair and maintenance of equipment within the terms of the Contract. CONTRACTOR provided personnel for troubleshooting, repair or maintenance of equipment shall be provided as soon as possible and in no case longer than 8 hours after notification from CONTRACTOR's coordinator. Such coordinators shall be familiar with the facility equipment and operations and shall be acceptable to ENGINEER. "Coordinator service" shall mean attendance at the site for whatever period is required at whatever time necessary in response to a request from ENGINEER. In addition, CONTRACTOR shall provide the services of one laborer on-call for 8-hour shift, 5 days per week during the commissioning period to assist OWNER personnel in general cleanup and maintenance.

D. OWNER will pay for all electrical power and water necessary for operation of the facility during commissioning.

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION

3.1 Final Acceptance Test Duration

A. The duration of the Final Acceptance Test shall be one (1) day. Each day the complete facility shall be operated for 8 continuous hours. During that period, CONTRACTOR shall demonstrate the operation of all equipment and all systems installed under this Contract. Commissioning period for the first two pumps shall be five (5) days. Removal of the existing pumps shall not occur until after successful startup and commissioning of the first two new pumps. Commissioning period for the replacement pumps shall be five (5) days and shall commence from the date of substantial completion of the facility.

- END OF SECTION -

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SECTION 01 78 50
PROJECT CLOSEOUT

PART 1 GENERAL

1.1 FINAL CLEANUP

A. CONTRACTOR shall promptly remove from the vicinity of the completed Work all rubbish, unused materials, concrete forms, construction equipment, and temporary structures and facilities used during construction. Final acceptance of the Work by OWNER will be withheld until CONTRACTOR has satisfactorily complied with the foregoing requirements for final cleanup of the Project Site.

1.2 TOUCH-UP AND REPAIR

A. CONTRACTOR shall touch up or repair all finished surfaces on structures, equipment, fixtures, etc., that have been damaged prior to final acceptance. Surface on which such touch-up or repair cannot be successfully accomplished shall be completely refinished or in the case of hardware and similar small items, the item shall be replaced.

1.3 CLOSEOUT TIMETABLE

A. CONTRACTOR shall establish dates for equipment testing, acceptance periods, and on-site instructional periods (as required under the Contract). Such dates shall be established not less than one week prior to beginning any of the foregoing items, to allow OWNER, ENGINEER, and their authorized representatives sufficient time to schedule attendance at such activities.

1.4 MAINTENANCE AND GUARANTEE

A. CONTRACTOR shall comply with the maintenance and guarantee requirements contained in Article 7.17 of the General Conditions, Section 00 72 00.

B. Replacement of earth fill or backfill, where it has settled below the required finish elevations, shall be considered as part of such required repair work, and any repair or resurfacing which becomes necessary by reason of such required repair work shall be completed by CONTRACTOR at no cost to OWNER.

C. CONTRACTOR shall make all repairs and replacements promptly upon receipt of written order from OWNER. If CONTRACTOR fails to make such repairs or replacement promptly, OWNER reserves the right to do the work and CONTRACTOR and his surety shall be liable to OWNER for the cost thereof.

D. CONTRACTOR shall obtain a signed release from the property owner approving restoration of work in the construction easements across or bordering private property.

1.5 BOND

A. CONTRACTOR shall provide a bond to guarantee performance of the provisions contained in Paragraph "Maintenance and Guarantee" above, and Article 6 of the General Conditions, Section 00 72 00.

1.6 FINAL ACCEPTANCE

A. Final acceptance and final payment shall not be made until all provisions of the General Conditions Section 00 72 00 Article 15.06 have been satisfied.

1.7 PROJECT RECORD DOCUMENTS

A. Maintain on site one set of the following record documents; record actual revisions to the Work:

1. Drawings.
2. Specifications.
3. Addenda.
4. Change Orders and other modifications to the Contract.
5. Reviewed Shop Drawings, Product Data, and Samples.
6. Manufacturer's instruction for assembly, installation, and adjusting.

B. Ensure entries are complete and accurate, enabling future reference by OWNER.

C. Store record documents separate from documents used for construction.

D. Record information concurrent with construction progress, not less than weekly.

E. Specifications: Legibly mark and record at each product section description of actual products installed, including the following:

1. Manufacturer's name and product model and number.
2. Product substitutions or alternates utilized.
3. Changes made by Addenda and modifications.

F. Record Drawings: Legibly mark each item to record actual construction including:

1. Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
2. Measured locations of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of the Work.
3. Field changes of dimension and detail
4. Details not on original Contract drawings

G. Submit documents to ENGINEER with claim for final Application for Payment.

1.8 CONTRACT CLOSEOUT

A. As a condition precedent to final acceptance of the project, CONTRACTOR shall complete the following forms and submit the original and two copies of each form to the Project Representative.

1. Contractor’s Certificate of Substantial Completion
2. Contractor’s Certificate of Final Completion
3. Contractor’s Final Waiver of Lien
4. Consent of Surety for Final Payment
5. Affidavit of Payment
6. Affidavit of Release of Liens by the Contractor

PART 2 PRODUCTS (Not Used)

PART 3 EXECUTION (Not Used)

CONTRACTOR'S CERTIFICATE OF SUBSTANTIAL COMPLETION

OWNER

TO: Name
Address
City, State, Zip Code

PROJECT: _____

ATTENTION: _____

FROM: _____
Firm or Corporation

This is to certify that I, _____ am an authorized official of _____ working in the capacity of _____ and have been properly authorized by said form or corporation to sign the following statements pertaining to the subject contract.

I know of my own personal knowledge, and do hereby certify, that the work of the Contract described above has been substantially performed, and materials used and installed to date in accordance with, and in conformity to, the Contract drawings and specifications. A list of all incomplete work is attached.

The Contractor hereby releases the Owner and its agents from all claims and liability to the Contractor for anything done or finished for or relating to the Work, as specified in the Project Manual, except demands against the Owner for the remainder of progress payments retained to date, and unresolved written claims prior to this date.

The Contract Work is now substantially complete, ready for its intended use, and ready for your inspection. You are requested to issue a Certificate of Substantial Completion.

Signature: _____

Date: _____

CONTRACTOR'S CERTIFICATE OF FINAL COMPLETION

OWNER

TO:
Name
Address
City, State, Zip Code

PROJECT: _____

ATTENTION: _____

FROM: _____
Firm or Corporation

This is to certify that I, _____ am an authorized official of _____ _____ working in the capacity of _____ _____ and have been properly authorized by said form or corporation to sign the following statements pertaining to the subject contract.

I know of my own personal knowledge, and do hereby certify, that the work of the Contract described above has been substantially performed, and materials used and installed to date in accordance with, and in conformity to, the Contract drawings and specifications.

The Contractor hereby releases the Owner and its agents from all claims and liability to the Contractor for anything done or finished for or relating to the Work. The Contract Work is now complete in all parts and requirements, ready for its intended use, excepting the attached list of minor deficiencies and the reason for each being incomplete to date, for which exemption from final payment requirements is requested (if no exemptions requested, write "none") _____. The Work is now ready for your final inspection. The following items are required from the Contractor prior to application for final payment and are submitted herewith, if any:

_____

_____

I understand that neither the issuance, by the Owner, or a Certificate of Final Completion, nor the acceptance thereof by the Owner, shall operate as a bar claim against the Contractor under the terms of the guarantee provisions of the Contract Documents.

Signature: _____
Date: _____

CONTRACTORS FINAL WAIVER OF LIEN

TO ALL WHOM IT MAY CONCERN:

WHEREAS, the undersigned has furnished labor and materials for (A) _____

_____

in the City of _____, County of _____, State of Utah, of which City of _____ is the Owner.

NOW THEREFOR, this _____ day of _____, 20_____, for and in consideration of the sum of (B) _____ dollars paid simultaneously herewith, the receipt whereof is hereby acknowledged by the undersigned, the undersigned does hereby waive and release any lien* right to, or claim of lien with respect to and on said above described premises, and the improvements thereon, and on the monies or other consideration due or to become due from the Owner, on account of labor, services, materials, fixtures, apparatus or machinery heretofore or which may hereafter be furnished by the undersigned to or for the above described premises by virtue of said contract.

(C) _____ (SEAL)
(Name of sole ownership, corporation or partnership)

(C) _____ (SEAL)
(Signature of Authorized Representative)

Title: _____

INSTRUCTION FOR FINAL WAIVER:

A. Project name.

B. Final Contract amount received (total amount of Contract as adjusted).

C. If the waiver is for a corporation, corporate name should be used, corporate seal affixed, and title of officer signing waiver should be set forth; if waiver is for a partnership, the partnership name should be used, partner should sign and designate himself/herself as partner.

* The word Lien as used herein shall include Stop Orders, Stop Notices, or Freeze Orders on monies or other consideration of the Owner which are due or are to become due on the Contract referenced above.

CONSENT OF SURETY FOR FINAL PAYMENT

Project Name: _____

Location: _____

Type of Contract: _____

Amount of Contract: _____

In accordance with the provisions of the above named contract between the Owner and the Contractor, the following named surety:

_____

_____

_____

on the Payment Bond of the following named Contractor:

_____

_____

_____

hereby approves of final payment to the Contractor, and further agrees that said final payment to the Contractor shall not relieve the Surety Company named herein of any of its obligations to the following named Owner (as set forth in said Surety Company's bond):

Owners Name
Owners Address
City, State, Zip Code

IN WITNESS WHEREOF, the Surety Company has hereunto set its hand and seal this _ day of _____, 20___.

_____
(Name of Surety Company)

_____
(Signature of Authorized Representative)

Title: _____

AFFIDAVIT OF PAYMENT

TO ALL WHOM IT MAY CONCERN:

WHEREAS, the undersigned has been employed by (Insert Owners Name) to furnish labor and materials under a contract dated _____ for the project named _____ _____ in the City of _____County of _____, State of Utah.

NOW THEREFORE, this _____ day of _____ , 20____, the undersigned, as the Contractor for the above named Contract pursuant to the conditions of the Contract, hereby certifies that, except as listed below, he has paid in full or has otherwise satisfied all obligations for all materials and equipment furnished, for all work, labor, and services performed, and for all known indebtedness and claims against the Contractor for damages arising in any manner in connection with the performance of the Contract referenced above for which the Owner or its property might in any way be held responsible.

EXCEPTIONS: (If none, write “none”. If required by the Owner, the Contractor furnish bond satisfactory to the Owner for each exception).

{AFFIX CORPORATE}
{SEAL HERE}

_____
Contractor (Name of sole ownership, Corporation or partnership)

_____
(Signature of Authorized Representative)

Title: _____

AFFIDAVIT OF RELEASE OF LIENS BY THE CONTRACTOR

TO ALL WHOM IT MAY CONCERN:

WHEREAS, the undersigned has been employed by (Insert Owners Name) to furnish labor and materials under a contract dated _____ for the project named _____ _____ in the City of _____County of , State of Utah.

NOW THEREFOR, this _____ day of _____ , 20_____, the undersigned, as the Contractor for the above named Contract pursuant to the conditions of the Contract, hereby certifies that to the best of his/her knowledge, information and belief, except as listed below, the Releases or Waivers of Lien* attached hereto include the Contractor, all subcontractors, all suppliers of material and equipment, and all performers of work, labor or services, who have or may have liens against any property of the Owner and on the monies or other consideration due to becomes due from the Owner arising in any manner in connection with the performance of the Contract referenced above.

EXCEPTIONS: (If none, write "none". If required by the Owner, the Contractor furnish bond satisfactory to the Owner for each exception).

ATTACHMENTS:

1. Contractor's Release or Waiver of Liens, conditional upon receipt of final payment.

2. Separate Release or Waiver of Liens from subcontractors and material suppliers.

{AFFIX CORPORATE}
{SEAL HERE}

_____
Contractor (Name of sole ownership, Corporation or partnership)

_____
(Signature of Authorized Representative)

Title: _____

* The word Lien as used herein shall include Stop Orders, Stop Notices, or Freeze Orders on monies or other consideration of the Owner which are due or are to become due on the Contract referenced above.

- END OF SECTION -

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SECTION 02 41 00
DEMOLITION

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:

1. Demolishing designated piping
2. Salvage existing pumps to OWNER
3. Removing demolished materials

B. See Electrical Specifications for required demolition of electrical equipment.

1.2 RELATED WORK

A. Related Work in other Sections includes, but is not limited to:

1. Section 01 33 00 Submittal Procedures

1.3 SUBMITTALS

A. Provide Submittals in accordance with Section 01 33 00 – Submittal Procedures.

B. Shop Drawings and Schedule: Describe demolition, removal procedures, sequence and schedule, and off-site disposal location(s).

C. Submit designs for bracing, shoring, and supporting existing piping.

PART 2 PRODUCTS

2.1 MATERIALS

A. Structural and piping modifications shall include the materials noted in the specific Sections related to the changes.

PART 3 EXECUTION

3.1 CLEAN UP

A. Remove demolished materials from site as work progresses.

B. Salvage existing pumps and motors to the City Public Works Building.

C. Leave areas of work in clean condition.

- END OF SECTION –

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SECTION 03 10 00
CONCRETE FORMING AND ACCESSORIES

PART 1 GENERAL

1.1 SUMMARY

A. This Section covers the work necessary to furnish, install, and complete, the concrete formwork.

1.2 RELATED WORK

A. Related Work in other Sections includes, but is not limited to:

1. Section 01 33 00 Submittal Procedures
2. Section 03 30 00 Cast-in-Place Concrete

1.3 REFERENCES

A. The latest edition of the following publications form a part of this Specification to the extent referenced. The publications are referred to in the text by basic designation only.

1. American Concrete Institute (ACI) -ACI 347R- Guide to Formwork for Concrete
2. American Hardboard Association (AHA) -AHA A135.4- Basic Hardboard
3. Department of Commerce (DOC) -DOC PS 1- Structural Plywood
4. ACI 350R-01 – Code Requirements for Environmental Engineering Concrete Structures and Commentary
5. NSF International (NSF) 61 - Drinking Water System Components - Health Effects

1.4 DESIGN

A. Formwork shall be designed in accordance with methodology of ACI 347R for anticipated loads, lateral pressures, and stresses. Forms shall be capable of producing a surface which meets the requirements of the finish specified in Section 03 30 00 Cast-in-Place Concrete. Forms shall be capable of withstanding the pressures resulting from placement and vibration of concrete.

1.5 SUBMITTALS

A. Provide submittals in accordance with Section 01 33 00 – Submittal Procedures.

B. The following shall be submitted:

1. Drawings showing details of forming, shoring and bracing for footings, walls, and floors shall be submitted to ENGINEER at least 3 weeks prior to their use. Drawings showing details of formwork shall include joints, supports, studding and shoring, and sequence of form and shoring removal.
2. If requested by ENGINEER, design analysis and calculations shall be submitted for form design and methodology used in the design. The analysis and calculations shall verify the selection of form ties, horizontal and vertical stiff-backs or braces for wall panels, forming and form openings, or any other part of forming, shoring or bracing which may be considered critical by ENGINEER.

3. Manufacturer's data including literature describing form materials, accessories, and form releasing agents.
4. Manufacturer's recommendation on method and rate of application of form releasing agent.

C. ENGINEER's review will not relieve CONTRACTOR from any responsibility as to the adequacy of the forming, shoring and bracing design. Any formwork installed by CONTRACTOR shall be solely at CONTRACTOR's risk. ENGINEER's review will not lessen or diminish CONTRACTOR's liability.

PART 2 PRODUCTS

2.1 FORM MATERIALS

A. Slab-on-Grade:

1. Lumber, steel, or plywood forms.

B. Other:

1. Shall be the same as wall forms or other as approved by ENGINEER.

C. Rustication (Reveal Strips) and Chamfer Strips: Wood or nonabsorbent material, compatible with the form surface, fully sealed on all sides prohibiting loss of cement paste or water between the two surfaces. The manufacturer shall be **Sylvan Products, LLC, Victory Bear Construction Products, Nox-Crete, Superior Profiles,** or approved equal.

2.2 FORM TIES

A. Form ties on exposed surfaces shall be located in a uniform pattern. Snap ties shall not be broken until the concrete has reached the design concrete strength. The use of tie wires as form ties will not be permitted. Snap ties, designed so that the ends must be broken off before the forms can be removed, shall not be used. Form ties shall be **Plastic Cone Snap Tie by Dayton-Superior, Wrench Head Snap Tie by MASCO Mason Supply,** or approved equal.

B. Taper ties with plastic or rubber plugs of an approved and proven design may also be used. The plugs must be driven into the hole with a steel rod, placed in a cylindrical recess made therefore in the plug. At no time shall plugs be driven on the flat area outside the cylindrical recess. Taper ties shall be **Taper Tie by Dayton-Superior, Taper-Tie by MASCO Mason Supply**, or approved equal.

C. Taper Tie Plug:

1. Design and size of the plug shall allow insertion with the insertion tool to elongate the plug while inserting and which will return to the approximate original size to form a watertight seal. Plug shall be soft PVC or EPDM and rated for a minimum hydrostatic pressure of 275 feet. The manufacturer shall be **Dayton Superior A58 Sure Plug, Sika X-Plug, Corkjoint CJ,** or approved equal.

2.3 FORM RELEASING AGENTS

A. Form releasing agents shall be commercial formulations that will not bond with, stain or adversely affect concrete surfaces. Agents shall not impair subsequent treatment of concrete surfaces depending upon bond or adhesion nor impede the wetting of surfaces to be cured with water or curing compounds. Agent shall be a ready-to-use water-based material containing no mineral oil of organic solvents. Form release agents shall be **BASF Master Finish RL 211, Euclid Chemical Formshield WB, WR Meadows Duogard II,** or approved equal.

PART 3 EXECUTION

3.1 INSTALLATION

A. Forms shall be mortar tight, properly aligned and adequately supported to produce concrete surfaces meeting the surface requirements specified in Section 03 30 00 Cast-in-Place Concrete. Forms shall be used, whenever necessary, to confine the concrete, to shape the concrete to the required lines and grades, and to obtain a thoroughly compacted dense concrete through proper vibrating. The forms shall have sufficient strength and rigidity to hold the concrete and to withstand the necessary pressure, tamping and vibration, without deflection from the prescribed lines. Where forms for continuous surfaces are placed in successive units, care shall be taken to fit the forms over the completed surface so as to obtain accurate alignment of the surface and to prevent leakage of mortar.

B. The surfaces of all forms in contact with the concrete shall be clean, rigid, tight and smooth. All dirt, chips, sawdust, mud, water and other foreign matter shall be removed from within the forms or within the excavated areas, before any concrete is deposited therein.

C. Forms shall not be reused if there is any evidence of surface wear and tear or defects which would impair the quality of the surface. Surfaces of forms to be reused shall be thoroughly cleaned of mortar from previous concreting and of all other dirt and foreign matter before reuse. Form ties that are to be completely withdrawn shall be coated with a nonstaining bond breaker.

3.2 COATING

A. Form inside surfaces shall be coated with a form releasing agent before the form or reinforcement is placed in final position. The coating shall be used as recommended in the manufacturer's printed or written instructions. Surplus coating on form surfaces and coating on reinforcing steel and construction joints shall be removed before placing concrete.

3.3 ALIGNMENT AND TOLERANCES

Forms shall be properly aligned and adequately supported to produce concrete surfaces conforming to construction tolerance given in Table 03 10 00-1 - Tolerances for Formed Surfaces.

TABLE 03 10 00-1
TOLERANCES FOR FORMED SURFACES

Condition	Measurement	Tolerance
1. Variations from the plumb:	In any 10 feet of length	1/4-inch
a. In the lines and surfaces of columns, piers, walls and in arises	Maximum for entire length	1-inch
b. For exposed corner columns, control-joint grooves, and other conspicuous lines	In any 20 feet of length Maximum for entire length	1/4-inch 1/2-inch
2. Variation from the level or from the grades indicated on the drawings	In any 10 feet of length In any bay or in any 20 feet of length	1/4-inch 3/8-inch
3. Variation of the linear building lines from established position in plan	In any 20 feet Maximum	1/2-inch 1-inch
4. Variation of distance between walls, columns, partitions	1/4-inch per 10 feet of distance, but not more than 1/2-inch in any one bay, and not more than 1-inch total variation	

3.4 FORM REMOVAL

A. Forms shall be removed in a manner that will prevent injury to the concrete and ensure the complete safety of the structure.

B. CONTRACTOR shall remove all wood splinters on concrete surfaces after stripping of wood forms.

- END OF SECTION -

SECTION 03 20 00
CONCRETE REINFORCEMENT

PART 1 GENERAL

1.1 SUMMARY

A. This Section covers the steel reinforcement bars and dowels for use in reinforced cast-in-place concrete.

1.2 RELATED WORK

A. Related Work in other Sections includes, but is not limited to:

1. Section 01 33 00 Submittal Procedures
2. Section 03 30 00 Cast-in-Place Concrete

1.3 REFERENCES

A. The latest edition of the following publications form a part of this Specification to the extent referenced. The publications are referred to in the text by basic designation only.

B. AMERICAN CONCRETE INSTITUTE (ACI)

1. ACI 301 Specifications for Structural Concrete
2. ACI 315 Details and Detailing of Concrete Reinforcement
3. ACI 318 Building Code Requirements for Structural Concrete and Commentary

C. AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

1. ASTM A 615 Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement.
2. ASTM A 767 Standard Specification for Zinc-Coated (Galvanized) Steel Bars for Concrete Reinforcement
3. ASTM A 775 Standard Specification for Epoxy-Coated Steel Reinforcing Bars

D. CONCRETE REINFORCING STEEL INSTITUTE (CRSI)

1. CRSI (DA4) Manual of Standard Practice (MSP-1)

1.4 SUBMITTALS

A. CONTRACTOR shall submit the following in accordance with Section 01 33 00 - Submittal Procedures:

1. Drawings of Concrete Reinforcement System with details showing reinforcing steel schedules, sizes, grades, and splicing and bending details. Drawings shall show support details including types, sizes and spacing.
2. Reinforcing Steel with certified copies of mill reports attesting that the reinforcing steel furnished meets the requirements specified, prior to the installation of reinforcing steel.

1.5 DELIVERY AND STORAGE

A. Reinforcement and accessories shall be stored off the ground on platforms, skids, or other supports.

PART 2 PRODUCTS

2.1 DOWELS

A. Dowels shall conform to ASTM A 615, Grade 60.

2.2 REINFORCING STEEL

A. Reinforcing steel shall be deformed bars conforming to ASTM A 615 grades and sizes as indicated. Cold drawn wire used for spiral reinforcement shall conform to ASTM A 1064. When no grade is indicated use 60 ksi grade steel. Special coated bars (epoxy and zinc) may be specified for use in a highly corrosive atmosphere where concrete cover is not considered sufficient, in which case reference to ASTM A 767 and A 775 will be included.

2.3 WIRE TIES

A. Wire ties shall be 16-gauge or heavier black annealed steel wire.

2.4 SUPPORTS

A. Bar supports for formed surfaces shall be designed and fabricated in accordance with CRSI (DA4) MSP-1 and shall be steel or precast concrete blocks. Precast concrete blocks shall be not less than 4 inches square when supporting reinforcement on ground. Precast concrete block shall have compressive strength equal to that of the surrounding concrete.

2.5 EPOXY ANCHOR GROUT

A. Epoxy for grouting reinforcing bars shall be specifically formulated for such application, for the moisture condition, application temperature, and orientation of the hole to be filled. Epoxy anchor grout shall meet the requirements of Section 03 60 00 – Grout.

PART 3 EXECUTION

3.1 GENERAL

A. All reinforcement steel, and other appurtenances shall be fabricated, and placed in accordance with the requirements of the Building Code and the requirements specified herein.

3.2 REINFORCEMENT

A. Reinforcement shall be fabricated to shapes and dimensions shown and shall conform to the requirements of ACI 318. Reinforcement shall be cold bent unless otherwise authorized. Bending may be accomplished in the field or at the mill. Bars shall not be bent after embedment in concrete.

B. Safety caps shall be placed on all exposed ends of vertical concrete reinforcement bars that pose a danger to life safety.

C. Placement:

1. Reinforcement shall be free from loose rust and scale, dirt, oil, or other deleterious coating that could reduce bond with the concrete.
2. Reinforcement shall be placed in accordance with ACI 318 at locations shown plus or minus one bar diameter. Reinforcement shall not be continuous through expansion joints and shall be as indicated through construction or contraction joints. Concrete coverage shall be as indicated or as required by ACI 318. If bars are moved more than one bar diameter to avoid interference with other reinforcement, conduits or embedded items, the resulting arrangement of bars, including additional bars required to meet structural requirements, shall be approved before concrete is placed.
3. All reinforcement steel shall be supported by concrete, plastic or metal supports, spacers or metal hangers which are strong and rigid enough to prevent any displacement of the reinforcement steel. Where concrete is to be placed on the ground, supporting concrete blocks (or dobies) shall be used, in sufficient numbers to support the bars without settlement, but in no case shall such support be continuous. All concrete blocks used to support reinforcement steel shall be tied to the steel with wire ties which are embedded in the blocks.
4. For concrete over formwork, CONTRACTOR shall furnish concrete, metal, plastic, or other acceptable bar chairs and spacers.
5. Limitations on the use of bar support materials shall be as follows.
   a. Concrete Dobies: permitted at all locations except where architectural finish is required.
   b. Wire Bar Supports: permitted only at slabs over dry areas, interior dry wall surfaces, and exterior wall surfaces.
   c. Plastic Bar Supports: permitted at all locations except on grade.
6. Tie wires shall be bent away from the forms in order to provide the specified concrete coverage.
7. Bars additional to those shown which may be found necessary or desirable by CONTRACTOR for the purpose of securing reinforcement in position shall be provided by CONTRACTOR at no additional cost to OWNER.
8. Epoxy coated reinforcing bars shall be stored, transported, and placed in such a manner as to avoid chipping of the epoxy coating. Specially coated bar supports shall be used. CONTRACTOR shall repair all chips or cracks in the epoxy coating with a compatible epoxy repair material prior to placing concrete.
9. Accessories supporting reinforcing bars shall be spaced such that there is no deflection of the accessory from the weight of the supported bars. When used to space the reinforcing bars from wall forms, the forms and bars shall be located so that there is no deflection of the accessory when the forms are tightened into position.

D. Splicing:

1. Splices of reinforcement shall conform to ACI 318 and shall be made only as required or indicated. Splicing shall be by lapping or by mechanical connection; except that lap splices shall not be used for bars larger than No. 11 unless otherwise indicated. Lapped bars shall be placed in contact and securely tied or spaced

transversely apart to permit the embedment of the entire surface of each bar in concrete. Lapped bars shall not be spaced farther apart than one-fifth the required length of lap or 6-inches. Mechanical butt splices shall be in accordance with the recommendation of the manufacturer of the mechanical splicing device. Butt splices shall develop 125 percent of the specified minimum yield tensile strength of the spliced bars or of the smaller bar in transition splices. Bars shall be flame dried before butt splicing. Adequate jigs and clamps or other devices shall be provided to support, align, and hold the longitudinal centerline of the bars to be butt spliced in a straight line.

3.3 DOWELS

A. Dowels shall be installed in slabs on grade at locations indicated and at right angles to the joint being doweled. Dowels shall be accurately aligned parallel to the finished concrete surface and rigidly supported during concrete placement.

3.4 EMBEDMENT OF DRILLED REINFORCING STEEL DOWELS

A. Dowel Epoxy Installation

1. The hole diameter shall be as recommended by the epoxy manufacturer but shall be no larger than 0.25 inch greater than the diameter of the outer surface of the reinforcing bar deformations.
2. The depth of the hole shall be as recommended by the epoxy manufacturer to fully develop the bar but shall not be less than 12 bar diameters, unless noted otherwise.
3. The hole shall be drilled by methods which do not interfere with the proper bonding of epoxy.
4. Existing reinforcing steel in the vicinity of proposed holes shall be located prior to drilling. The location of holes to be drilled shall be adjusted to avoid drilling through or damaging any existing reinforcing bars.
5. The hole shall be blown clean with clean, dry compressed air to remove all dust and loose particles.
6. Epoxy shall be injected into the hole through a tube placed to the bottom of the hole. The tube shall be withdrawn as epoxy is placed but kept immersed to prevent formation of air pockets. The hole shall be filled to a depth that ensures that excess material will be expelled from the hole during dowel placement.
7. Dowels shall be twisted during insertion into the partially filled hole to guarantee full wetting of the bar surface with epoxy. CONTRACTOR shall insert the bar slowly enough to avoid developing air pockets.

3.5 CLEANING AND PROTECTION

A. CONTRACTOR shall protect reinforcement steel from conditions conducive to corrosion until concrete is placed.

B. The surfaces of all reinforcement steel to be in contact with concrete shall be thoroughly cleaned of all dirt, grease, loose scale and rust, grout, mortar, and other foreign substances immediately before the concrete is placed. Where there is a delay in placing concrete, reinforcement shall be reinspected and if necessary, recleaned.

- END OF SECTION -

SECTION 03 30 00
CAST-IN-PLACE CONCRETE

PART 1 GENERAL

1.1 SUMMARY

A. This Section covers cast-in-place concrete mix design and placement.

B. CONTRACTOR shall provide cast-in-place concrete as indicated in the Specifications and the Contract Drawings.

1.2 RELATED WORK

A. Related Work specified in other Sections includes, but is not limited to:

1. Section 01 33 00 Submittal Procedures
2. Section 01 45 00 Quality Control and Material Testing
3. Section 03 10 00 Concrete Forming and Accessories
4. Section 03 20 00 Concrete Reinforcement
5. Section 09 90 00 Painting and Finishes

1.3 REFERENCES

A. Work covered by this Specification shall meet or exceed the provisions of the latest editions of the following Codes and Standards in effect at the time of award of the Contract. The publications are referred to in the text by basic designation only.

B. AMERICAN CONCRETE INSTITUTE (ACI)

1. ACI 117 Specifications for Tolerances for Concrete Construction and Materials and Commentary
2. ACI 211.1 Standard Practice for Selecting Proportions for Normal, Heavyweight, and Mass Concrete
3. ACI 301 Structural Concrete for Buildings
4. ACI 304 Guide for Measuring, Mixing, Transporting, and Placing Concrete
5. ACI 305R Hot Weather Concreting
6. ACI 306R Cold Weather Concreting
7. ACI 318 Building Code Requirements for Structural Concrete and Commentary
8. ACI 350R Code Requirements for Environmental Engineering Concrete Structures and Commentary

C. AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

1. ASTM C 31 Standard Practice for Making and Curing Concrete Test Specimens in the Field
2. ASTM C 33 Standard Specification for Concrete Aggregates
3. ASTM C 39 Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens
4. ASTM C 42 Standard Test Method for Obtaining and Testing Drilled Cores and Sawed Beams of Concrete
5. ASTM C 78 Standard Test Method for Flexural Strength of Concrete (Using

Simple Beam With Third-Point Loading)
6. ASTM C 94 Standard Specification for Ready-Mixed Concrete
7. ASTM C 109 Standard Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-in. or 50-mm Cube Specimens)
8. ASTM C 143 Standard Test Method for Slump of Hydraulic-Cement Concrete
9. ASTM C 150 Standard Specification for Portland Cement
10. ASTM C 171 Standard Specification for Sheet Materials for Curing Concrete
11. ASTM C 172 Standard Specification for Sampling Freshly Mixed Concrete
12. ASTM C 173 Standard Test Method for Air Content of Freshly Mixed Concrete by the Volumetric Method
13. ASTM C 192 Standard Practice for Making and Curing Concrete Test Specimens in the Laboratory
14. ASTM C 231 Standard Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method
15. ASTM C 260 Standard Specification for Air-Entraining Admixtures for Concrete
16. ASTM C 309 Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete
17. ASTM C 494 Standard Specification for Chemical Admixtures for Concrete
18. ASTM C 595 Standard Specification for Blended Hydraulic Cements
19. ASTM C 618 Standard Specification for Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete
20. ASTM C 1157 Standard Performance Specification for Hydraulic Cement

1.4 DEFINITIONS

A. Average Strength (f_{cr}): The required average strength for 30 consecutive strength tests which statistically assures not more than the permissible proportions of tests will fall below Specified Strength.

B. Specified Strength (f_c'): The indicated strength.

1.5 SUBMITTALS

A. The following shall be submitted in accordance with Section 01 33 00 – Submittal Procedures.

B. Provide catalog information for all products to be used as part of the submitted mix design.

C. The results of trial mix designs along with a statement giving the maximum nominal coarse aggregate size and the proportions of all ingredients that will be used in the manufacture of each strength of concrete, at least 14 days prior to commencing concrete placing operations. Aggregate weights shall be based on the saturated surface dry condition. The statement shall be accompanied by test results from an independent commercial testing laboratory, attesting that the proportions selected will produce concrete of the qualities indicated. No substitutions shall be made in the materials used in the work without additional tests to show that the quality of the concrete is satisfactory. Indicate whether mixes have been designed for pumping. Include in the report the following information:

1. Water-cement ratio.
2. Air entrainment.

3. Proportion of materials in the mix.
4. Source and type of cement.
5. Analysis of water to be used unless potable.
6. Type and name of admixtures applied. Indicate when accelerating or retarding admixtures are to be used and the resulting change in placement times and strengths.
7. Slump, air content and temperature of samples.
8. Unit weight of fresh and dry light weight concrete.
9. Strength test data showing mix meets indicated strength requirements per ACI-301.

D. Preapproved Mix Design Data: If supplier has on record, an OWNER approved mix design, submit name and address of supplier for each mix design 1 day prior to using concrete mix.

E. Certified copies of laboratory test reports, including all test data, for aggregate, admixtures, and curing compound. These tests shall be made by an approved commercial laboratory or by a laboratory maintained by the manufacturers of the materials. Test reports shall meet the following requirements:

1. Date of mix design: No older than 365 days from the date of submission.
2. Physical properties of the aggregate: Test results shall not be older than 455 days from the date of submission. A new report will be required if the aggregate source is changed.

F. Cementitious Materials showing Manufacturer's certification of compliance, accompanied by mill test reports attesting that the materials meet the requirements of the specification under which it is furnished, for cement and pozzolan.

G. Submit catalog information on the curing compound and the proposed location(s) to be used.

1.6 QUALITY ASSURANCE

A. Do not change material sources, type of cement, air-entraining agent, water reducing agent, other admixtures, or aggregate without ENGINEER'S approval.

B. In proportioning materials for mixing, use scales certified by the State of Utah. Do not use volume measurement except for water and liquid admixtures.

C. Do not change the quantity of cement per cubic yard for approved mix design without written approval of ENGINEER.

D. Use of admixtures will not relax hot or cold weather placement requirements.

E. Ready-mixed concrete to be in accordance with Alternate No. 3 of ASTM C-94 and the requirements in this Section.

F. Tolerances for concrete construction and materials shall be in accordance with ACI 117.

1.7 PRODUCT STORAGE AND HANDLING

A. Store bagged and bulk cement in weatherproof enclosures to exclude moisture and contaminants.

B. Stockpile aggregate to avoid segregation and prevent contamination.

C. Avoid contamination, evaporation, or damage to admixtures. Protect liquid admixtures from freezing.

PART 2 PRODUCTS

2.1 ADMIXTURES

A. Admixtures shall be approved by ENGINEER prior to use. Any admixtures to be used shall be included in proposed concrete mix designs.

B. Air Entrainment: ASTM C 260.

C. Later Reducing and Set Retarding Agents: ASTM C494.

1. Type A: Set water reducing.
2. Type B: Set retarding.
3. Type C: Set accelerating.
4. Type D: Water reducing and set retarding.
5. Type E: Water reducing and set accelerating.
6. Type F: High range water reducing (super plasticizer).*
7. Type G: High range water reducing and set retarding*

* The relative durability factor of water reducing admixtures shall not be less than 80 and the chlorides content (as Cl^-) expressed as a percent of the cement shall not exceed 0.1 percent by weight.

D. Calcium Chloride: None allowed.

E. Pozzolan: Pozzolan conforming to the requirements of ASTM C 618, Class F, is allowed as a Portland cement replacing agent under the following conditions:

1. The maximum percentage of Portland cement replacement is:
   a. 15 percent, for concrete exposed to weather.
   b. 20 percent, for interior concrete.
2. Pozzolan should not exceed 25% by weight of the cement plus pozzolans.
3. The minimum cement content shall be used in the design formulas before replacement is made.
4. Loss of ignition of pozzolan is less than 3 percent and the water requirement does not exceed 100 percent.
5. All other requirements of this section still apply.
6. Mix designs including trial batches are required for each aggregate source and for each concrete class.

F. Cementitious Materials showing Manufacturer's certification of compliance, accompanied by mill test reports attesting that the materials meet the requirements of the specification under which it is furnished, for cement and pozzolan.

2.2 CEMENTITIOUS MATERIALS

A. Cementitious materials shall each be of one type and from one source when used in

concrete which will have surfaces exposed in the finished structure. Cementitious materials shall each be of one type and from one source when used in concrete which will have surfaces exposed in the finished structure. Cementitious materials shall conform to one of the following:

1. Cement: Use Portland cement, ASTM C 150, Type II, Type IIA, or Type V, low alkali, or ASTM C 595 and ASTM C 1157 IL(10)-A-MS, unless noted otherwise.
2. Portland - Pozzolan Cement: ASTM C 595, Type IP(20 Max)-A-MS. Do not use Pozzolan cement unless approved by ENGINEER.

B. Only one brand of cement from one manufacturing plant may be used.

2.3 AGGREGATES

A. Aggregates shall be natural aggregates, free from deleterious coatings, and shall conform to the requirements of ASTM C 33, except as modified herein. Aggregates shall not be potentially reactive as defined in Appendix XI of ASTM C 33. CONTRACTOR shall import nonreactive aggregates if local aggregates are reactive.

B. Fine Aggregates

1. Fine aggregate shall consist of clean, sharp, natural sand and shall conform to the requirements of ASTM C 33. Fine aggregate shall be graded as follows:

FINE AGGREGATES	
Sieve Size	Percent Passing by Weight
3/8 inch	100
#4	95-100
#8	80-100
#16	50-85
#30	25-60
#50	10-30
#100	2-10

2. Fine aggregates shall have no more than two percent by weight passing #200 sieve.

C. Coarse Aggregate

1. Coarse aggregate shall be washed gravel or crushed stone, or a combination of these materials, consisting of hard, tough, durable particles free from adherent coatings. It shall contain no more than 15 percent flat or elongated particles. A thin, flat or elongated particle is defined as a particle having a maximum dimension in excess of five times its minimum dimension. Aggregate which has disintegrated or weathered badly under exposure conditions similar to those which will be encountered in the work under consideration shall not be used. Coarse aggregate shall be graded as follows (ASTM C 33):

COARSE AGGREGATES	
Sieve Size	Percent Passing by Weight
1-1/2 inch	100
1 inch	95-100
1/2-inch	25-60
#4	0-10
#8	0-5

2. Coarse aggregates shall have no more than 1.75 percent by weight passing #200 sieve. Proof of gradation will be provided to ENGINEER by CONTRACTOR.

2.4 ACI MIX DESIGN

A. The amount by which the average strength (f_{cr}) of a concrete mix exceeds the specified compressive strength (f'_c) shall be based upon no more than 1 in 100 random individual strength tests falling more than 500 psi below the specific strength.

B. Proportion the materials in accordance with ACI 211.1, 211.2 or 211.3 as applicable to produce concrete having the properties or limitations of Table No. 03 30 00-A.

2.5 HAND MIXING

A. Do not hand mix batches exceeding 0.5 cubic yards.

B. Hand mix only on watertight platform. Mix cement and aggregate prior to adding water.

C. Ensure all stones are thoroughly covered with mortar and mixture is of uniform color and consistency.

2.6 HEATING, WATER AND AGGREGATE

A. Do not allow products of fuel combustion to contact the aggregate.

B. Heat mixing water to maximum temperature of 150 degrees F. Heat aggregates uniformly.

C. Do not mix cement with water and aggregate at a mix temperature greater than 100 degrees F.

2.7 WATER

A. Water shall be potable, except that non-potable water may be used if it produces cylinders having 7- and 28-day strengths at least 90 percent of the strength of similar specimens made with water from a municipal supply. The strength comparison shall be made on cylinders, identical except for mixing water, prepared and tested in accordance with ASTM C 109. Water for curing shall not contain any substance injurious to concrete, or which causes staining.

2.8 PROPORTIONS OF MIX

A. Mixture Proportioning, Normal Weight Concrete: All concrete that must be watertight and resistant to freeze-thaw cycles and to naturally occurring or commonly used

chemicals should be air entrained. All materials should be proportioned to produce a well-graded mixture of high density and maximum workability with a minimum specified 28-day compressive strength of concrete classification. Trial batches shall contain materials proposed to be used in the project. Trial mixtures having proportions, consistencies, and air content suitable for the work shall be made based on methodology described in ACI 211.1, using at least three different water-cement ratios. Trial mixes shall be proportioned to produce concrete strengths specified. In the case where ground iron blast-furnace slag is used, the weight of the slag will be substituted in the equations for the term P which is used to denote the weight of pozzolan. Trial mixtures shall be designed for maximum permitted slump and air content. The temperature of concrete in each trial batch shall be reported. For each water-cement ratio at least three test cylinders for each test age shall be made and cured in accordance with ASTM C 192. They shall be tested at 7 and 28 days in accordance with ASTM C 39. From these test results a curve shall be plotted showing the relationship between water-cement ratio and strength. Maximum water-cement or water-cement plus pozzolan Ratio: 0.45.

B. Average Strength: In meeting the strength requirements specified, the selected mixture proportion shall produce an average compressive strength exceeding the specified strength by the amount indicated below. Where a concrete production facility has test records, a standard deviation shall be established. Test records from which a standard deviation is calculated shall represent materials, quality control procedures, and conditions similar to those expected; shall represent concrete produced to meet a specified strength or strengths within 1,000 psi of that specified for proposed work; and shall consist of at least 30 consecutive tests. A strength test shall be the average of the strengths of two cylinders made from the same sample of concrete and tested at 28 days or at other test age designated for determination of the specified strength.

TABLE NO. 03 30 00-1

CONCRETE PROPERTIES	CONCRETE CLASSIFICATION
	Class 4000
Specified Compressive Strength $f_{c'}$ at 28 days, min., psi	4,000
Compressive Strength at 7 days, min., psi (a)	2,680
Cement content (94 lb. sacks of cement per cubic yard of concrete), min. (b)	6.5
Entrained air content, (% by volume).	6±1
Slump Range, in. (c)	1 - 4 (f)
Maximum Water Cement Ratio	0.45

(a) Used for monitoring purposes only.
(b) May include pozzolan replacements if approved by ENGINEER.
(c) Not more than 8 inches after adding high range water reducing admixture at site.

(d) Not allowed if concrete is exposed to freezing and thawing temperatures. Use Class 4000 or higher compressive strength and 6±1.0 percent air entrainment.
(e) All mix designs must be approved by ENGINEER.
(f) 1-3" for footings, sub-structural walls and 1-4" for slabs, beams, reinforced walls and columns.

2.9 CURING MATERIALS

A. Normal Curing Compound

1. The curing compound shall be white pigmented and shall conform to ASTM C 309, Type 2 Class B.
2. Sodium silicate compounds cannot be used.
3. Manufacturer, or approved equal:
   a. 1200-White by W.R. Meadows
   b. White Resin Cure J10W by Dayton Superior
   c. Safe-Cure 2000 by ChemMasters
   d. Aqua Kure White by Lambert Corporation

B. Dissipating Curing Compound

1. When the curing compound must be removed for finishes or grouting, compounds shall be of a dissipating type, conforming to the requirements of ASTM C 309, Type 1 or Type 2, Class B
2. Manufacturer, or approved equal:
   a. 1100-Clear by W.R. Meadows
   b. Kurez DR VOX by Euclid Chemical Company
   c. Clear Cure VOC J7WB by Dayton Superior
   d. Safe-Cure Clear DR by ChemMasters

PART 3 EXECUTION

3.1 GENERAL

A. CONTRACTOR shall inform ENGINEER at least 72 hours in advance of time and places at which CONTRACTOR intends to place concrete. All preparation work for concrete placements shall be substantially completed at least 2 workdays prior to the scheduled start of concrete placement to allow for ENGINEER's review and any necessary corrections.

B. Provide concrete with the minimum compressive strengths at 28 days per Table 03 30 00-2.

TABLE NO. 03 30 00-2

TYPE OF WORK	MIN 28-DAY COMPRESSIVE STRENGTH (PSI)
Pump Pedestal	4,000

3.2 PREPARATION OF SURFACES

A. Surfaces to receive concrete shall be clean and free from frost, ice, mud, and water. Conduit and other similar items shall be in place and clean of any deleterious substance.

B. Foundations: Earthwork shall be as specified. Flowing water shall be diverted without washing over freshly deposited concrete. Rock foundations shall be cleaned by high velocity air-water jets, sandblasting, or other approved methods. Debris and loose, semi-detached or unsound fragments shall be removed. Rock surfaces shall be moist but without free water when concrete is placed. Semi porous subgrades for foundations and footings shall be damp when concrete is placed. Pervious subgrades shall be sealed by blending impervious material with the top 6 inches of the in-place pervious material or by covering with an impervious membrane.

C. Preparation of Previously Placed Concrete: Concrete surfaces to which other concrete is to be bonded shall be roughened in an approved manner that will expose sound aggregate uniformly without damaging the concrete. Laitance and loose particles shall be removed. Surfaces shall be moist but without free water when concrete is placed.

3.3 INSTALLATION OF EMBEDDED ITEMS

A. Embedded items shall be free from oil, loose scale or rust, and paint. Embedded items shall be installed at the locations indicated and required to serve the intended purpose. Voids in sleeves, slots and inserts shall be filled with readily removable material to prevent the entry of concrete.

B. Reinforcement, anchor bolts, sleeves, inserts, and similar items shall be set and secured in the forms at locations as indicated or shown on the Contract Drawings. Proper placement and locations shall be the responsibility of CONTRACTOR.

3.4 BATCHING, MIXING AND TRANSPORTING CONCRETE

A. Ready-mixed concrete shall be batched, mixed, and transported in accordance with ASTM C 94, except as otherwise specified. Truck mixers, agitators, and non-agitating units shall comply with NRMCA TMMB-1. Ready-mix plant equipment and facilities shall be certified in accordance with NRMCA-QC 3.

B. The use of non-agitating equipment for transporting ready-mixed concrete will not be permitted. Combination truck and trailer equipment for transporting ready-mixed concrete will not be permitted. The quantity and quality of materials used in ready-mixed concrete and in batch aggregates shall be subject to continuous inspection at the batching plant by ENGINEER.

C. Truck mixers and their operation must be such that the concrete throughout the mixed batch as discharged is within acceptable limits of uniformity with respect to consistency, mix, and grading. If slump tests taken at approximately the 1/4 and 3/4 points of the load during discharge give slumps differing by more than 1 inch when the specified slump is 3 inches or less, or more than 2 inches when the specified slump is more than 3 inches, the mixer shall not be used on the work unless the causing condition is corrected and satisfactory performance is verified by additional slump tests. All mechanical details of the mixer, such as water measuring and discharge apparatus, condition of the blades, speed of rotation, general mechanical condition of the unit, and

clearance of the drum, shall be checked before a further attempt to use the unit will be permitted.

D. Admixtures: Admixtures shall be batched within an accuracy of 3 percent. Where two or more admixtures are used in the same batch, they shall be batched separately and must be compatible. Retarding admixture shall be added within one minute after addition of water is complete or in the first quarter of the required mixing time, whichever is first. Superplasticizing admixtures shall be added at the project site, and the concrete with the admixture shall be mixed 4 to 5 minutes before placing as recommended by manufacturer. Concrete that shows evidence of total collapse or segregation caused by the use of admixture shall be removed from the site.

E. Control of Mixing Water: No water from the truck system or elsewhere shall be added after the initial introduction of mixing water for the batch. No water shall be added at the jobsite without the approval of ENGINEER.

3.5 SAMPLING AND TESTING

A. Sampling and Testing of the concrete will be as defined in Section 01 45 00 – Quality Control and Material Testing. If there are discrepancies between this Section and Section 01 45 00, the more stringent requirement shall apply.

1. Aggregates: Aggregates for normal weight concrete shall be sampled and tested in accordance with ASTM C 33.
2. Sampling of Concrete: Samples of concrete for air, slump, unit weight, and strength tests shall be taken in accordance with ASTM C 172.
    a. Air Content: Test for air content shall be performed in accordance with ASTM C 173 or ASTM C 231. A minimum of 1 test shall be conducted each time a slump test is made.
    b. Slump: At least 1 slump test shall be made on randomly selected batches of each mixture of concrete for every 100 cubic yards of ready-mixed concrete delivered to the job site. Also note the time batched at the plant and the starting time when unloading began at the site. Tests shall be performed in accordance with ASTM C 143.
    c. Temperature: Concrete and air temperatures shall be measured and recorded with each slump test or with each set of cylinders and the air temperature shall also be recorded when the air temperature at the site is 40 degrees F or below and/or 90 degrees F or above.
3. Evaluation and Acceptance of Concrete
    a. Frequency of Testing: Samples for strength tests of each class of concrete placed each day shall be taken not less than once a day, nor less than once for each 100 cubic yards of concrete, nor less than once for each 3,000 square feet of surface area for slabs or walls. If this sampling frequency results in less than 5 strength tests for a given class of concrete, tests shall be made from at least 5 randomly selected trucks or from each truck if fewer than 5 truck loads are used. Field cured specimens for determining form removal time or when a structure may be put in service shall be made in numbers directed to check the adequacy of curing and protection of concrete in the structure. The specimens shall be removed from the molds at the age of 24 hours and shall be cured and protected, insofar as practicable, in the same manner as that given to the portion of the

structure the samples represent. Each sample used to mold strength test specimens shall be tested for slump, air content, and temperature.

b. Testing Procedures: Cylinders for acceptance tests shall be molded and cured in accordance with ASTM C 31. Cylinders shall be tested in accordance with ASTM C 39. A strength test shall be the average of the strengths of two (2) 6-inch diameter by 12-inch high cylinders made from the same sample of concrete and tested at 28 days or at another specified test age. If 4-inch diameter cylinders are used, the strength shall be the average of the strengths of three (3) 4-inch by 8-inch high cylinders.

c. Evaluation of Results: Concrete specified on the basis of compressive strength will be considered satisfactory if the averages of all sets of three consecutive strength test results equal or exceed the specified strength and no individual strength test result falls below the required strength by more than 500 pounds per square inch.

d. Unless noted otherwise, make a minimum of five (5) 6-inch diameter by 12-inch high concrete cylinders or six (6) 4-inch diameter by 8-inch high cylinders each time a test is required. When concrete is being placed in suspended slabs, beams and retaining walls make two (2) extra cylinders which must be cured on site. The extra cylinders will be used to determine when to remove forms and/or when to backfill.

B. Investigation of Low-Strength Test Results: When any strength test of standard-cured test cylinder falls below the specified strength requirement by more than 500 pounds per square inch, or if tests of field-cured cylinders indicate deficiencies in protection and curing, steps shall be taken to assure that load-carrying capacity of the structure is not jeopardized. Nondestructive testing in accordance with ASTM C 597, ASTM C 803 or ASTM C 805 may be permitted by ENGINEER to determine the relative strengths at various locations in the structure as an aid in evaluating concrete strength in place or for selecting areas to be cored. Such tests, unless properly calibrated and correlated with other test data, shall not be used as a basis for acceptance or rejection. When the strength of concrete in place is considered potentially deficient, cores shall be obtained and tested in accordance with ASTM C 42. At least three representative cores shall be taken from each member or area of concrete in a place that is considered potentially deficient. The location of cores shall be determined by ENGINEER to least impair the strength of the structure. If the concrete in the structure will be dry under service conditions, the cores shall be air dried (temperature 60 to 80 degrees F, relative humidity less than 60 percent) for seven days before testing and shall be tested dry. If the concrete in the structure will be more than superficially wet under service conditions, the cores shall be tested after moisture conditioning in accordance with ASTM C 42. Concrete in the area represented by the core testing will be considered adequate if the average strength of the cores is equal to or at least 85 percent of the specified strength requirement and if no single core is less than 75 percent of the specified strength requirement. If the core tests are inconclusive or impractical to obtain, or if structural analysis does not confirm the safety of the structure, load tests may be directed by ENGINEER in accordance with the requirements of ACI 318. Concrete work evaluated by structural analysis or by results of a load test and found deficient shall be corrected in a manner satisfactory to ENGINEER. All investigations, testing, load tests, and correction of deficiencies shall be performed, and approved by ENGINEER, at the expense of CONTRACTOR.

3.6 CONVEYING CONCRETE

A. Concrete shall be conveyed from mixer to forms as rapidly as possible and within the time interval specified in paragraph 3.7 CONCRETE PLACEMENT by methods which will prevent segregation or loss of ingredients. Conveying concrete shall be in accordance with the requirements of ACI 304.

1. Chutes: When concrete can be placed directly from a truck mixer or other transporting equipment, chutes attached to this equipment may be used. Separate chutes will not be permitted except when specifically approved.
   a. Use metal or metal lined chutes with a maximum length of 20-feet.
   b. The minimum slopes of chutes shall be such that concrete of the indicated consistency will readily flow in them.
2. Buckets: Bucket design shall be such that concrete of the required slump can be readily discharged. Bucket gates shall be essentially grout tight when closed. The bucket shall provide means for positive regulations of the amount and rate of deposit of concrete in each dumping position.
3. Pumps: Concrete may be conveyed by positive displacement pumps when approved. Pump shall be the piston or squeeze pressure type. Pipeline shall be steel pipe or heavy-duty flexible hose. Inside diameter of the pipe shall be at least three times the maximum size of the coarse aggregate. Distance to be pumped shall not exceed the limits recommended by the pump manufacturer. Concrete shall be supplied to the pump continuously. When pumping is completed, the concrete remaining in the pipeline shall be ejected without contaminating the concrete in place. After each use, the equipment shall be thoroughly cleaned. Flushing water shall be wasted outside the forms.

3.7 CONCRETE PLACEMENT

A. Mixed concrete which is transported in truck mixers or agitators or concrete which is truck mixed, shall be discharged within 1-1/2 hours or before the drum has revolved 300 revolutions, whichever comes first after the introduction of the mixing water to the cement and aggregates or the introduction of the cement to the aggregates. These limitations may be waived by ENGINEER if the concrete is of such slump after the 1-1/2 hour time or 300 revolution limit has been reached that it can be placed, without the addition of water to the batch. When the concrete temperature exceeds 85 degrees F, the time shall be reduced to 45 minutes. Concrete shall be placed within 15 minutes after it has been discharged from the truck.

1. Placing Operation: Concrete shall be handled from mixer to forms in a continuous manner until the approved unit of operation is completed. Adequate scaffolding, ramps and walkways shall be provided so that personnel and equipment are not supported by in-place reinforcement. Placing will not be permitted when the sun, heat, wind, or limitations of facilities furnished by CONTRACTOR prevent proper consolidation, finishing and curing. Concrete shall be deposited as close as possible to its final position in the forms, and there shall be no vertical drop greater than 4 feet except where suitable equipment is provided to prevent segregation and where specifically authorized. Concrete should not be allowed to drop through a cage of reinforcing steel. Depositing of the concrete shall be so regulated that it will be effectively consolidated in horizontal layers not more than 12 inches thick, except that all slabs shall be placed in a single layer. Concrete to receive other construction

shall be screened to the proper level to avoid excessive shimming or grouting.

a. Additional requirements for depositing concrete in walls include, but are not limited to:
    1) Deposit concrete in a continuous operation until section is completed.
    2) Place concrete in approximately horizontal layers 2 ft maximum thickness.
    3) Each layer of concrete shall be plastic when covered with the following layer.
    4) Rate of vertical rise not more than 4 ft per hour.
    5) Pump concrete or use a tremie having varying lengths for placing concrete in columns and walls to prevent free fall of more than 4 ft.
    6) Allow concrete to thoroughly settle before top is finished. Remove all laitance, debris, and surplus water from surfaces at tops of forms by screeding, scraping, or other effective means.
b. Additional requirements for depositing concrete in slabs include, but are not limited to:
    1) Deposit concrete in a continuous operation until section is completed.
    2) Concrete shall be deposited as nearly as practicable to its final position to avoid segregation due to rehandling or flowing.
    3) In sloping slabs, proceed uniformly from the bottom of the slab to the top for the full width of the placement.

2. Consolidation: Immediately after placing, each layer of concrete shall be consolidated by internal vibrators, except for slabs 4 inches or less. The vibrators shall at all times be adequate in effectiveness and number to properly consolidate the concrete; a spare vibrator shall be kept at the jobsite during all concrete placing operations. The vibrators shall have a frequency of not less than 8,000 vibrations per minute, and the head diameter and amplitude shall be appropriate for the concrete mixture being placed. Vibrators shall be inserted vertically at uniform spacing over the area of placement. The distance between insertions shall be approximately 1-1/2 times the radius of action of the vibrator so that the area being vibrated will overlap the adjacent just-vibrated area by a few inches. The vibrator shall penetrate rapidly to the bottom of the layer and at least 6 inches into the preceding layer if there is such. Vibrator shall be held stationary until the concrete is consolidated and then withdrawn slowly. The use of form vibrators must be specifically approved. Vibrators shall not be used to transport concrete within the forms. Slabs 4 inches and less in thickness shall be consolidated by properly designed vibrating screeds or other approved technique.

B. Cold Weather Requirements: Cold weather requirements shall conform to ACI 306 and this Specification. Special protection measures, approved by ENGINEER, shall be used if freezing temperatures are anticipated before the expiration of the specified curing period. Provisions should be made to keep the concrete at a minimum temperature of 50 degrees F for 7 days. The ambient temperature of the air where concrete is to be placed and the temperature of surfaces to receive concrete shall be not less than 32 degrees F. No concrete shall be placed on frozen ground. The temperature of the concrete when placed shall be not less than 55 degrees F nor more than 75 degrees F. Heating of the mixing water or aggregates will be required to regulate the concrete placing temperature. Materials entering the mixer shall be free from ice, snow, or frozen lumps. Salt, chemicals, or other materials shall not be incorporated in the concrete to prevent freezing. Calcium chloride shall not be used.

C. Hot Weather Requirements: Hot weather requirements shall conform to ACI 305 and this Specification. The temperature of the concrete placed during hot weather shall not exceed 85 degrees F except where an approved retarder is used. The mixing water and/or aggregates shall be cooled, if necessary, to maintain a satisfactory placing temperature. In no case shall the placing temperature exceed 95 degrees F.

3.8 CONSTRUCTION JOINTS

A. Construction joints shall be located as indicated on the Contract Drawings. Where concrete work is interrupted by weather, end of work shift or other similar type of delay, location and type of construction joint shall be subject to approval of ENGINEER. Unless otherwise indicated and except for slabs on grade, reinforcing steel shall extend through construction joints. Construction joints in slabs on grade shall be keyed or doweled as shown. Concrete columns, walls, or piers shall be in place at least 2 hours, or until the concrete is no longer plastic, before placing concrete for beams, girders, or slabs thereon. In walls having door or window openings, lifts shall terminate at the top and bottom of the opening. Other lifts shall terminate at such levels as to conform to structural requirements or architectural details. Where horizontal construction joints are required, a strip of 1-inch square-edge lumber, beveled and oiled to facilitate removal, shall be tacked to the inside of the forms at the construction joint. Concrete shall be placed to a point 1 inch above the underside of the strip. The strip shall be removed 1 hour after the concrete has been placed, and any irregularities in the joint line shall be leveled off with a wood float, and all laitance shall be removed. Prior to placing additional concrete, horizontal construction joints shall be prepared as specified in paragraph 3.2, PREPARATION OF SURFACES.

3.9 FINISHING CONCRETE

A. Formed Surfaces

1. Repair of Surface Defects: Surface defects shall be repaired within 24 hours after the removal of forms. Honeycombed and other defective areas shall be cut back to solid concrete or to a depth of not less than 1 inch, whichever is greater. Edges shall be cut perpendicular to the surface of the concrete. The prepared areas shall be dampened and brush-coated with neat cement grout. The repair shall be made using mortar consisting of not more than 1 part cement to 2-1/2 parts sand. The mixed mortar shall be allowed to stand to stiffen (approximately 45 minutes), during which time the mortar shall be intermittently remixed without the addition of water. After the mortar has attained the stiffest consistency that will permit placing, the patching mix shall be thoroughly tamped into place by means approved by ENGINEER and finished slightly higher than the surrounding surface. For Class A and Class B finished surfaces the cement used in the patching mortar shall be a blend of job cement and white cement proportioned to produce a finished repair surface matching, after curing, the color of adjacent surfaces. Holes left after the removal of form ties shall be cleaned and filled with patching mortar. Holes left by the removal of tie rods shall be reamed and filled by dry packing. Repaired surfaces shall be cured as required for adjacent surfaces. The temperature of concrete, mortar patching material, and ambient air shall be above 50 degrees F while making repairs and during the curing period. Concrete with defects which affect the strength of the member or with excessive honeycombs will be rejected, or the defects shall be corrected as directed by ENGINEER.

2. Class A Finish: Where a Class A finish is indicated, fins shall be removed. A mortar mix consisting of one-part Portland cement and two parts well-graded sand passing a No. 30 sieve, with water added to give the consistency of thick paint, shall be prepared. White cement shall be used to replace part of the job cement. After the surface has been thoroughly wetted and allowed to approach surface dryness, the mortar shall be vigorously applied to the area by clean burlap pads or by cork or wood-floating, to completely fill all surface voids. Excess grout shall be scraped off with a trowel. As soon as it can be accomplished without pulling the mortar from the voids, the area shall be rubbed with burlap pads until all visible grout film is removed. The rubbing pads shall have on their surfaces the same sand-cement mix specified above but without any mixing water. The finish of any area shall be completed in the same day, and the limits of a finished area shall be made at natural breaks in the surface. The surface shall be continuously moist cured for 48 hours. The temperature of the air adjacent to the surface shall be not less than 50 degrees F for 24 hours prior to, and 48 hours after, the application. In hot, dry weather the smooth finish shall be applied in shaded areas.
3. Class B Finish: Where a Class B finish is indicated, fins shall be removed. Concrete surface shall be smooth with a texture at least equal to that obtained using Grade B-B plywood forms.
4. Class C Finish: Where a Class C finish is indicated, fins shall be removed. Concrete surfaces shall be relatively smooth with a texture imparted by the forms used.
5. Class D Finish: Where a Class D finish is indicated, fins exceeding 1/4 inch in height shall be chipped or rubbed off. Concrete surfaces shall be left with the texture imparted by the forms used.
6. See Specification Section 09 90 00 Painting and Finishes for required finishes.

B. Unformed Surfaces: In cold weather, the air temperature in areas where concrete is being finished shall not be less than 50 degrees F in accordance with ACI 306R. In hot windy weather when the rate of evaporation of surface moisture, as determined by methodology presented in ACI 305R, may reasonably be expected to exceed 0.2 pounds per square foot per hour; coverings, windbreaks, or fog sprays shall be provided as necessary to prevent premature setting and drying of the surface. The dusting of surfaces with dry materials or the addition of water during finishing will not be permitted. Finished surfaces shall be plane, with no deviation greater than 5/16-inch when tested with a 10-foot straightedge. Surfaces shall be pitched to drains.

1. Rough-Slab Finish: Slabs to receive fill or mortar setting beds shall be screened with straightedges immediately after consolidation to bring the surface to the required finish level with no coarse aggregate visible.
2. Float Finish: Slabs to receive a steel trowel finish and slabs where indicated shall be given a float finish. Screeding shall be followed immediately by darbying or bull floating before bleeding water is present, to bring the surface to a true, even plane. After the concrete has stiffened to permit the operation and the water sheen has disappeared, it shall be wood floated. Concrete that portrays stickiness shall be finished with a magnesium float in lieu of a wood float and left free of ridges and other projections. Float finish is normally specified for surfaces that will receive other treatment such as built-up roofing, nonslip surfacing material. Float Finish shall not be used on wearing surfaces.
3. Trowel Finish: Slabs where indicated, shall be given a trowel finish immediately following floating. Surfaces shall be trowelled to produce smooth, dense slabs free from blemishes including trowel marks. In lieu of hand finishing, an approved power

finishing machine may be used in accordance with the directions of the machine manufacturer. A final hard steel troweling shall be done by hand. Trowel finish shall be used on wearing surfaces and where a smooth finish is required.

4. Broom Finish: After floating, slabs where indicated, shall be lightly troweled, and then broomed with a fiber-bristle brush in a direction transverse to that of the main traffic.
5. See Specification Section 09 90 00 Painting and Finishes for required finishes.

3.10 CURING AND PROTECTION

A. General: All concrete shall be cured by an approved method for the period of time given below:

Concrete with Type III cement	3 days
Concrete with Type II or IIA, or V, low alkali cement	7 days
Concrete with Type IP-A(MS) cement blended with pozzolan	10 days

B. Immediately after placement, concrete shall be protected from premature drying extremes in temperatures, rapid temperature change, mechanical injury and injury from rain and flowing water. Air and forms in contact with concrete shall be maintained at a temperature above 50 degrees F for the first 3 days and at a temperature above 32 degrees F for the remainder of the specified curing period. Exhaust fumes from combustion heating units shall be vented to the outside of the enclosure and heaters and ducts shall be placed and directed so as not to cause areas of overheating and drying of concrete surfaces or to create fire hazards. All materials and equipment needed for adequate curing and protection shall be available and at the site prior to placing concrete. No fire or excessive heat shall be permitted near or in direct contact with the concrete at any time. Curing shall be accomplished by any of the following methods, or combination thereof, as approved.

C. Moist Curing: Concrete to be moist cured shall be maintained continuously wet for the entire curing period. If water or curing materials used stains or discolors concrete surfaces which are to be permanently exposed, the concrete surfaces shall be cleaned. When wooden forms are left in place during curing, they shall be kept wet at all times. If the forms are removed before the end of the curing period, curing shall be carried out on unformed surfaces, using suitable materials. Horizontal surfaces shall be cured by ponding, by covering with a 2-inch minimum thickness of continuously saturated sand, or by covering with waterproof paper, polyethylene sheet, polyethylene-coated burlap, or saturated burlap. Once the moist curing has started the concrete surface must not be allowed to become surface dry for the entire curing period.

D. Membrane Curing:

1. Normal membrane curing compound shall not be used on surfaces that are to receive any subsequent treatment depending on adhesion or bonding to the concrete. Use a Dissipating curing compound for surfaces which are to be painted or are to receive bituminous roofing or waterproofing, or floors that are to receive adhesive applications of resilient flooring.
2. The curing compound selected shall be compatible with any subsequent paint, roofing, waterproofing or flooring specified. Membrane curing compound shall not be

used on surfaces that are maintained at curing temperatures with free steam.

3. Curing compound shall be applied to formed surfaces immediately after the forms are removed and prior to any patching or other surface treatment except the cleaning of loose sand, mortar, and debris from the surface.
4. Surfaces shall be thoroughly moistened with water and the curing compound shall be applied to slab surfaces as soon as the bleeding water has disappeared, with the tops of joints being temporarily sealed to prevent entry of the compound and to prevent moisture loss during the curing period.
5. Compound shall be applied in a one-coat continuous operation by mechanical spraying equipment, at a uniform coverage in accordance with the manufacturer's printed instructions.
6. Concrete surfaces which have been subjected to rainfall within 3 hours after curing compound has been applied shall be resprayed by the method and at the coverage specified.
7. On surfaces permanently exposed to view, the surface shall be shaded from direct rays of the sun for the duration of the curing period.
8. Surfaces coated with curing compound shall be kept free of foot and vehicular traffic, and from other sources of abrasion and contamination during the curing period.

3.11 QUALITY CONTROL TESTING

A. Quality Control Testing shall be in accordance with Section 01 45 00 – Quality Control and Material Testing.

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SECTION 03 60 00
GROUT

PART 1 GENERAL

1.1 REQUIREMENTS

A. CONTRACTOR shall provide grout, complete and in place, in accordance with the Contract Documents.

B. Unless indicated otherwise, grout shall be provided as listed in this Section whether indicated in the Contract Drawings or not.

C. The following types of grouts are covered in this Section:

1. Non-Shrink Grout – Class II (cement based)
2. Epoxy Anchor Grout for Adhesive Anchors

1.2 RELATED WORK

A. Related Work specified in other Sections includes, but is not limited to:

1. Section 01 33 00 Submittal Procedures
2. Section 01 60 00 Product Requirements
3. Section 03 30 00 Cast-in-Place Concrete

1.3 REFERENCES

A. The latest edition of the following publications form a part of this Specification to the extent referenced. The publications are referred to in the text by basic designation only.

B. American Society for Testing Materials (ASTM)

1. ASTM C 33 Standard Specification for Concrete Aggregates
2. ASTM C 136 Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates
3. ASTM C 150 Standard Specification for Portland Cement
4. ASTM C 307 Standard Test Method for Tensile Strength of Chemical-Resistant Mortar, Grouts, and Monolithic Surfacings
5. ASTM C 494 Standard Specification for Chemical Admixtures for Concrete
6. ASTM C 496 Standard Test Method for Splitting Tensile Strength of Cylindrical Concrete Specimens
7. ASTM C 531 Standard Test Method for Linear Shrinkage and Coefficient of Thermal Expansion of Chemical-Resistant Mortars, Grouts, Monolithic Surfacings, and Polymer Concretes
8. ASTM C 579 Standard Test Methods for Compressive Strength of Chemical-Resistant Mortars, Grouts, Monolithic Surfacings, and Polymer Concretes
9. ASTM C 580 Standard Test Method for Flexural Strength and Modulus of Elasticity of Chemical-Resistant Mortars, Grouts, Monolithic Surfacings, and Polymer Concretes
10. ASTM C 595 Standard Specification for Blended Hydraulic Cements

11. ASTM C 827 Standard Test Method for Change in Height at Early Ages of Cylindrical Specimens of Cementitious Mixtures
12. ASTM C 881 Standard Specification for Epoxy-Resin-Base Bonding Systems for Concrete
13. ASTM C 882 Standard Test Method for Bond Strength of Epoxy-Resin Systems Used With Concrete By Slant Shear
14. ASTM C 939 Standard Test Method for Flow of Grout for Preplaced-Aggregate Concrete (Flow Cone Method)
15. ASTM C 942 Standard Test Method for Compressive Strength of Grouts for Preplaced-Aggregate Concrete in the Laboratory
16. ASTM C 1090 Standard Test Method for Measuring Changes in Height of Cylindrical Specimens of Hydraulic-Cement Grout
17. ASTM C 1107 Standard Specification for Packaged Dry, Hydraulic-Cement Grout (Nonshrink)
18. ASTM C 1157 Standard Performance Specification for Hydraulic Cement
19. ASTM C 1339 Standard Test Method for Flowability and Bearing Area of Chemical-Resistant Polymer Machinery Grouts
20. ASTM D 648 Standard Test Method for Deflection Temperature of Plastics Under Flexural Load in the Edgewise Position
21. ASTM D 695 Standard Test Method for Compressive Properties of Rigid Plastics

1.4 CONTRACTOR SUBMITTALS

A. Submittals shall be furnished in accordance with Section 01 33 00 – Submittal Procedures.

B. Provide the following submittals for each type of grout used on the project:

1. Test reports accompanied by a manufacturer’s statement that previously tested material is of similar type, quality, and manufacture as that which is proposed for use on this project shall be submitted for:
   a. Cement
   b. Aggregates
   c. Retardants
   d. Bonding compounds
   e. Epoxy Resin
2. Certifications that grout used on the project contain no chlorides or other chemicals that cause corrosion.
3. Manufacturer’s literature containing instructions and recommendations on the mixing, handling, placement, curing, and appropriate uses for each type of grout used in the WORK, and location of use. ICBO/ES report shall be submitted for epoxy anchor grout for adhesive anchors.
4. Manufacturer’s certification that non-shrink grout does not contain aluminum, zinc, or magnesium powders as a method of expansion.
5. Submit manufacturer's written warranty as indicated herein.
6. Name and telephone number of grout manufacturer's representative who will give on-Site service. The representative shall have at least one year of experience with the indicated grout.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Section 01 60 00 - Product Requirements: Requirements for transporting, handling, storing, and protecting products.

B. Grout and grout materials shall be stored in a dry shelter, protected from moisture, and for prepackaged grout, maintained in accordance with the manufacturer's recommendations.

1.6 QUALITY ASSURANCE

A. The work shall be subject to inspection at all times by OWNER and ENGINEER for the purpose of determining that the work is properly executed in accordance with this specification. Failure to detect defective workmanship or material during any interim inspection shall not constitute acceptance of workmanship and materials.

B. All testing will be done by a testing laboratory at CONTRACTOR's expense, except as otherwise indicated.

C. Field Tests

1. Compression test specimens will be taken from the first placement of each type of grout, and at intervals thereafter selected by ENGINEER.
2. Compression tests and fabrication of specimens for cement grout and cement based non-shrink grout will be performed in accordance with ASTM C 1107, at intervals during construction selected by ENGINEER. A set of 3 specimens will be made for testing at 7 Days, 28 Days, and each additional time period as appropriate.
3. Compression tests and fabrication of specimens for topping grout and concrete/grout fill will be performed in accordance with Section 03 31 00 - Cast-in-Place Concrete, at intervals during construction selected by ENGINEER.
4. Compression tests and fabrication of specimens for epoxy grouts will be performed in accordance with ASTM C 579, Method B, at intervals during construction selected by ENGINEER. A set of 3 specimens will be made for testing at 7 Days and each earlier time period as appropriate.

D. Construction tolerances shall be as indicated in Section 03 30 00 Cast-in-Place Concrete unless noted otherwise.

PART 2 PRODUCTS

2.1 MATERIALS

A. Cement: Portland cement shall be Type II or Type V per ASTM C 150 or Type IL(10)-MS or HS per ASTM C 595 and ASTM C 1157.

B. Aggregate:

1. General: Aggregate shall be non-reactive and shall be washed before use. When sources of aggregate are changed, test reports shall be provided for the material from the new source prior to commencing grout work.
2. Fine Aggregate: Fine aggregate shall be sand or crush stone conforming to ASTM C 33 as modified herein. When tested in accordance with ASTM C 136, gradation shall

be such that 100 percent by weight passes a No. 8 sieve and not less than 45 percent by weight passes a standard No. 40 sieve. Variation from the specified gradation in individual tests will be accepted if the average of three consecutive tests is within the following variation:

Standard Sieve	Permissible Variation in Individual Test
No. 30 or coarser	2% by weight
No. 50 or finer	0.5% by weight

C. Admixtures

1. General: Admixtures shall be compatible with the grout and shall comply with the manufacturer's recommendations. Admixtures shall be added to the grout mix separately.
2. Water Reducing Retarder: Water reducing retarder shall comply with ASTM C 494, Type D and shall be **Master Builders (BASF) MasterSet R 300, Sika Corporation Plastiment**, or approved equal.
3. Lubricant: Lubricant additive for cement pressure grouting shall be **Sika Intraplast**, or approved equal.

D. Water:

1. Water for washing aggregate, for mixing and for curing shall be potable, shall not contain more than 1,000 mg/L of chlorides as Cl, nor more than 1,300 mg/L of sulfates as SO_4, and shall not contain impurities which may change the setting time by more than 25 percent or a reduction of more than 5 percent of the compressive strength of the grout at 14 days when compared to the results for grout made with distilled water.

2.2 NON-SHRINK GROUT

A. General

1. Non-shrink cementitious grout shall be a flowable, prepackaged, inorganic, non-metallic, cement type grout requiring only the addition of water. Cement from kilns burning metal-rich hazardous waste fuel shall not be used. The manufacturer shall have at least 10 years' experience in the manufacture of cement-based grouts. The manufacturer shall provide technical services and provide a representative at the jobsite for product training prior to product installation.
2. Manufacturer's instructions shall be printed on each bag or other container in which the materials are packaged. The specific formulation for each class of non-shrink grout shall be as recommended by the manufacturer for the application.
3. Grout shall not contain chlorides or additives that may contribute to corrosion.
4. Grout shall be formulated to be used at any consistency from fluid to plastic.
5. Cement-based non-shrink grout shall have the following minimum properties when tested at a fluid consistency, at 28 Days:
   a. Minimum tensile splitting strength of 500 psi per ASTM C 496.
   b. Minimum flexural strength of 1,000 psi per ASTM C 580.
   c. Minimum bond strength (concrete to grout) of 1,900 psi per modified ASTM C 882.

d. Grout shall be certified for use in freeze/thaw environments.

B. Class II Non-Shrink Grout

1. Application: Column base plates (greater than 2 story or larger than 16-inches in the least dimension); under precast concrete elements; and repair of holes, defects, and around the annular space of pipe penetrations in concrete members which are water bearing or in contact with soil or other fill materials.
2. Class II non-shrink grout shall be a high precision, fluid, extended working time, grout. The minimum 28-Day compressive strength shall be 7,500 psi, when mixed at a fluid consistency.
3. Grout shall have no shrinkage (0.0%) and a maximum volume change of 0.08% at 28 days when tested in accordance with ASTM C 1090.
4. Class II non-shrink grout shall have an extended working time of 30 minutes minimum when mixed to a fluid consistency as defined in ASTM C 827 at temperature extremes of 45 to 90 degrees F in accordance with ASTM C 1107.
5. Class II non-shrink grout shall meet the requirements of ASTM C 1107, Grade B or C when tested using the amount of water needed to achieve fluid consistency per ASTM C 939.
6. The grout when tested shall not bleed or segregate at maximum allowed water content.
7. Provide certification that its non-shrink property is not based on gas production or gypsum expansion.
8. Class II non-shrink grout not in contact with potable water shall be **Five Star Fluid Grout 100 by Five Star Products**, **Crystex by L&M Construction Chemicals**, or equal.
9. Class II non-shrink grout in contact with potable shall be NSF 61 certified and shall be **SikaGrout 928 (formerly known as Masterflow 928), Euclid Hi-Flow Grout, Dayton Superior Sure -Grip High Performance Grout**, or approved equal.

2.3 EPOXY ANCHOR GROUT

A. Application: Anchor bolts and reinforcing steel required to be set in grout that is not in high temperature or high fire risk areas.

B. Epoxy anchor grout shall conform to ASTM C 881, Type IV, Class A, B, and C, Grade 3 with the exception of gel time.

C. Heat deflection temperature shall be a minimum of 139 °F per ASTM D 648.

D. Manufacturer shall certify that the epoxy anchor grout will maintain 90 percent of its strength up to a temperature of 125 °F.

E. Grout shall come in a 2 chambered cartridge with a metering system that provides the proper ratio of hardener and resin. The grout shall also come with a static mixer nozzle to thoroughly mix the hardener and resin together.

F. Epoxy anchor grout shall be capable of being used in submersed applications once cured.

G. Minimum compressive strength shall be 12,000 psi per ASTM D 695.

H. Overhead anchors and anchors in fire-resistive construction shall be cast-in anchors.

I. Embedment of adhesive anchors/rebar shall be deep enough to develop the anchor/rebar. Embedment shall not exceed 67 percent of the member depth.

J. Epoxy anchor grout shall be **Epcon C6+ by ITW Ramset/Red Head, Power-Fast Epoxy Injection Gel by Powers Fasteners, RE 500 by Hilti, Simpson SET3G-RE 500 V2**, or approved equal.

2.4 CONSISTENCY

A. The consistency of grouts shall be that necessary to completely fill the space to be grouted for the application. Dry pack consistency is defined such that the grout is plastic and moldable but will not flow. Where "dry pack" is called for in the Contract Documents, it shall mean a grout of that consistency; the type of grout to be used shall be as indicated herein for the application.

B. The slump for topping grout and concrete/grout fill shall be adjusted to match placement and finishing conditions but shall not exceed 4-inches.

PART 3 EXECUTION

3.1 PREPARATION

A. Remove defective concrete, laitance, dirt, oil, grease, and other foreign material from concrete surfaces by brushing, hammering, chipping or other similar means until sound, clean concrete surface is achieved.

B. Rough concrete lightly, but not enough to interfere with placement of grout.

C. Remove foreign materials from metal surfaces in contact with grout.

D. Align, level, and maintain final positioning of components to be grouted.

3.2 GENERAL

A. CONTRACTOR shall arrange for the manufacturer of prepackaged grouts to provide on-Site technical assistance within 72 hours of request, as part of the WORK.

B. Grout shall not be placed until base concrete or masonry has attained its design strength, unless authorized otherwise by ENGINEER.

C. When cementitious grouts are used on concrete surfaces, the concrete surface shall be saturated with water for 24 hours prior to placement. Upon completion of the saturation period, excess water shall be removed. Concrete substrate shall not be wet prior to placement of epoxy grouts.

D. Surface preparation, curing, and protection of cement grout shall be in accordance with Section 03 30 00 – Cast-in-Place Concrete. The finish of the grout surface shall match that of the adjacent concrete unless otherwise indicated.

E. Surfaces that will be in contact with grout shall be free of dirt, loose rust, oil, wax, grease, curing compounds, laitance, loose concrete, and other deleterious materials.

F. Shade the WORK from sunlight for at least 24 hours before and 48 hours after grouting.

G. Contact the grout manufacturer's representative for assistance on hot and cold weather grouting techniques and precautions if applicable.

3.3 GROUTING PROCEDURES

A. **General:** Mixing, surface preparation, handling, placing, consolidation, curing, and other means of execution for prepackaged grouts shall be done according to the instructions and recommendations of the manufacturer.

B. Structural, equipment, tank, and piping support bases shall be grouted, unless indicated otherwise.

1. The original concrete shall be blocked out or finished off a sufficient distance below the plate to provide for a minimum one-inch thickness of grout or other thickness if indicated.
2. After the base plate has been set in position at the proper elevation by steel wedges or double nuts on the anchor bolts, the space between the bottom of the plate and the original pour of concrete shall be filled with non-shrink-type grout through a headbox of appropriate size. The mixture shall be of a fluid consistency and poured continuously into the space between the plate and the base concrete. Forms for grout shall be tight against retaining surfaces, and joints shall be sealed as recommended by the grout manufacturer to be liquid-tight. Forms shall be coated as recommended by the grout manufacturer for easy form release. Where this method of placement is not practical or where required by ENGINEER, alternate grouting methods shall be submitted for acceptance by ENGINEER.
3. Concrete equipment pads for equipment bases that will be epoxy-grouted shall be sized so that, when the equipment base is fully grouted, the epoxy grout is stopped not less than 4-inches from the edge of the pad.

C. Drilled Anchors and Reinforcing Bars

1. General
   a. Drilled anchors and reinforcing bars shall be installed in strict accordance with the manufacturer's instructions. Holes shall be roughened with a brush on a power drill and cleaned. Drilled anchors shall not be installed until the concrete has reached the required 28 Day compressive strength. Anchors shall not be loaded until the grout has reached its indicated strength in accordance with the manufacturer's instructions.
   b. CONTRACTOR shall identify position of reinforcing steel and other embedded items prior to drilling holes. Care shall be exercised in coring and drilling to avoid damaging existing reinforcing or embedded items. Notify ENGINEER if reinforcing steel or other embedded items are encountered during drilling. Take precautions as necessary to avoid damaging prestressing tendons, electrical and communications conduit, and piping.
2. Epoxy Adhesive Anchors
   a. Grout shall be proportioned and mixed with automatic equipment.
   b. Unless otherwise indicated, embedment shall be sufficient to develop the ultimate tensile strength of the anchor or reinforcing bar per the manufacturer's ICBO/ES report, but shall not be less than 8 diameters for threaded rod or 12 diameters for reinforcing or smooth bars.

c. Holes required for grouting shall be blown or vacuumed clean and are to be free of dust and standing water. Horizontal holes for grouting are to be drilled at a slight downward angle and with the inserted dowel or bolt bent to match.

3. Cement Based Non-Shrink Grout
   a. In places with high temperature or fire hazard, anchor bolts shall be grouted in using cement based non-shrink grout, Class I.
   b. Unless otherwise indicated, embedment shall be sufficient to develop the ultimate tensile strength of the anchor or reinforcing bar per the manufacturer's ICBO/ES report but shall not be less than 16 diameters for threaded rod or 24 diameters for reinforcing or smooth bars.
   c. When the bolt diameter is one-inch or less, the hole diameter should be a minimum of 2-inches. When the bolt diameter is greater than one inch, the hole diameter should be at least twice the bolt diameter.
   d. Drilled holes shall be saturated with water for not less than 24 hours before installation of anchor/rod/rebar.
   e. The non-shrink grout should be placed in the holes in a non-sag (trowelable) consistency. The grout should be placed in the holes before the anchor and then the anchor inserted and vibrated to ensure proper coverage.

3.4 CONSOLIDATION

A. Grout shall be placed in such a manner, for the consistency necessary for each application, to ensure that the space to be grouted is completely filled.

3.5 CURING

A. Cement based grouts shall be cured per 03 30 00 – Cast-in-Place Concrete and per the manufacturer's recommendations.

- END OF SECTION –

SECTION 05 45 00
MECHANICAL METAL SUPPORTS (PIPE SUPPORTS)

PART 1 GENERAL

1.1 DESCRIPTION

A. This Section covers materials and installation of mechanical metal supports, pipe supports, hangers, guides, anchors, and appurtenances as specified and indicated.

B. CONTRACTOR shall provide mechanical metal supports in accordance with this Section whether shown on the Contract Drawings or not.

1.2 RELATED WORK

A. Related Work specified in other Sections includes, but is not limited to:

1. Section 01 33 00 Submittal Procedures
2. Section 05 50 00 Miscellaneous Specialties
3. Section 09 90 00 Painting and Finishes
4. Section 33 05 05 Ductile Iron Pipe
5. Section 33 12 00 Mechanical Appurtenances

1.3 REFERENCES

A. The latest edition of the following publications form a part of this Specification to the extent referenced. The publications are referred to in the text by basic designation only.

B. MANUFACTURERS STANDARDIZATION SOCIETY OF THE VALVE AND FITTING INDUSTRY (MSS)

1. MSS SP-58 Pipe Hangers and Supports – Materials Design and Manufacture
2. MSS SP-69 Pipe Hangers and Supports – Selection and Application
3. MSS SP-89 Pipe Hangers and Supports – Fabrication and Installation Practices
4. MSS SP-127 Bracing for Piping Systems Seismic-Wind-Dynamic Design, Selection, Application

C. AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME)

1. ASME B 31.1 Power Piping

D. AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

1. ASTM A 36 Standard Specification for Carbon Structural Steel
2. ASTM A 47 Standard Specification for Ferritic Malleable Iron Castings
3. ASTM A 48 Standard Specification for Gray Iron Castings
4. ASTM A 123 Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
5. ASTM A 153 Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware
6. ASTM A 575 Standard Specification for Steel Bars, Carbon, Merchant Quality, M-Grades

7. ASTM A 576 Standard Specification for Steel Bars, Carbon, Hot-Wrought, Special Quality

1.4 SUBMITTALS

A. Provide submittals in accordance with Section 01 33 00 – Submittal Procedures.

B. CONTRACTOR shall submit complete shop drawings of mechanical supports, pipe supports, hangers and guides. Provide scaled shop drawings showing locations of the supports and detailed drawings for each support. Identify each type of hanger or support by the manufacturer's part number of figure on the drawing.

C. Provide installation drawings and manufacturer's catalog information on each type of hanger and support.

D. Provide structural calculations for special supports and anchors, stamped, and signed by a professional engineer registered in the State of Utah.

PART 2 MATERIALS

2.1 GENERAL

A. All pipe hangers and supports shall be manufactured to comply with MSS-SP-58, MSS-SP-569, MSS-SP-89 except as modified herein. Where applicable, design and manufacture must also conform to ANSI/ASME B31.1. Supports for plumbing or fire piping shall be in accordance with the latest edition of the applicable plumbing or fire code and the requirements of the local jurisdiction.

B. Hangers, supports, anchors and restraints must be designed in accordance with MSS-SP-127 to withstand all static and dynamic loading conditions which act upon the piping system and associated equipment. Piping supports and equipment must be considered as a total system and appropriate balance calculations made to determine load forces at critical stress points. Loading conditions to be considered may include, but are not limited to:

1. The total load of pipe, fittings, valves, insulation, and any expected contents of the pipe.
2. Thermal expansion and contraction
3. Stress from cycling of equipment or process.
4. Vibration transmitted to or from equipment or terminal connection.
5. Wind, snow, or ice loading on outdoor piping
6. Loading due to seismic forces

C. Static and dynamic forces at points of attachments must be considered to help ensure structural integrity of buildings or equipment. Hangers and supports must be selected to minimize the effect of piping system loading on the structure.

D. In general, piping shall be supported from structural members, such as walls, beams, columns, and slabs, using approved structural attachments. In situations where approved attachments cannot be used, alternative attachments or substructure assemblies must receive approval by ENGINEER prior to installation. Prior approval by ENGINEER must be given before any cutting or drilling of building structural steel.

Damage to the structure through welding, cutting, or drilling will not be permitted if it reduces the structure's strength below the established safety factor for the structure. Any additional structural steel required to properly support piping or equipment shall be furnished and installed by CONTRACTOR at no additional cost to OWNER.

2.2 SUPPORT MATERIALS

A. Pipe supports, hangers, guides, etc. shall be hot-dip galvanized carbon steel, unless noted otherwise on the Contract Drawings. Steel shall be in accordance with ASTM A 36, ASTM A 575, or ASTM A 576. Hot-dip galvanizing shall be in accordance with ASTM A 123 or ASTM A 153. Bases, rollers, and anchors shall be steel as described above or may be cast iron conforming to ASTM A 48. Pipe clamps shall be steel as described above or may be malleable iron conforming to ASTM A 47.

B. Piping in chemical or corrosive areas shall have supports, including hardware and anchors constructed of Type 316 stainless steel or fiberglass reinforced plastic (FRP), unless noted otherwise on the Drawings.

C. Supports fabricated from other materials specified on the Contract Drawings shall have a protective coating in accordance with the requirements of Section 09 90 00 – Painting and Finishes.

2.3 FLOOR MOUNTED SUPPORTS

A. Floor mounted pipe supports shall be the adjustable saddle support with stanchion, base and U-bolt or adjustable flange support type with stanchion and base. Pipe supports with stanchion and base plate shall be sized for the pipe or mechanical appurtenance it supports. All pipe supports shall have a 1-inch-high grouted pad to be used as a leveling base. Pipe supports shall be secured to the floor. A 1/4-inch-thick EPDM Rubber insulation pad shall be provided between the pipe and the U-Bolt.

2.4 CONCENTRATED LOADS

A. Concentrated loads, such as meters, valves, and equipment, on PVC piping systems shall have supports on each side of the concentrated load.

2.5 CONCRETE ANCHORS

A. Anchors shall be in accordance with Section 05 50 00 – Miscellaneous Specialties.

2.6 MANUFACTURERS

A. Mechanical Metal Support (pipe support) manufacturers shall be **Anvil (an ASC Engineered Solution), B-Line by Eaton (Cooper Industries), Utility Coatings & Fabrication, Piping Technology & Products, Inc. (PT&P),** or approved equal. To be considered an approved equal, materials must be of similar diameter, thickness, and strength to the product specified.

PART 3 EXECUTION

3.1 GENERAL

A. Mechanical metal supports, pipe supports, hangers, guides, etc. shall be installed per

the manufacturer's instructions and ASME B31.1 – Power Piping.

B. Pipe supports shall be positioned in order to produce an orderly, neat piping system. Hanger rods shall be vertical without offsets.

C. Hangers shall be adjusted to line up groups of pipes at the proper grade for drainage and venting as close to ceilings or roofs as possible and without interference with other work.

D. Hangers shall be installed in a manner to prevent obstructing ladders, manhole covers, and access hatches.

E. Set embedded inserts accurately in position and support them rigidly before concrete is placed and prevent displacement during and after placement of concrete.

F. Provide separate hangers or supports at valves, meters, elbows, tees, and other equipment. Provide separate hangers on each both sides of each non-rigid joint or flexible coupling.

G. Install piping without springing, forcing, or stressing the pipe or any connecting valves, pumps, or other pipe to which the pipe is connected.

H. Hangers and supports for rigid plastic pipe shall be provided with a support shield to spread the load bearing surface.

I. Use of wire hangers, perforated strap, hanging from unreinforced metal deck and cellular roof deck are not permitted.

J. Repair or replace metal items damaged during installation. Follow the manufacturer's procedures for repairing damaged surfaces.

K. Galvanizing Field Repairs

1. Surface preparation shall consist of removing oil, grease, soil, and soluble material by cleaning with water and detergent (SSPC SP1) followed by brush-off blast cleaning (SSPC SP7) over an area extending at least 4 inches into the undamaged area.
2. The coating shall be applied to at least 3 mils dry film thickness and shall be **Zinc-Clad XI by Sherwin-Williams, Galvax by Alvin Products, Galvite by ZRC Worldwide**, or approved equal.

3.2 SUPPORT LOCATION AND SPACING

A. Supports for horizontal piping shall be spaced to prevent excessive sag, bending and stress in the piping. Spacing shall not exceed the maximum indicated spans.

B. Maximum spans indicated in the tables below are for ambient temperatures or the temperatures listed for the materials and pipe wall thicknesses shown. Adjust the span spacing for different temperatures and/or pipe wall thicknesses per the manufacturer's recommendations.

C. Install pipe supports on horizontal and vertical runs at the spacing shown or detailed on the Contract Drawings. If no spacing or rod sizes are given on the Contract Drawings or

in the Specifications for a particular piping system, use the following tables or the recommendations of the support or pipe manufacturer.

1. Supports for Ductile Iron Pipe (Section 33 05 05 – Ductile Iron Pipe) should be installed in locations shown on the Drawings with a minimum of one support per 20-foot length of pipe. If longer spans are required, the supports should be designed in accordance with DIPRA – Design of Ductile Iron Pipe on Supports and the pipe manufacturer's recommendations. Supports should be cradle type with a saddle angle of 120 degrees. The table below shows the recommended maximum spans per US Pipe – Long Span and Bridge Crossing Pipe guidelines.

Pipe Size (inches)	Maximum Span Water Service (feet)
6	28
8	30
10	30
12	35
14	35
16	40
18	42
20 to 64	45
Note: These spacings do not apply where span calculations are made or where there are concentrated loads between supports such as flanges, valves, specialties, etc. or changes in direction requiring additional supports.	

2. Support spacing for other pipe materials shall be based on recommendations from the pipe manufacturer.
3. Provide sway bracing for hangers where shown on the Contract Drawings. If no bracing is shown, provide bracing at 10-foot maximum center-to-center intervals.

- END OF SECTION -

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SECTION 05 50 00
MISCELLANEOUS SPECIALTIES

PART 1 GENERAL

1.1 DESCRIPTION

A. This section covers materials, fabrication, and installation of miscellaneous metals, specialties, and appurtenances as specified and indicated.

1.2 RELATED WORK

A. Related Work in other Sections includes, but is not limited to:

1. Section 01 33 00 Submittal Procedures
2. Section 09 90 00 Painting and Finishes

1.3 RELATED SPECIFICATIONS

A. Fabrication and erection of the platforms, ladders and stairs shall be in accordance with the Specification for the Design, Fabrication and Creation of Structural Steel for Buildings of the latest edition of the A.I.S.C. Manual, and Section 1910.27 of the latest edition of the OSHA standards, except as specified herein.

1.4 REFERENCES

A. The latest edition of the following publications form a part of this Specification to the extent referenced. The publications are referred to in the text by basic designation only.

B. AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC)

1. Manual of Steel Construction

C. AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

1. ASTM A 36 Standard Specification for Carbon Structural Steel
2. ASTM A 53 Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless
3. ASTM A 123 Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
4. ASMT A 153 Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware
5. ASTM A 276 Standard Specification for Stainless Steel Bars and Shapes
6. ASTM A 307 Standard Specification for Carbon Steel Bolts, Studs, and Threaded Rod 60,000 psi Tensile Strength
7. ASTM A 615 Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement
8. ASTM F 593 Standard Specification for Stainless Steel Bolts, Hex Cap Screws, and Studs
9. ASTM F 594 Standard Specification for Stainless Steel Nuts

1.5 SUBMITTALS

A. Provide submittals in accordance with Section 01 33 00 – Submittal Procedures.

B. CONTRACTOR shall submit complete shop drawings of fabricated items, such as vents, ladders, stairs, platforms, beams, pipe supports, and miscellaneous metals for approval to ENGINEER.

C. Shop drawings shall conform to AISC recommendations and specifications, and shall show holes, and the like, as may be required for other parts of the work.

D. Shop drawings shall include complete details of members and connections, anchor bolt layouts, schedules for fabrication procedures, and diagrams for the sequence of erection.

E. Submit manufacturer's catalog data and dimensional drawings for lifting eyebolts and inserts; ladder safety posts, manhole covers and frames, and anchor bolts.

F. Submit ICC ES Evaluation Reports for adhesive and wedge anchors and installer qualifications and procedures.

1.6 QUALITY ASSURANCE

A. Field Measurements: Take field measurement prior to preparation of Shop Drawings and fabrication to ensure proper fitting of the Work.

B. Shop Assembly: Preassemble items in the shop to the greatest extent possible, so as to minimize field splicing and assembly of units at the project site. Disassemble units to the extent necessary for shipping limitations.

C. Fabricator Qualifications: Fabricators shall be regularly engaged in the manufacture of the types of steel specialties they are providing and shall have at least 5 years of experience in this specialty.

D. Qualifications: Qualify welding operators in accordance with the requirements of current AWS Standard. Provide certification that all welders employed on or to be employed for the Work have satisfactorily passed AWS qualification tests within the previous 12 months. Ensure that all certifications are kept current.

PART 2 MATERIALS

2.1 CARBON STEEL

A. Materials for bolted or welded steel construction shall conform to ASTM A 36.

2.2 STAINLESS STEEL

A. All bolts, expansion bolts, nuts, washers, and expansion sleeve inserts used to attach metal supports shall be stainless steel Type 316.

B. All interior tank ladders, wall conduits, louvers, and other items required shall be stainless steel unless noted otherwise.

2.3 BOLTS

A. Steel anchor and connection bolts for non-corrosive service shall conform to ASTM A 307, Grade A or B, unless otherwise noted. Bolts shall be hot-dip galvanized and provided with self-locking nuts or lock washers and plain nuts.

B. Steel anchor and connection bolts for corrosive service shall be fabricated from stainless steel, unless indicated otherwise in the specifications or on the Contract Drawings. Corrosive service locations are listed below.

1. Buried locations
2. Submerged locations
3. Locations subject to occasional flooding
4. Inside dry-pit vault
5. Inside buried manholes, vaults, and structures that do not have a gravity drain or sump pump
6. Inside trenches, containment walls, and curbed areas.

C. The nuts shall be capable of developing the full strength of the bolts. Bolts and cap screws shall have hexagon heads and nuts shall be heavy hexagon series. Bolts and nuts shall be installed with washers from material matching the base material of bolts. Lock washers fabricated from the material matching the bolts shall be installed where indicated.

D. The length of the bolts shall be such that the bolt extends at least 1/8 inch beyond the outside face of the nut before tightening, except for anchor bolts which shall be flush with the face of the nut before tightening.

2.4 ADHESIVE ANCHORS

A. Unless otherwise indicated, drilled concrete or masonry anchors shall be adhesive anchors. No substitutions will be considered without an ICC ES Report verifying strength and material equivalency. Anchors used inside potable water reservoirs shall be ANSI/NSF 61 certified.

B. Adhesive anchors shall be a two-component system consisting of an all-threaded anchor rod with nut and washer, and the adhesive capsule. Anchor rods shall be Type 304 stainless steel conforming to ASTM F 593 with nuts conforming to ASTM F 594. The adhesive capsules shall contain a polyvinyl or urethane methacrylate-based resin and accelerator within a sealed dual chamber foil capsule. Adhesive anchors shall be **Hilti HVA Capsule Adhesive Anchoring System**, or approved equal.

PART 3 EXECUTION

3.1 GENERAL

A. Except as otherwise shown, the design, fabrication, and erection of structural steel shall conform to the requirements of the American Institute of Steel Construction "Manual of Steel Construction".

B. Install miscellaneous specialties as indicated on the Contract Drawings or as recommended by the manufacturer.

C. Store materials above ground on platforms, skids, or other supports. Keep material free from dirt, grease, and other foreign matter and protect from corrosion.

D. Clean surfaces of metalwork to be in contact with concrete of rust, dirt, grease, and other foreign matter before placing concrete.

E. Set embedded metalwork accurately in position and support it rigidly before concrete is placed and prevent displacement during and after placement of concrete.

F. Repair or replace metal items damaged during installation. Follow the manufacturer's procedures for repairing damaged surfaces.

G. Welding shall be performed by metal-arc method or shielded metal arc method as per the American Welding Society's (AWS) "Welding Handbook". During welding component parts shall be adequately clamped or supported. Avoid irregular surface, non-uniform bead pattern, and high crown. Upon completion of welding, remove weld splatter, flux, slag, and burrs. Accomplish repair, chipping, and grinding of welds in a manner that will not gouge, groove, or reduce the base metal thickness.

H. Adhesive Anchors. Do not install anchors until the concrete has reached the required 28-day compressive strength. Drill hole in concrete by means of a percussion hammer drill. The hole shall be roughened with a brush on a power drill and then cleaned and dried. Install anchor in accordance with the manufacturer's instructions. Do not load the anchor until the adhesive has reached its indicated strength in accordance with the manufacturer's instructions.

I. Galvanizing Field Repairs:

1. Surface preparation shall consist of removing oil, grease, soil, and soluble material by cleaning with water and detergent (SSPC SP1) followed by brush-off blast cleaning (SSPC SP7) over an area extending at least 4 inches into the undamaged area.
2. The coating shall be applied to at least 3 mils dry film thickness and shall be **Zinc-Clad XI by Sherwin-Williams, Galvax by Alvin Products, Galvite by ZRC Worldwide**, or approved equal.

- END OF SECTION -

SECTION 09 90 00
PAINTING AND FINISHES

PART 1 GENERAL

1.1 DESCRIPTION

A. This section covers furnishing, surface preparation, and applying paints and coatings, complete and in place, to all specified surfaces including exposed valves, piping, or fittings.

B. Definitions

1. The term “paint”, “coatings”, or “finishes” as used herein, shall include surface treatments, emulsions, enamels, paints, epoxy resins, and other protective coatings, excepting galvanizing or anodizing, whether used as a pretreatment, primer, intermediate coat, or finish coat.
2. The term “DFT” means minimum dry film thickness, without any negative tolerance.
3. The term “mil” means thousandths of an inch.
4. The term “SSPC” means The Society for Protective Coatings.

C. The following surfaces shall not be coated:

1. Concrete, unless required by items on the concrete coating schedule below or the Contract Drawings.
2. Stainless steel
3. Machined surfaces
4. Grease fittings
5. Glass
6. Equipment nameplates
7. Platform gratings, stair treads, door thresholds, and other walk surfaces, unless specifically indicated to be coated.

D. The protective coatings applicator (Applicator) shall possess a valid state license as required for the performance of the painting and coating work called for in this specification and shall provide 5 references which show the Applicator has previous successful experience with the indicated of comparable coating systems. Include the name, address, and the telephone number for the owner of each installation for which the Applicator provided the protective coating.

1.2 RELATED WORK

A. Related Work in other Sections includes, but is not limit to:

1. Section 01 33 00 Submittal Procedures
2. Section 33 05 05 Ductile Iron Pipe
3. Section 33 12 00 Mechanical Appurtenances

1.3 REFERENCES AND STANDARDS

A. Work covered by this Specification shall meet or exceed the provisions of the latest editions of the following Codes and Standards in effect at the time of award of the Contract:

1. OSHA — Occupation Safety and Health Act: State of Utah and Federal
2. ICRI — International Concrete Repair Institute Guideline No. 310.2 – Selecting and Specifying Concrete Surface Preparation for Sealers, Coatings, and Polymer Overlays

B. AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)

1. ANSI A 13.1 — Standard for Scheme for the Identification of Piping Systems
2. ANSI Z 535 — Standard for Safety Colors

C. AMERICAN SOCIETY OF TESTING AND MATERIALS (ASTM)

1. ASTM C 309 — Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete
2. ASTM D 520 — Standard Specification for Zinc Dust Pigment
3. ASTM D 521 — Standard Test Methods for Chemical Analysis of Zinc Dust (Metallic Zinc Powder)
4. ASTM D 6943 — Standard Practice for Immersion Testing of Industrial Protective Coatings Linings
5. ASTM D 1653 — Standard Test Methods for Water Vapor Transmission of Organic Coating Films
6. ASTM D 2370 — Standard Test Method for Tensile Properties of Organic Coatings
7. ASTM D 2794 — Standard Test Method for Resistance of Organic Coatings to the Effects of Rapid Deformation (Impact)
8. ASTM D 4263 — Standard Test Method for Indicating Moisture in Concrete by the Plastic Sheet Method
9. ASTM D 4414 — Standard Practice for Measurement of Wet Film Thickness by Notch Gages
10. ASTM D 4417 — Standard Test Methods for Field Measurement of Surface Profile of Blast Cleaned Steel
11. ASTM D 7234 — Standard Test Method for Pull-Off Adhesion Strength of Coatings on Concrete Using Portable Pull-Off Adhesion Testers
12. ASTM D 7682 — Standard Test Method for Replication and Measurement of Concrete Surface Profiles Using Replica Putty
13. ASTM E 96 — Standard Test Methods for Water Vapor Transmission of Materials
14. ASTM F 1869 — Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride
15. ASTM F 2170 — Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in situ Probes

D. AMERICAN CONCRETE INSTITUTE (ACI)

1. ACI 301 — Specifications for Structural Concrete

E. NACE International (NACE)

1. NACE RP0287 Field Measurement of Surface Profile of Abrasive Blast-Cleaned Steel Surfaces Using a Replica Tape
2. NACE SP0188 Standard Practice for Discontinuity (Holiday) Testing of Protective Linings
3. NACE SP0892 Standard Practice for Coatings and Linings over Concrete for Chemical Immersion and Containment Service
4. NACE No. 1/SSPC-SP 5 White Metal Blast Cleaning
5. NACE No. 2/SSPC-SP10 Near White Metal Blast Cleaning
6. NACE No. 3/SSPC-SP6 Commercial Blast Cleaning
7. NACE No. 6/SSPC-SP13 Surface Preparation of Concrete

F. SSPC: The Society for Protective Coatings (SSPC)

1. SSPC PA1 - Shop, Field, and Maintenance Painting of Steel
2. SSPC-PA2 – Paint Application Specification No. 2: Measurement of Dry Coating Thickness with Magnetic Gages.
3. SSPC-PA11 - Protecting Edges, Crevices, and Irregular Steel Surfaces by Stripe Coating
4. SSPC-SP 6/NACE No. 3 - Commercial Blast Cleaning.
5. SSPC-SP10/NACE 2 - Near White Metal Blast Cleaning
6. SSPC-SP16 – Brush-off Blast Cleaning of Coated and Uncoated Galvanized Steel, Stainless Steels, and Non-Ferrous Metals
7. SSPC-VIS 1 - Guide to Reference Photographs for Steel Surfaces Prepared by Dry Abrasive Blast Cleaning

1.4 SUBMITTALS

A. Provide submittals in accordance with Section 01 33 00 – Submittal Procedures.

B. CONTRACTOR shall supply shop drawings for approval on all paint materials at least 30 days prior to installation. Submittals shall include the following data sheets:

1. For each paint system used herein, furnish a Paint System Data Sheet (PSDS), Technical Data Sheets, and paint colors available (where applicable) for each product used in the paint system, except for products applied by equipment manufacturers.

C. Quality Control Submittals:

1. Furnish a list of references for the Applicator substantiating the requirements as specified.
2. Manufacturer’s certification stating factory applied coating systems meets or exceeds requirements specified herein.
3. If the manufacturer of finish coating differs from that of shop primer, provide both manufacturers’ written confirmation that materials are compatible.

1.5 PAINT DELIVERY, STORAGE, AND HANDLING

A. Deliver paint to the project site in unopened containers that plainly show, at the time of use, the designated name, date of manufacture, color, and name of manufacturer.

B. Store paints in a suitable protected area that is heated or cooled as required to maintain temperatures within the range recommended by the manufacturer.

1.6 QUALITY ASSURANCE

A. All inspection for quality assurance shall ultimately be the responsibility of CONTRACTOR. OWNER retains the right to observe, accept, or reject the work based on the results of CONTRACTOR's inspection or observations by ENGINEER, at OWNER's discretion, in accordance with the Specifications.

B. Repair and recoat all runs, overspray, roughness, or any other signs of improper application in accordance with paint manufacturer's instructions and as reviewed by ENGINEER.

C. Observations by OWNER or ENGINEER, or the waiver of inspection of any particular portion of the work, shall not be construed to relieve CONTRACTOR of his responsibility to perform the work in accordance with these Specifications.

1.7 MANUFACTURER'S SERVICES

A. Furnish paint manufacturer's representative to visit jobsite at intervals during surface preparation and painting as may be required for product application quality assurance, and to determine compliance with manufacturer's instructions and these specifications, and as may be necessary to resolve field problems attributable to, or associated with, manufacturer's products furnished under this Contract.

1.8 SPECIAL CORRECTION OF DEFECTS REQUIREMENTS

A. An inspection may be conducted during the eleventh month following completion of coating work. CONTRACTOR and a representative of the coating material manufacturer shall attend this inspection. Defective work shall be repaired in accordance with these specifications and to the satisfaction of OWNER. OWNER may, by written notice to CONTRACTOR, reschedule the inspection to another date within the one-year correction period or may cancel the inspection altogether. CONTRACTOR is not relieved of its responsibilities to correct defects whether or not the inspection is conducted.

PART 2 PRODUCTS

2.1 GENERAL

A. CONTRACTOR shall use suitable coating materials as recommended by the manufacturer. Materials shall comply with Volatile Organic Compound (VOC) limits applicable at the Site.

B. Where manufacturers and product numbers are listed, it is to show the type and quality of coatings that are required. If a named product does not comply with VOC limits in effect at the time of Bid opening, that product will not be accepted, and CONTRACTOR shall propose a substitute product of equal quality that does comply. Proposed substitute materials will be considered as indicated below. Coating materials shall be materials that have a record of satisfactory performance in industrial plants, manufacturing facilities, and water and wastewater treatment plants.

C. In any coating system only compatible materials from a single manufacturer shall be used in the work. Particular attention shall be directed to the compatibility of primers and finish coats. If necessary, a barrier coat shall be applied between existing prime coat and subsequent field coats to ensure compatibility.

D. Colors and shades of colors of coatings shall be as indicated or selected by ENGINEER. Each coat shall be of a slightly different shade to facilitate observation of surface coverage of each coat. Finish colors shall be as selected from the manufacturer's standard color samples by OWNER.

E. Substitute or “Or-Equal” Products

1. Basis of Design: The Coating Systems listed below in paragraph 2.3 are based on products from Tnemec Company Incorporated, except where indicated below.
2. Product Substitution: To establish equality under Section 01 60 00 – Product Requirements, the specified coating systems are the minimum standard of quality for this project. Equivalent materials of other manufacturers may be substituted only by approval of ENGINEER. Requests for material substitutions shall be in accordance with the requirements of the project specification.
3. Product Requirements: CONTRACTOR shall furnish satisfactory documentation from the manufacturer of the proposed substitute or "or equal" product that the material meets the indicated requirements and is equivalent or better in the following properties: Quality, Durability, Resistance to abrasion and physical damage, Life expectancy, Ability to recoat in the future, Solids content by volume, Dry film thickness per coat, Compatibility with other coatings, Suitability to chemical attack, Temperature limitations during application and in service, Type and quality of recommended undercoats or topcoats, Ease of repairing damaged areas, and stability of colors.
4. Manufacturers of “or equal” products shall provide direct performance comparison with the materials specified, in addition to complying with all other requirements of these Specifications. “Or equal” products shall employ the same generic type materials and system components as the specified coating systems.
5. Requests for product substitution shall be made and approved at least 10 days prior to bid date.
6. CONTRACTOR shall bear any additional costs, if a proposed substitution requires changes or additional work.

2.2 COLORS

A. Provide colors as selected by OWNER or ENGINEER.

B. Colors shall be formulated with colorants free of lead, lead compounds, or other materials which might be affected by the presence of hydrogen sulfide or other gas likely to be present at the project.

C. Proprietary identification of colors is for identification only. Any authorized manufacturer may supply color matches.

D. Equipment colors;

1. Equipment shall mean the machinery or vessel itself plus the structural supports and fasteners.

2. Paint non-submerged portions of equipment in the same color as the process piping it serves, except as indicated below:

   a. Dangerous parts of equipment and machinery: OSHA Orange
   b. Fire protection equipment and apparatus: OSHA Red
   c. Radiation hazards: OSHA Purple
   d. Physical hazards in normal operating area: OSHA Yellow

3. Fiberglass reinforced plastic (FRP) equipment with an integral colored gel coat does not require painting, provided the color is as specified.

E. Piping color coding shall be in accordance with ANSI A13.1, Division of Drinking Water R-309-525, and International Plumbing Code.

1. Color code non-submerged metal piping except electrical conduit. Paint fittings and valves the same color as the pipe unless otherwise specified.
2. Pipe supports: If pipe supports are not galvanized or stainless steel, supports shall be painted ANSI No. 70 light gray as specified in ANSI Z535.
3. Fiberglass reinforced plastic (FRP) pipe and polyvinyl chloride (PVC) pipe located outside of buildings and enclosed structures will not require painting, unless noted otherwise on the Contract Drawings.

2.3 COATING SYSTEMS

A. System No. 1 through System No. 7 (Not Used)

B. System No. 8 Galvanized Steel and Cast/Ductile Iron – Interior Exposed

1. Materials

Type	Polyamide Epoxy
VOC content, max, g/L	250
Demonstrated Suitable for	Ferrous, galvanized, nonferrous, cast/ductile iron surfaces in industrial exposure, resistant to mild corrosion and chemical fumes, has good color and gloss retention

2. Surface preparation and Coating System

Surface Preparation	**Products**	**Total System** (mils)
Galvanized Steel and Non-Ferrous: SSPC-SP16 brush-off blast cleaning of coated and uncoated galvanized steel and	Primer: Tnemec Series 69 Hi-Build Epoxoline II Finish: Tnemec Series 69 Hi-Build Epoxoline II	Primer: 3-5 DFT Finish: 3 – 5 DFT

non-ferrous metals to achieve a uniform anchor profile of 1.0-2.0 mils. Ductile and Cast Iron: Prepare all surfaces as per NAPF 500-03 - Uniformly abrasive blast the entire exterior surface using abrasive to an NAPF 500-03-04 with a minimum angular anchor profile of 1.5 mils.	Primer: Sherwin Williams Macropoxy 646 Fast Cure Epoxy Finish: Sherwin Williams Macropoxy 646 Fast Cure Epoxy	
	Primer: Carboline Carboguard 60 Finish: Carboline Carboguard 60	

3. Application
   a. Exposed galvanized and cast/ductile iron surfaces located inside of structures requiring painting and the following specific surfaces unless noted otherwise:
      1) All exposed galvanized pipe
      2) All exposed cast/ductile iron pipe
   b. Do not paint galvanized steel mechanical pipe and equipment supports unless noted otherwise.

2.4 CONCRETE FINISHES

A. Exterior Above Grade Concrete: Concrete surfaces exposed to view outside the building and including 6 inches below finished grade on the building or structure should be finished with a “Class B” finish. Products for the “Class B” finish are identified or specified in Section 03 30 00 - Cast-In-Place Concrete.

B. Interior Exposed Above Floor Concrete: Interior above grade concrete shall be finished with a “Class B” finish. Products for the “Class B” finish are identified or specified in Section 03 30 00 - Cast-In-Place Concrete.

C. Interior Concrete Floors: Interior concrete floors shall be finished with a “Trowel” finish. Products for the “Trowel” finish are identified or specified in Section 03 30 00 - Cast-In-Place Concrete.

D. Exterior Concrete Flat Surfaces: Exterior concrete flat surfaces shall be finished with a “Broom” finish. Products for the “Broom” finish are identified or specified in Section 03 30 00 - Cast-In-Place Concrete.

PART 3 EXECUTION

3.1 GENERAL

A. The intention of this specification is for all new, interior and exterior, masonry, concrete, and metal, whether atmospheric or submerged exposure surfaces to be painted whether specifically mentioned or not, except as modified herein. Concealed structural steel surfaces shall receive a prime coat only unless modified herein.

B. Surface preparation and coating application shall be in accordance with these specifications and the coating manufacturer's written product data sheets and written recommendations of the manufacturer's technical representative. Where conflict occurs between the manufacturer's recommendations and these specifications, the more stringent of the two shall apply unless approved by ENGINEER.

C. For immersion coatings, obtain full cure for completed system before immersing or allowing exposure to water of condensation for more than 12 hours.

3.2 REGULATORY REQUIREMENTS

A. Meet federal, state, and local requirements limiting the emission of volatile organic compounds and worker exposures.

B. Protect workers and comply with applicable federal, state, and local air pollution and environmental regulations for surface preparation, blast cleaning, disposition of spent aggregate and debris, coating application, and dust prevention including but not limited to the following Acts, Regulations, Standards, and Guidelines:

1. Clean Air Act
2. National Ambient Air Quality Standard
3. Resource Conservation and Recovery Act (RCRA)
4. SSPC Guide 6

C. Comply with applicable federal, state, and local regulations for confined space entry.

D. Provide and operate equipment that meets explosion proof requirements.

3.3 ENVIRONMENTAL CONDITIONS

A. Do not apply paint in extreme heat, temperatures below 40 degrees F, nor in dust, smoke-laden atmosphere, damp or humid weather. The Applicator shall adhere to the manufacturer's recommendations regarding environmental conditions. The Applicator shall monitor humidity, air temperature, and surface temperature with properly calibrated instruments.

B. Do not perform abrasive blast cleaning whenever relative humidity exceeds 85 percent, nor whenever surface temperature is less than 5 degrees F above dew point of ambient air. Strictly adhere to manufacturer's recommendations.

C. Surface preparation power tools and blast equipment shall contain dust collection devices that will prevent discharge of dust particles into the atmosphere around electrical or mechanical equipment unless otherwise permitted by ENGINEER.

D. Where weather conditions or project requirement dictate, the Applicator shall provide and operate dehumidification equipment to maintain environmental conditions suitable for abrasive blasting and coating application as specified.

3.4 WORKMANSHIP

A. Skilled craftsmen and experienced supervision shall be used on coating work.

B. Coating shall be done in a workmanlike manner so as to produce an even film of uniform thickness. Edges, corners, crevices, and joints shall receive special attention to insure thorough surface preparation. The finished surfaces shall be free from runs, drops, ridges, waves, laps, brush marks, and variations in color, texture, and finish. The hiding shall be so complete that the addition of another coat would not increase the hiding. Special attention shall be given so that edges, corners, crevices, welds, and similar areas receive a film thickness equivalent to adjacent areas, and installations shall be protected by the use of drop cloths or other precautionary measures.

C. Damage to other surfaces resulting from the work shall be cleaned, repaired, and refinished to original condition.

3.5 STORAGE, MIXING, AND THINNING OF MATERIALS

A. Unless otherwise indicated, the coating manufacturer's printed recommendations and instructions for thinning, mixing, handling, applying, and protecting its coating materials, for preparation of surfaces for coating, and for other procedures relative to coating shall be strictly observed.

B. Coating materials shall be used within the manufacturer's recommended shelf life.

C. Coating materials shall be stored under the conditions recommended by the Product Data Sheets, and shall be thoroughly stirred, strained, and kept at a uniform consistency during application. Coatings from different manufacturers shall not be mixed together.

3.6 SURFACE PREPARATION

A. All surfaces which receive paint or other coatings shall be prepared in accordance with the recommendations of the manufacturer of the material being used. The Applicator shall examine surfaces to be coated and shall correct surface defects before application of any coating material. Marred or abraded spots on shop-primed and on factory-finished surfaces shall receive touch-up restoration prior to any field coating application.

B. Perform sandblasting for piping and any other items and equipment where specified and as required to restore damaged surfaces previously shop or field blasted and primed. Materials, equipment, and procedures shall meet requirements of the Society for Protective Coatings (formerly the Steel Structures Painting Council).

3.7 PROTECTION OF MATERIALS NOT TO BE PAINTED

A. Surfaces that are not to receive coatings shall be protected during surface preparation, cleaning, and coating operations.

B. Remove, mask or otherwise protect hardware, lighting fixtures, switch plates, aluminum surfaces, machined surfaces, couplings, shafts, bearings, nameplates on machinery, and other surfaces not intended to be painted.

C. Provide drop cloths to prevent paint materials from falling on or marring adjacent surfaces.

D. Protect working parts or mechanical and electrical equipment and motors from damage.

E. Care shall be exercised not to damage adjacent work during blasting operations. Spraying shall be conducted under carefully controlled conditions. CONTRACTOR shall be fully

responsible for and shall promptly repair any and all damage to adjacent work or adjoining property occurring from blasting or coating operations.

3.8 SURFACE PREPARATION STANDARDS

A. The following referenced surface preparation specifications of the the Society for Protective Coatings shall form a part of this specification:

1. Solvent Cleaning (SSPC SP1): Removal of oil, grease, soil, salts, and other soluble contaminants by cleaning with solvent, vapor, alkali, emulsion, or steam.
2. Hand Tool Cleaning (SSPC SP2): Removal of loose rust, loose mill scale, loose paint, and other loose detrimental foreign matter, by hand chipping, scraping, sanding, and wire brushing.
3. Power Tool Cleaning (SSPC SP3): Removal of loose rust, loose mill scale, loose paint, and other loose detrimental foreign matter, by power tool chipping, descaling, sanding, wire brushing, and grinding.
4. White Metal Blast Cleaning (SSPC SP5): Removal of all visible rust, oil, grease, soil, dust, mill scale, paint, oxides, corrosion products and foreign matter by blast cleaning.
5. Commercial Blast Cleaning (SSPC SP6): Removal of all visible oil, grease, soil, dust, mill scale, rust, paint, oxides, corrosion products, and other foreign matter, except that staining shall be limited to no more than 33 percent of each square inch of surface area.
6. Brush-Off Blast Cleaning (SSPC SP7): Removal of all visible oil, grease, soil, dust, loose mill scale, loose rust, and loose paint.
7. Near-White Blast Cleaning (SSPC SP10): Removal of all visible oil, grease, soil, dust, mill scale, rust, paint, oxides, corrosion products, and other foreign matter, except that staining shall be limited to no more than 5 percent of each square inch of surface area.
8. Surface Preparation of Concrete (SSPC-SP13): Removal of protrusions, laitance and efflorescence, existing coatings, form-release agents, and surface contamination by detergent or steam cleaning, abrasive blasting, water jetting, or impact or power tool methods as appropriate for the condition of the surface and the requirements of the coating system.
9. Surface Preparation (SSPC-SP16): Brush-off Blast Cleaning of Coated and Uncoated Galvanized Steel, Stainless Steels, and Non-Ferrous Metals

3.9 FERROUS METAL SURFACE PREPARATION (UNGALVANIZED)

A. The minimum abrasive blasting surface preparation shall be as indicated in the coating system schedules included at the end of this Section. Where there is a conflict between these requirements and the coating manufacturer's printed recommendations for the intended service, the higher degree of cleaning shall apply.

B. Oil, grease, welding fluxes, and other surface contaminants shall be removed by solvent cleaning per SSPC SP1 - Solvent Cleaning prior to blast cleaning.

C. Round or chamfer all sharp edges and grind smooth burrs and surface defects and weld splatter prior to blast cleaning.

D. Surfaces shall be cleaned of dust and residual particles of the cleaning operation by dry air blast cleaning, vacuuming, or another approved method prior to painting.

E. Enclosed areas and other areas where dust settling is a problem shall be vacuum cleaned and wiped with a tack cloth.

F. Damaged or defective coating shall be removed by the blast cleaning to meet the clean surface requirements before recoating.

G. If the required abrasive blast cleaning will damage adjacent work, the area to be cleaned is less than 100 square feet, and the coated surface will not be submerged in service, then SSPC SP2 or SSPC SP3 may be used as per manufacturers recommendations.

H. Shop-applied coatings of unknown composition shall be completely removed before the indicated coatings are applied. Valves, castings, ductile or cast iron pipe, and fabricated pipe or equipment shall be examined for the presence of shop-applied temporary coatings. Temporary coatings shall be completely removed by solvent cleaning per SSPC SP1 before the abrasive blast cleaning has been started.

I. Shop primed equipment shall be solvent-cleaned in the field before finish coats are applied.

J. Exposed ductile iron pipe shall be given a shop coat of rust-inhibitive primer conforming to these specifications. Abrasive blasting of the asphaltic coating on ductile iron pipe will not be allowed.

3.10 SHOP COATING REQUIREMENTS

A. Unless otherwise indicated, items of equipment or parts of equipment which are not submerged in service shall be shop-primed and then finish-coated in the field after installation with the indicated or selected color. The methods, materials, application equipment, and other details of shop painting shall comply with this Section. If the shop primer requires topcoating within a specific period of time, the equipment shall be finish coated in the shop and then be touched up after installation.

B. Items of equipment or parts and surfaces of equipment which are submerged or inside an enclosed hydraulic structure when in service, with the exception of pumps and valves, shall have surface preparation and coating performed in the field.

C. For certain pieces of equipment, it may be undesirable or impractical to apply finish coatings in the field. Such equipment shall be primed and finish coated in the shop and touched up in the field with the identical material after installation. CONTRACTOR shall require the manufacturer of each such piece of equipment to certify as part of its Shop Drawings that the surface preparation is in accordance with these specifications. The coating material data sheet shall be submitted with the Shop Drawings for the equipment.

D. For certain small pieces of equipment, the manufacturer may have a standard coating system that is suitable for the intended service conditions. In such cases, the final determination of suitability will be made during review of the Shop Drawing submittals. Equipment of this type generally includes only indoor equipment such as instruments, small compressors, and chemical metering pumps.

E. Shop-painted surfaces shall be protected during shipment and handling by suitable provisions including padding, blocking, and the use of canvas or nylon slings. Primed

surfaces shall not be exposed to the weather for more than 2 months before being topcoated, or less time if recommended by the coating manufacturer.

F. CONTRACTOR shall make certain that the shop primers and field topcoats are compatible and meet the requirements of this Section. Copies of applicable coating manufacturer's data sheets shall be submitted with equipment Shop Drawings.

G. Damage to shop-applied coatings shall be repaired in accordance with this Section and the coating manufacturer's printed instructions.

3.11 APPLICATION

A. General

1. Schedule inspection with ENGINEER in advance for cleaned surfaces and all coats prior to each succeeding coat.
2. Apply coatings in accordance with the paint manufacturer’s recommendations and these specifications, whichever is more stringent. Allow sufficient time between coats to assure thorough drying of previously applied paint.
3. Blast cleaned ferrous metal surfaces shall be painted before any rusting or other deterioration of the surface occurs. Blast cleaning shall be limited to only those surfaces that can be coated in the same day.
4. Special attention shall be given to materials that will be joined so closely that proper surface preparation and application are not possible. Such contact surfaces shall be coated prior to assembly or installation.
5. Finish coats, including touch-up and damage repair coats shall be applied in a manner that will present a uniform texture and color matched appearance.
6. Non-buried steel piping shall be abrasive blast cleaned and primed before installation.
7. Finish coats shall be applied after concrete, masonry, and equipment installation is complete, and the working areas are clean and dust free.

3.12 CURING OF COATINGS

A. CONTRACTOR shall maintain curing conditions in accordance with the conditions recommended by the coating material manufacturer or by this Section, whichever is the most stringent, prior to placing the completed coating system into service.

B. In the case of enclosed areas, forced air ventilation, using heated air, if necessary, may be required until the coatings have fully cured.

3.13 SHOP AND FIELD OBSERVATION AND TESTING

A. CONTRACTOR shall give ENGINEER a minimum of 3 Days advance notice of the start of any field surface preparation or coating application, and a minimum of 7 Days advance notice of the start of any surface preparation activity in the shop.

B. Observation by ENGINEER, or the waiver of inspection of any particular portion of the work, shall not relieve CONTRACTOR of its responsibility to perform the work in accordance with these Specifications.

C. CONTRACTOR shall furnish inspection devices in good working condition for the detection of holidays and measurement of dry film thicknesses of coatings. Dry-film

thickness gauges shall be made available for ENGINEER's use while coating is being done, until final acceptance of such coatings. CONTRACTOR shall furnish the services of a trained operator of the holiday detection devices until the final acceptance of such coatings. Holiday detection devices shall be operated only in the presence of ENGINEER.

D. CONTRACTOR shall test for continuity (holiday test) all coated surfaces inside reservoirs, other surfaces that will be submerged in water or other liquids, surfaces that are enclosed in a vapor space in such structures, and surfaces coated with any of the submerged and severe service coating systems. Areas that contain discontinuities shall be marked and repaired or recoated in accordance with the coating manufacturers' printed instructions and then be retested.

1. Coatings with thickness exceeding 20-mils total DFT: Pulse-type holiday detector such as Tinker & Rasor Model AP-W, D.E. Stearns Co. Model 14/20, or equal shall be used. The unit shall be adjusted to operate at the voltage required to cause a spark jump across an air gap equal to twice the required coating thickness.
2. Coatings with thickness of 20-mils or less total DFT: Tinker & Rasor Model M1 nondestructive type holiday detector, K-D Bird Dog, or equal shall be used. The unit shall operate at less than 75 volts. For thicknesses between 10- and 20-mils, a nonsudsing type wetting agent, such as Kodak Photo-Flo or equal, shall be added to the water prior to wetting the detector sponge.

E. On ferrous and non-ferrous the dry film coating thickness shall be measured in accordance with the SSPC PA 2 using a magnetic type dry film thickness gauge such as Mikrotest Model FM, Elcometer Model 111/1EZ, or equal. Each coat shall be tested for the correct thickness. No measurements shall be made until at least 8 hours after application of the coating. On non-ferrous metals and other substrates, the coating thicknesses shall be measured at the time of application using a wet film gauge.

F. Evaluation of blast cleaned surface preparation will be based upon comparison of the blasted surfaces with the standard samples available from SSPC and NACE, such as using NACE standards TM-01-70 and TM-01-75.

G. Visually inspect concrete, nonferrous metal, plastic, drywall, and wood surfaces to ensure proper and complete coverage has been attained.

3.14 CLEANUP

A. Place cloths and waste that might constitute a fire hazard in closed metal containers or destroy at the end of each day.

B. Upon completion of the work, remove staging, scaffolding, and containers from the site or destroy in a legal manner.

C. Completely remove paint spots, oil, or stains upon adjacent surfaces and floors and leave entire job clean.

D. Damages due to overspray on buildings, vehicles, trees, or other surfaces not specified to be painted would be the responsibility of CONTRACTOR.

3.15 MANUFACTURER' SERVICES

A. Furnish paint manufacturer's representative to visit jobsite at intervals during surface preparation and painting as may be required for product application quality assurance, and to determine compliance with manufacturer's instructions and these specifications, and as may be necessary to resolve field problems attributable to, or associated with, manufacturer's products furnished under this Contract.

- END OF SECTION –

SECTION 22 13 29.12
DRY PIT CHOPPER PUMP

PART 1 GENERAL

1.1 DESCRIPTION

A. Furnish, deliver and install pedestal mount Dry Pit Chopper Pumps. motors, and appurtenances, complete and operable, as specified below and as shown on the Contract Drawings. The pumps shall be specifically designed to pump waste solids at heavy consistencies without plugging or dewatering of solids. Materials shall be macerated and conditioned by the pump as an integral part of the pumping action. The pump must have demonstrated the ability to chop through and pump high concentrations of solids such as plastics, heavy rags, grease and hair balls, wood, paper products and stringy materials without plugging, both in tests and field applications.

B. CONTRACTOR shall be responsible for furnishing the Work and for the coordination of design, assembly, testing, and installation of the Work. CONTRACTOR shall be responsible to OWNER for compliance with the requirements of each pump.

C. Where 2 or more pumps of the same type or size are required, provide pumps produced by the same manufacturer.

1.2 RELATED WORK

A. Related Work in other Sections includes, but is not limited to:

1. Section 01 33 00 Submittal Procedures
2. Section 09 90 00 Painting and Finishes

1.3 REFERENCES

A. The latest edition of the following publications form a part of this Specification to the extent referenced. The publications are referred to in the text by basic designation only.

B. American Society for Testing and Materials (ASTM)

1. ASTM A 48 Standard Specification for Gray Iron Castings

1.4 SUBMITTALS

A. CONTRACTOR shall submit for review to ENGINEER sufficient literature, detailed specifications, and drawings to show dimensions, make, style, speed, size, type, horsepower, head-capacity, efficiency, materials used, design features, internal construction, weights, and any other information required by ENGINEER for review of all pumping equipment. No pumping equipment will be accepted, and installation will not be allowed, until such review has been completed. All submittals shall clearly state any deviations from the specified requirements. The following shall also be furnished with the Submittal:

1. Performance data curves showing head, capacity, horsepower demand, and pump efficiency over the entire operating range of the pump, from shutoff to maximum capacity. The equipment manufacturer shall indicate separately the head, capacity,

horsepower demand, overall efficiency, and minimum submergence required at the specified design point.

2. Equipment manufacturer shall provide complete and detailed information regarding the installation of the pumps. Any installation requirements or operating conditions which the supplier or manufacturer considers to be critical to the safe and reliable operation of the pumps should be identified, described in detail, and incorporated into the construction.

B. Shop drawings submitted for review also shall include electrical diagrams, power circuit breaker requirements, electrical and control wire requirements, schematic control diagrams, and a detailed description of how the control system is to function.

1.5 MECHANICAL DEFECTS AND REJECTIONS

A. CONTRACTOR furnished pumps that have mechanical defects or do not meet the requirements for head-capacity, horsepower, efficiency, and vibration requirements will be rejected, and shall be replaced by CONTRACTOR without additional cost to OWNER for furnishing, removal, reinstallation, and retesting. Mechanical defects shall include excessive vibration, improper balancing of any rotating parts, improper tolerances, binding, excessive bearing or motor heating, defective materials, including materials that do not conform to the Specifications, improper fitting of parts, and any other defect which will in time damage the pump or unreasonably impair its efficiency or operation.

1.6 WARRANTY

A. CONTRACTOR furnished equipment covered by these specifications shall be warranted against defective parts due to faulty material or workmanship for one (1) year after date of start-up and acceptance by OWNER. CONTRACTOR shall guarantee to replace any defective parts within the period of time specified at no additional cost to OWNER. If CONTRACTOR has to pull pump to replace defective parts, CONTRACTOR shall guarantee to pull and replace pump at no additional cost to OWNER.

PART 2 PRODUCTS

2.1 GENERAL

A. Compliance with the requirements below may necessitate modifications to the manufacturer’s standard equipment.

B. Provide each pump with a stainless steel nameplate indicating serial number(s), rated head and flow, impeller size, pump speed, and manufacturer’s name, serial number, and model number.

2.2 PUMP DESIGN

A. The Dry Pit Chopper pump assembly shall be mounted vertically on a common steel base plate with an 8-inch 150# ANSI suction flange and 10-inch 150# ANSI discharge flange.

B. Performance Requirements

1. Operating Conditions:

DESCRIPTION	Pumps P-107
Duty	Continuous
Drive	Variable Speed
Ambient Environment	Dry Pit
Ambient Temperature (°F)	40 to 80
Ambient relative humidity (%)	20 to 80
Fluid Temperature (°F)	50 to 80
Fluid pH range	6 to 9
Project site elevation (ft above msl)	4,510
NPSH Available (ft)	22.4
Pump Lubrication	Oil
Maximum shutoff head (ft)	120
Design flow capacity (gpm)	1,500
Design flow total dynamic head (ft)	90
Nominal Operating Speed (rpm)	1,780
Design flow minimum efficiency (%)	70
Maximum Discharge Size (inches)	6
Motor Horsepower (hp)	60
Utility Power (Phase, Volts, Hertz)	3, 480, 60

2. Pump Characteristics - The pump shall be characterized by head capacity curves of steadily decreasing head with increasing capacity. Maximum head shall be at zero flow. The pump shall have a minimum efficiency as provided in the table above during operation against the system head. Pumps shall have head-capacity curves similar to that of the specified pump. Pumps having curves that show a flatter or near horizontal slope over a section in the head–capacity curve will not be accepted. Curves with head-capacity curves with slopes of the curve flatter than that shown for the specified pump will not be accepted.
3. The pump and motor shall be capable of producing the flow rates and total dynamic heads indicated in the table above.
4. Motor Characteristics - Under no operating conditions shall the required pump brake horsepower exceed the nameplate rating of the motor being furnished.
5. The pump shall be designed to operate throughout its entire range without excessive vibration or noise.

C. Dry Pit Chopper Pump Components

1. Pumps
   a. The Dry Pit Chopper pump shall be **Model PE6W8 by Vaughan**, or approved equal.
2. Pump Mechanical Seal
   a. The Mechanical Seal system specifically designed to require no seal flush: The mechanical seal shall be located immediately behind the impeller hub to eliminate the stuffing box and maximize the flushing available from the impeller pumpout vanes. The seal shall be a cartridge-type mechanical seal with Viton O-rings and silicon carbide (or tungsten carbide) faces. This cartridge seal shall be preassembled, and pre-tested so that no seal settings or adjustments are required from the installer. Any springs used to push the seal faces together must be shielded from the fluid to be pumped. The cartridge shall also include a 17-4PH, heat-treated seal sleeve and stainless-steel seal housing.
3. Impeller
   a. The impeller shall be semi-open type with pump out vanes to reduce seal area pressure. Chopping/maceration of materials shall be accomplished by the action of the cupped and sharpened leading edges of the impeller blades moving across the cutter bar at the intake openings, with a maximum set clearance between the impeller and cutter bar of 0.015-inch to 0.025-inch cold. Impeller shall be keyed to the shaft and shall have no axial adjustments and no set screws.
4. Casing and Back Pull-Out Plate
   a. The pump casing shall be of volute design, spiraling outward to the Class 125 flanged centerline discharge. Back pull-out design shall incorporate jacking bolts for accurate adjustment of impeller-to-cutter bar clearance and shall allow removal of pump components without requiring disconnection of casing from inlet or discharge piping. Casing & backplate shall be ductile cast iron with all water passages to be smooth, and free of blowholes and imperfections for good flow characteristics. A pressure tap shall be included on or near the discharge flange. Backplate shall include a replaceable Rockwell C 60 alloy steel cutter adjustable for 0.005-inch to 0.050-inch clearance to cut against the rotating impeller pumpout vanes for removing fiber and debris.
5. Cutter Bar Plate
   a. The cutter bar plate shall be recessed into the pump bowl and shall contain at least 2 shear bars extending diametrically across the intake opening to within 0.010” to 0.030” of the rotating cutter nut tooth, for the purpose of preventing intake opening blockage and wrapping of debris at the shaft area. Chopper pumps utilizing individually mounted shear bars shall not be acceptable. Cutter bar shall be alloy steel heat treated to minimum Rockwell C 60.
6. Cutter Nut
   a. The impeller shall be secured to the shaft using a cutter nut designed to cut stringy materials and prevent binding using a raised, rotating cutter tooth. The cutter nut shall be cast alloy steel heat treated to minimum Rockwell C 60.
7. Upper Cutter
   a. The upper cutter shall be threaded into the casing behind the impeller designed to cut against the pump-out vanes and the impeller hub, reducing and removing stringy materials from the mechanical seal area. Upper cutter shall be cast alloy steel heat treated to minimum Rockwell C 60. The upper cutter teeth are positioned as closely as possible to the center of shaft rotation to minimize cutting

torque and nuisance motor tripping. The ratio of upper cutter cutting diameter to shaft diameter in the upper cutter area of the pump shall be 3.0 or less.

8. Pump Shafting
   a. The pump shafting shall be heat treated alloy steel. Upper shaft extension shall be turned, ground, and polished. The shaft column shall be minimum 4-inch O.D. precision steel tubing welded to steel flanges and machined with piloted bearing fits for concentricity of all components. All support column tubes shall be leak tested. Distance between shaft bearings shall not exceed critical speed dimensions.
9. Pump Shaft Bearings
   a. Shall be oil-bath lubricated with ISO Grade 46 oil. Shaft thrust in both directions shall be taken up by two back-to-back mounted single-row angular contact ball bearings or two face to face mounted tapered roller bearings. Two adjacently mounted single row radial bearings or one cylindrical roller type shall also be provided. L-10 bearing life shall be minimum 100,000 hours.
10. Pump Shaft Housing
   a. Shall be ductile cast iron and machined with piloted bearing fits for concentricity of all components. Bearing housing shall include a side-mounted oil reservoir. Viton® double lip seals riding on stainless steel shaft sleeves are to provide sealing at each end of the bearing housing. Thrust bearings are mounted in an adjustable cartridge to allow external upper cutter adjustment.
11. Automatic Oil Level Monitor
   a. The automatic oil level monitor shall be located above the mounting plate and be fitted with an internal oil level switch to monitor oil level and shut off the motor in event of low oil level. A relay shall be included for mounting in the PLC.
12. Inlet Manifold
   a. The pump assembly shall be mounted vertically on a 90 degree carbon steel elbow with a Class 150 inlet flange, cleanout, 1/4-inch NPT suction pressure tap, drain connection and pedestal base.
13. Shaft Coupling
   a. The shaft coupling shall be T.B. Woods Sureflex elastomeric type with a minimum 1.5 service factor based on the drive rated horsepower and shall be protected with a guard meeting OSHA requirements.
14. Motor Stool
   a. The motor stool shall be a fabricated carbon steel weldment machined with piloted fits to positively align the C-flanged motor and pump shaft with no adjustments.

2.3 MOTOR

A. The motor shall be inverter duty, premium efficiency rated for continuous duty and suitable for operation with a VFD. The Class 1, Division 1 motor shall be 480V, three phase, 60 Hz with a 1.15 service factor, thermostats, and TEFC enclosure. The motor shall be sized for non-overloading conditions.

2.4 SURFACE PREPARATION AND COATING

A. The pump and pump assembly shall be coated in accordance with Section 09 90 00 – Painting and Finishes with 30 MDFT Tnemec Perma-Shield PL Series 431 (excluding motor).

PART 3 EXECUTION

3.1 INSTALLATION

A. Install the Dry Pit Chopper pump at the location shown on the Contract Drawings and according with manufacturer's written installation procedures.

B. All pumps, complete with drive system, in place at the jobsite, shall not exceed acceptable field vibration limits given in the latest revisions of the Hydraulic Institute Standards. All pumps shall be free of static unbalance; shall be free of dynamic unbalance up to the maximum speed of the pump and drive system; shall be free of torsional vibration from 10 percent below the minimum speed to 10 percent above the maximum speed of the pump and drive system; and shall be free of apparent unbalance caused by defective bearings, by close fittings parts which may rub on the rotating parts intermittently, or by loose discs or rotor parts, or unbalanced loads.

3.2 FIELD TESTS

A. After installation, the pump shall be given an operating test to demonstrate freedom from mechanical defects, excessive noise, and vibration. The test shall include operating the pump continuously while throttling the discharge as needed. The operating test shall be performed for a minimum of one hour, or as directed by ENGINEER.

- END OF SECTION –

SECTION 26 05 00
ELECTRICAL GENERAL REQUIREMENTS

PART 1 GENERAL

1.1 DESCRIPTION

A. It is the intent of this part of the Contract Documents to cover all work and materials necessary for erecting complete, ready for continuous use, a tested and working electrical system, substantially as indicated on the Plans and as hereinafter specified.

1.2 GENERAL PROVISIONS

A. Minimum sizes of equipment, electric devices, etc., are indicated but it is not intended to show every offset and fitting, nor every structural or mechanical difficulty that will be encountered during the installation of the work.

B. All work indicated on the Plans is approximately to scale, but actual dimensions and detailed drawings should be followed as closely as field conditions permit. Field verification of scale dimensions on Plans is directed since actual locations, distances, levels, etc. will be governed by field conditions.

C. Discrepancies indicated on different Plans, between Plans and actual field conditions, or between Plans and Contract Documents shall be promptly brought to the attention of ENGINEER for a decision.

D. The alignment of equipment and conduit shall be varied due to architectural changes, or to avoid work of other trades, without extra expense to OWNER.

E. CONTRACTOR shall furnish and install all parts and pieces necessary to the installation of equipment in accordance with the best practice of the trade and in conformance with the requirements of these Contract Documents.

F. All items not specifically mentioned in these Contract Documents or noted on the Plans or accepted shop drawings, but which are obviously necessary to make a complete working installation, shall be deemed to be included herein.

G. CONTRACTOR shall lay out and install electrical work prior to placing floors and walls. He shall furnish and install all sleeves and openings through floors and walls required for passage of all conduits. Sleeves shall be rigidly supported and suitably packed or sealed to prevent ingress of wet concrete.

H. CONTRACTOR shall furnish and install all inserts and hangers required to support conduits and other electrical equipment. If the inserts, hangers, sleeves, etc. are improperly placed or installed, CONTRACTOR shall do all necessary work, at his own expense, to rectify the errors.

I. All electrical equipment shall be capable of operating successfully at full-rated load, without failure, at an ambient air temperature of 40 degrees C, and specifically rated for an altitude of 4500 feet.

J. CONTRACTOR shall submit shop drawings, data and details to ENGINEER on all controls, fixtures, wiring, electrical equipment, conduit, etc. for review and acceptance prior to use of any components in the work.

K. All materials, equipment, and parts comprising any unit or part thereof specified or indicated on the Plans shall be new and unused, of current manufacture, and of highest grade consistent to the state of the art. Damaged materials, equipment and parts are not considered to be new and unused and will not be accepted.

1.3 REGULATIONS AND CODES

A. Electrical work, including connection to electrical equipment integral with mechanical equipment, shall be performed in accordance with the latest published regulations of each of the following as well as all State and local codes.

1. NATIONAL ELECTRICAL CODE (NEC)
2. NATIONAL ELECTRICAL SAFETY CODE (NESC)
3. INSTITUTE OF ELECTRICAL AND ELECTRONIC ENGINEERS (IEEE)
4. AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)
5. AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)
6. INSULATED CABLE ENGINEERS ASSOCIATION (ICEA)
7. NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION (NEMA)
8. NATIONAL ELECTRICAL CONTRACTORS ASSOCIATION (NECA)
9. FEDERAL OCCUPATIONAL SAFETY AND HEALTH ACT (OSHA)
10. UNDERWRITERS' LABORATORIES, INC. (UL).

1.4 COORDINATION OF THE ELECTRICAL SYSTEM

A. CONTRACTOR shall verify all actual equipment and motor full-load and locked-rotor current ratings. The necessary minimum equipment, wire, and conduit sizes are indicated on the Plans. If CONTRACTOR furnishes equipment of different ratings, CONTRACTOR shall coordinate the actual current rating of equipment furnished with the branch circuit conductor size, the overcurrent protection, the controller size, the motor starter, and the branch circuit overcurrent protection. The branch circuit conductors shall have a carrying capacity of not less than 125 percent of the actual full-load current rating. The size of the branch circuit conductors shall be such that the voltage drop from the overcurrent protection devices up to the equipment shall not be greater than 2 percent when the equipment is running at full-load and rated voltage.

1.5 TEST

A. The electrical work shall be free from improper grounds and from short circuits. The correctness of the wiring shall be verified first by visual comparison of the conductor connections with connection diagrams. Individual circuit continuity checks shall next be made by using electrical circuit testers. Last, the correctness of the wiring shall be verified by the actual electrical operation of the electrical and mechanical devices. Any deviation from the wiring indicated on the Plans or accepted drawings shall be corrected and indicated on the Plans.

1.6 CONFORMS TO RECORD DOCUMENTS DRAWINGS

A. Prior to completion of the Contract, CONTRACTOR shall furnish ENGINEER with a set of electrical plans marked with any changes, deviations or additions to any part of the electrical work.

B. Each conductor shall be identified as required by the Contract Documents. This identification shall be indicated on the record documents drawings to enable rapid and accurate circuit tracing by maintenance personnel.

1.7 SUBMITTALS

A. Submittals shall be in accordance with Section 01 33 00 Submittal Procedures.

PART 2 PRODUCTS

2.1 NAMEPLATES

A. Where indicated on the Plans and where required by applicable codes, CONTRACTOR shall furnish and install nameplates which shall be black lamicoid with white letters. The nameplates shall be fastened to the various devices with round head brass screws. Each disconnect means for service, feeder, branch, or equipment conductors shall have nameplates indicating its purpose. All nameplates shall have 3/8-inch high lettering.

2.2 AUTOMATIC EQUIPMENT WARNING SIGNS

A. Permanent warning signs shall be mounted at all mechanical equipment which may be started automatically or from remote locations. Signs shall be in accordance with OSHA regulations and shall be suitable for exterior use. The warning signs shall be fastened with round head brass screws or bolts, located and mounted in a manner acceptable to ENGINEER.

B. Warning signs shall be 7 inches high by 10 inches wide, colored yellow and black, on not less than 18 gauge vitreous enameling stock. Sign shall read:

CAUTION
THIS EQUIPMENT STARTS
AUTOMATICALLY
BY REMOTE CONTROL

PART 3 EXECUTION - Not Used

- END OF SECTION -

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SECTION 26 05 05
ELECTRICAL EQUIPMENT

PART 1 GENERAL

1.1 DESCRIPTION

A. This section includes general electrical equipment used to complete the electrical system.

1.2 RELATED SECTIONS

A. Related Work specified in other sections includes, but is not limited to:

1. Section 01 33 00 Submittal Procedures
2. Section 26 05 00 Electrical General Requirements
3. Section 26 05 13 Conductors and Cables
4. Section 26 05 33 Conduit and Raceways
5. Section 26 05 34 Electrical Boxes and Fittings

1.3 SUBMITTALS

A. Submittals will be required for all electrical equipment and shall be made in accordance with Section 01 33 00 Submittal Procedures.

PART 2 MATERIALS

2.1 ENCLOSURES

A. Manufacturers:

1. Hammond Manufacturing,
2. Nvent Hoffman, Inc.
3. Rittal North America, LLC
4. Or approved equal.

B. This specification includes enclosures to house electrical controls, instruments, terminal blocks, etc. If not indicated otherwise they shall be NEMA 12 for indoor and NEMA 3R for outdoor installations.

C. A rolled lip shall be provided around three sides of the door and around all sides of the enclosure opening. The gasket shall be attached with oil-resistant adhesive and held in place with steel retaining strips. Exterior hardware, such as clamps, screws, and hinge pins, shall be of stainless steel for outdoor installations. A hasp and staple shall be provided for padlocking. Each enclosure shall have a print pocket.

D. Enclosures shall be from 14 gauge steel with seams that are continuously welded. Doors shall have full length piano hinges with the door removable by pulling the hinge pin. They shall be as manufactured by Hoffman, Fischer & Porter, or equal.

E. Finish - Steel: Finish shall be white enamel interior, light grey enamel, ANSI 61 exterior, over phosphatized surfaces. Special finishes and colors shall be furnished for wet locations. Plans should be checked for special conditions.

2.2 FUSES, 0-600 VOLTS

A. Provide a complete set of current-limiting fuses wherever fuses are indicated. Supply a set of six spare fuses of each type and each current rating installed. Utilize fuses that fit mountings specified with switches and which provide features rejecting Class H fuses. Provide the following types:

1. For 0- to 600-volt motor and transformer circuits, 0- to 600 amps, UL Class RK-1 with time delay, Bussmann Type LPS-RK, Shawmut Type A6D, or equal.
2. For 0- to 250-volt motor and transformer circuits, 0- to 600 amps, UL Class RK-1 with time delay, Bussmann Type LPN-RK, Shawmut Type A2D-R, or equal.
3. For 0- to 600-volt feeder and service circuits, 0 to 600 amps, UL Class RK-1, Bussmann Type KTS-R Shawmut Type A6K-R, or equal.
4. For 0- to 250-volt feeder and service circuits, 0 to 600 amps, UL Class RK-1, Bussmann Type KTN-R, Shawmut Type A2K-R, or equal.

2.3 CONTROL PANELS

A. Enclosure Manufacturers:

1. Hammond Manufacturing,
2. Nvent Hoffman, Inc.
3. Rittal North America, LLC
4. Or approved equal.

B. ENCLOSURES:

1. This specification includes enclosures to house electrical controls, instruments, terminal blocks, etc. If not indicated otherwise they shall be NEMA 12 for indoor and NEMA 3R for outdoor installations.
2. A rolled lip shall be provided around three sides of the door and around all sides of the enclosure opening. The gasket shall be attached with oil-resistant adhesive and held in place with steel retaining strips. Exterior hardware, such as clamps, screws, and hinge pins, shall be of stainless steel for outdoor installations. A hasp and staple shall be provided for padlocking. Each enclosure shall have a print pocket.
3. Enclosures shall be from 14 gauge steel with seams that are continuously welded. Doors shall have full length piano hinges with the door removable by pulling the hinge pin. They shall be as manufactured by Hoffman, Fischer & Porter, or equal.
4. Finish - Steel: Finish shall be white enamel interior, light grey enamel, ANSI 61 exterior, over phosphatized surfaces. Special finishes and colors shall be furnished for wet locations. Plans should be checked for special conditions.

C. PILOT DEVICES:

1. Manufacturers:
   a. Allen-Bradley, Bulletin 800T, 30 mm
   b. Eaton
   c. Square D, Type K, 30 mm - Class 9001
   d. Or approved equal.
2. Indicating lights, pushbuttons and selector switches shall be miniature oiltight units. Contact blocks in control circuits shall be NEMA ICS, B150, rated 5 amperes inductive at 120 volts AC. Contact blocks for signal circuits shall be rated 0.06 amperes at 30 volts AC or DC and shall be hermetically sealed and reed switches. Pilot lights for 120 volt AC circuits shall be LED type. Where group lamp test circuits are not specified, individual pilot light assemblies shall be "push-to-test" type. Pilot lights shall be capable of being changed from the front of the panel without special tools.

D. TERMINAL BLOCKS:

1. Manufacturers:
   a. Allen-Bradley
   b. Buchanan
   c. Eaton
   d. Entrelec (ABB) M4/6
   e. Square D Co.
   f. Weidmuller
   g. Or approved equal
2. Terminal blocks shall be of the size required for conductors therein and a minimum of 50 percent spares shall be provided in each terminal box.

E. FUSE BLOCKS:

1. Manufacturers:
   a. Entrelec (ABB), M10/13.SF2
   b. Or approved equal.
2. DIN rail mounted.
3. Terminals shall accommodate 22-10 AWG solid or stranded wires.
4. Provide terminals rated for 600 VAC/VDC and 15 amperes.
5. Device shall be UL listed.

F. CONTROL RELAYS:

1. Manufacturer:
   a. Allen-Bradley
   b. Idec RH series
   c. Or approved equal.
2. Control relays shall be general purpose “midget” relays, 10 ampere contact rating, with 1, 2, 3 or 4 Form C contacts as shown on the drawings.
3. Relay shall be provided with blade style terminals.
4. Provide LED indicator light with relay.
5. Provide a standard DIN rail mount relay socket.

6. Relay life expectancy shall be in excess of 500,000 operations at 120 VAC.
7. Device shall be UL listed.

G. DIN RAIL CIRCUIT BREAKERS

1. Manufacturer/Model:
   a. **Eaton/FAZ-NA**
   b. **LS Electric**
   c. Or approved equal.
2. DIN Rail mounted.
3. Trip Characteristics: UL C or D.
4. UL Listed under UL 489.
5. Dual rated for AC or DC applications.
6. Single-pole, two-pole or three-pole models.
7. Current limiting design.
8. Thermal-magnetic overcurrent protection.
9. Trip-free design.

H. DIN-RAIL DUPLEX RECEPTACLE

1. Manufacturer/Model:
   a. Phoenix Contact/EM-DUO
   b. Or approved equal.
2. Color: Ivory.
3. UL: 508
4. Voltage: 125 VAC
5. Amps: 15A.
6. Mounting: Din rail.

I. DC POWER SUPPLY

1. Manufacturer/Model:
   a. IDEC/PS5R-S
   b. Rhino/PSB
   c. Or approved equal.
2. Input: 85-264 V AC, 50/60 Hz.
3. Output: 24 V DC, Adjustable voltage range: ±10%.
4. Mounting: DIN rail mounting.
5. Temperature:
   a. Operating: -10 to +65 deg C
   b. Storage: -25 to +75-deg C.
6. IP20 finger safe
7. UL Listed.

2.4 INSTRUMENTATION

A. LEVEL ELEMENT AND TRANSMITTER, RADAR

1. Manufacturers:
   a. Siemens LR110

b. Or approved equal.

2. General:
   a. Function: Provide continuous non-contacting level measurement with output proportional to level being sensed.
   b. Type: W Band FMCW Radar level transmitter.
   c. Parts: Level element/transmitter.
3. Service:
   a. Medium: Liquids, slurries, solids, granulated solids.
   b. Pressure: Atmospheric.
   c. Temperature Range: Level element/transmitter shall be capable of operating in range of minus 40 to +176 degrees F.
   d. Ambient Conditions: Unit shall be rated for Class 1, Division 1 atmospheres.
4. Performance:
   a. Range: 49.2 feet.
   b. Zero Reference: As noted.
   c. Accuracy: Plus or minus 2 mm for analog output signal.
5. Features:
   a. Unit shall be a two wire device, operating on the 4-20 mA signal loop.
6. Signal Interface:
   a. Transmitter Output: 4 to 20 mA dc output.
   b. Power Supply: Unit shall operate on 17-30 V DC power.
7. Element:
   a. Type: Shall be of a waterproof/weatherproof design for outdoor installation.
   b. Process Connection: 1-1/2 inch NPT tapered.
8. Transmitter:
   a. Transmitter shall be mounted in a NEMA 4 enclosure, unless otherwise noted, suitable for mounting as noted or shown.
9. Bluetooth function:
   a. Unit shall function with the Siemens mobile IQ Bluetooth app for configuration, set up and monitoring.

2.5 PROCESS SWITCHES - NOT REQUIRED

PART 3 INSTALLATION

A. Installation shall be as per manufacturers' specifications.

- END OF SECTION -

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SECTION 26 05 13
CONDUCTORS AND CABLES

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Installation of wires or cables required for power distribution, service, feeders, and branch circuits.

1.2 REFERENCES

A. NFPA 70: National Electrical Code.

B. UL: Underwriters' Laboratories, Inc.

1.3 SUBMITTALS

A. Field Test Data: Submit megohmmeter test data for circuits under 600 volts.

PART 2 PRODUCTS

2.1 MATERIALS

A. Building Conductors: Copper, 600 Volt insulation, THW.

B. Branch Circuit Conductors and All Conductors #3 AWG and Smaller: Copper conductor, with TW, THHN, or THWN insulation #10 AWG and smaller, and THW larger than #10 AWG, where ambient temperature conditions exceed 140 deg. F.

1. Size all conductors per NFPA 70.
2. Minimum size to be #12 AWG.
3. Stranded conductors for #8 AWG and larger.
4. For outlets to fixtures, and in fixture channels (in dry areas); THHN insulated conductor.
5. In damp locations, under slabs, on exterior provide THWN.

C. Provide permanent plastic name-tag indicating load feed.

D. Use type XHHW conductors for water pumping and regulator stations.

E. Cable Supports: OZ cable supports for vertical risers, type as required by application.

2.2 INSTRUMENTATION

A. Instrumentation cable shall have the number of twisted pairs indicated on the Plans and shall be insulated for not less than 600 volts. Unless otherwise indicated, conductor size shall be No. 18 AWG minimum.

B. The jacket shall be flame retardant Flamenal or Okoseal, 90 degrees C temperature rating. The cable shield shall be minimum of 2.3 mil aluminum or copper tape overlapped to provide 100 percent coverage and a tinned copper drain wire.

C. The conductors shall be bare soft annealed copper, Class B, 7 strand minimum concentric lay with Okoseal or Vulkene, 15 mils nominal thickness, nylon jacket, 4 mil nominal thickness, 90 degrees C temperature rating. One conductor within each pair shall be numerically identified.

2.3 COLOR AND CODING OF CONDUCTORS

A. 120/240 volt.

1. A-Phase - Black
2. B-Phase - Red
3. Neutral - White
4. Ground - Green

B. 480Y/277 volt.

1. A-Phase - Brown
2. B-Phase - Orange
3. C- Phase - Yellow
4. Neutral - White
5. Ground - Green

2.4 VFD CONDUCTORS

A. Manufacturers:

1. Belden 29507 (AWG#2)
2. Or approved equal

B. Provide 3 conductor plus (3) symmetrical bare copper circuit conductors plus (2) spiral copper tape shields (100% coverage) with PVC insulation, XLPE insulation. Provide a 100% foil plus dual copper tape shield. Cable shall be sun and oil resistant.

C. Cable shall be suitable for Variable Frequency Drives.

D. Cable shall be suitable for indoor installation.

2.5 ETHERNET CABLE

A. Ethernet, Cat 6

1. Manufacturer:
   a. Belden 7953A
   b. Or approved equal.

B. 4 pair Category 6 shielded twisted pair cable. Constructed with #23 AWG solid bare

copper conductors polyethylene or polypropylene insulation, and a black sunlight resistant PVC jacket with ripcord under the jacket for use in general communications applications.

C. Characteristics:
   1. Jacket Diameter: 0.258-inches.
   2. Jacket Material: PP (Polypropylene)
   3. Cable Weight: 44 lbs/1000ft.
   4. Temperature Rating: -40 to 75-deg C
   5. Conductor Color Code:
      a. Pair 1 - Blue & White/Blue
      b. Pair 2 - Orange & White/Orange
      c. Pair 3 - Green & White/Green
      d. Pair 4 - Brown & White/Brown

PART 3 EXECUTION

3.1 INSTALLATION

A. Make conductor length for parallel feeders identical.

B. Lace or clip groups of feeder conductors at distribution center, pull-boxes, and wireway. Neatly arrange wiring within cabinets, junction boxes, fixtures, etc.

C. Provide copper grounding conductors and straps.

D. Install wire and cable in code conforming raceway.

E. Use non-detrimental wire pulling lubricant for pulling No. 4 AWG and larger wire.

F. Install wire in conduit runs after concrete and masonry work is complete and after moisture is swabbed from conduits.

G. Color code conductors to designate neutral conductor and phase.

H. Furnish necessary reels, reel jacks, and other pulling aids required to prevent damage to wires and cable.

I. Splicing:

   1. Install wires and cables continuous without splices from sources of supply to distribution equipment and from source of supply to motor, lighting, or power outlet.
   2. Do not use pull boxes for making splices.
   3. Do not install splices in conduits.

J. Install all wiring per NFPA 70.

K. Use of cable with more conductors then specified; CONTRACTOR's option. When done, tape off and labeled extra conductors as spares.

3.2 CONDUCTOR CONNECTIONS

A. Use approved pressure type solderless connectors and lugs for service entrance, feeder, equipment connections and terminal posts.

B. Use connectors of a type compatible to conductors, locations, and load.

C. Make neutral connection and taps individually in order to prevent the possibility of an "open-neutral".

D. Make branch circuit connections with UL approved solderless connectors. Do not depend solely upon a single insulating material to secure connection as well as to insulate it.

E. After first either silverplating the bars or applying suitable non¡oxidizing agents, bolt buss bar connections with adequate nonferrous bolts, washers, and lockwashers.

F. Insulate joints and taps with patented or molded plastic insulators. Use tapes compatible .with conductor jackets, temperature, and other conditions.

3.3 SPECIAL WIRING

A. Special Systems: Furnish and install equipment, materials, labor, services, and accessories required for completion of any special systems of an electrical nature, but not classified otherwise herein, that may be indicated. Applicable portions of NFPA 70 also apply.

3.4 HAZARDOUS AREAS

A. Comply with NFPA 70 when installing wiring, fixtures, and equipment in locations classified as "Hazardous Locations".

3.5 AFTER INSTALLATION TEST FOR CABLE 600 VOLTS AND BELOW

A. Prior to energization, test cable and wire for continuity of circuit for short circuits. Megger all circuit of 100 amp and greater rating.

B. Correct malfunctions.

C. Submit record of megaohmmeter readings to ENGINEER.

3.6 IDENTIFICATION OF FEEDERS

A. Affix a marker stamped or embossed on each cable at each entry to and exit for each manhole, pullhole, pullbox, cable tray switchgear and switch, identifying circuit; i.e. "MCCI", "PANEL L" "NO 1" etc.

B. Identification letters to be 1/8 inch size minimum.

C. Markers to be rigid, noncorrosive, attached to feeder cables with feeder identification.

D. Nylon straps to be used to tie the markers.

- END OF SECTION -

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SECTION 26 05 26
GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS

PART 1 GENERAL

1.1 SECTION INCLUDES:

A. Grounding of Electrical Systems and Equipment.

1. Grounding requirements specified in this Section may be supplemented by special requirements of systems described in other Sections.

1.2 RELATED SECTIONS AND REFERENCES:

A. Section 26 05 13 Conductors and Cables.

1.3 QUALITY ASSURANCE

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use. Comply with UL 467.

B. Comply with NFPA 70; for overhead-line construction and medium-voltage underground construction, comply with IEEE C2.

C. Comply with NFPA 780 and UL 96 when interconnecting with lightning protection system.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Approved Manufacturers:

1. Grounding Conductors, Cables, Connectors, and Rods:
   a. Chance/Hubbell (573-682-5521)
   b. Copperweld Corp. (931-433-7177)
   c. Thomas & Betts, Electrical (800-816-7809)
   d. Or approved equal.

2.2 GROUNDING CONDUCTORS

A. For insulated conductors, comply with Section 26 05 13 - "Conductors and Cables"

B. Material: Copper.

C. Equipment Grounding Conductors: Insulated with green-colored insulation.

D. Isolated Ground Conductors: Insulated with green-colored insulation with yellow stripe.

On feeders with isolated ground, use colored tape, alternating bands of green and yellow tape to provide a minimum of three bands of green and two bands of yellow.

E. Bare Copper Conductors: Comply with the following:

1. Solid Conductors: ASTM B3.
2. Assembly of Stranded Conductors: ASTM B8.
3. Tinned Conductors: ASTM B33.

F. Copper Bonding Conductors: As follows:

1. Bonding Conductor: No. 4 or No. 6 AWG, stranded copper conductor.
2. Bonding Jumper: Bare copper tape, braided bare copper conductors, terminated with copper ferrules; 1-5/8 inches wide and 1/16 inch thick.

G. Equipment Ground Conductor (Green) shall be included with all circuit conductors. In addition, provide a neutral conductor where applicable.

2.3 CONNECTOR PRODUCTS

A. Comply with IEEE 837 and UL 467; listed for use for specific types, sizes, and combinations of conductors and connected items.

B. Bolted Connectors: Bolted-pressure-type connectors, or compression type.

C. Welded Connectors: Exothermic-welded type, in kit form, and selected per manufacturer's written instructions.

PART 3 EXECUTION

3.1 APPLICATION

A. Use only copper conductors for both insulated and bare grounding conductors in direct contact with earth, concrete, masonry, crushed stone, and similar materials.

B. In raceways, use insulated equipment grounding conductors.

C. Equipment Grounding Conductor Terminations: Use bolted pressure clamps.

D. Grounding Bus: Install in electrical and telephone equipment rooms, in rooms housing service equipment, and elsewhere as indicated.

1. Use insulated spacer; space 1 inch from wall and support from wall 6 inches above finished floor, unless otherwise indicated.
2. At doors, route the bus up to the top of the door frame, across the top of the doorway, and down to the specified height above the floor.

3.2 EQUIPMENT GROUNDING CONDUCTORS

A. Comply with NFPA 70, Article 250, for types, sizes, and quantities of equipment

grounding conductors, unless specific types, larger sizes, or more conductors than required by NFPA 70 are indicated.

B. Install equipment grounding conductors in all feeders and circuits.

C. Computer Outlet Circuits: Install insulated equipment grounding conductor in branch-circuit runs from computer-area power panels or power-distribution units.

D. Nonmetallic Raceways: Install an equipment grounding conductor in nonmetallic raceways unless they are designated for telephone or data cables.

E. SCADA RTU: For signal and data, systems, provide No. 4 AWG minimum insulated grounding conductor from grounding electrode system to the SCADA RTU.

3.3 INSTALLATION

A. Grounding Conductors: Route along shortest and straightest paths possible, unless otherwise indicated. Avoid obstructing access or placing conductors where they may be subjected to strain, impact, or damage.

3.4 CONNECTIONS

A. General: Make connections so galvanic action or electrolysis possibility is minimized. Select connectors, connection hardware, conductors, and connection methods so metals in direct contact will be galvanically compatible.

1. Use electroplated or hot-tin-coated materials to ensure high conductivity and to make contact points closer to order of galvanic series.
2. Make connections with clean, bare metal at points of contact.
3. Coat and seal connections having dissimilar metals with inert material to prevent future penetration of moisture to contact surfaces.

B. Equipment Grounding Conductor Terminations: For No. 8 AWG and larger, use pressure-type grounding lugs. No. 10 AWG and smaller grounding conductors may be terminated with winged pressure-type connectors.

C. Non-contact Metal Raceway Terminations: If metallic raceways terminate at metal housings without mechanical and electrical connection to housing, terminate each conduit with a grounding bushing. Connect grounding bushings with a bare grounding conductor to grounding bus or terminal in housing. Bond electrically non-continuous conduits at entrances and exits with grounding bushings and bare grounding conductors, unless otherwise indicated.

D. Tighten screws and bolts for grounding and bonding connectors and terminals according to manufacturer's published torque-tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A .

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SECTION 26 05 33
RACEWAY

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Flexible or rigid conduits. couplings. supports, and nonmetallic ducts.

1.2 REFERENCES

A. ANSI C80.1: Rigid Steel Conduit - Zinc-Coated.

B. ANSI C80.3: Electrical Metallic Tubing - Zinc-Coated.

C. FS W-F-406: Fittings for Cable, Power, Electrical and Conduit, Metal, Flexible.

D. FS WW-C-566: Conduit, Metal, Flexible.

E. NEMA TC6: PVC and ABS Plastic Utilities Duct for Underground Installation.

F. NEMA TC9: Fittings for ABS and PVC Plastic Utilities Duct for Underground Installation.

G. NFPA 70: National Electric Code.

H. UL: Underwriters' Laboratories, Inc.

PART 2 PRODUCTS

2.1 METAL CONDUIT AND TUBING

A. General: Provide metal conduit. tubing and fittings of types, grades, sizes and weights (wall thicknesses) as indicated; with minimum trade size of 3/4 inch.

B. Rigid Metal Conduit (RMC): ANSI C80.1.

C. Intermediate Metal Conduit (IMC): ANSI C80.1.

D. Rigid and Intermediate Steel Conduit Fittings: Provide fully threaded malleable steel couplings; raintight and concrete tight where required by application. Provide double locknuts and metal bushings at conduit termination, use OZ type B bushings on conduits 1-1/4 inch and larger.

E. Electrical Metallic Tubing (EMT): ANSI C80. 3.

F. EMT Fittings: Provide insulated throat non-indenter type malleable steel fittings; concrete tight where required by application. Install OZ type B bushings on conduits 1-1/4 inches and larger.

G. Flexible Metal Conduit (FMC): FS WW-C-566, Zinc-coated steel.

H. Flexible Metal Conduit Fittings: FS W-F-406, Type 1, Class 1, Style A.

I. Liquid Tight Flexible Metal Conduit: Provide liquid-tight, flexible metal conduit; constructed of single strip, flexible continuous, interlocked, and double-wrapped steel; galvanized inside and outside; coated with liquid-tight jacket of flexible polyvinyl chloride (PVC).

J. Liquid-Tight Flexible Metal Conduit Fittings: FS W-F-406, Type1, Class 3, Style G.

K. Expansion Fittings: OZ Type AX, or equivalent to suit application.

2.2 NON-METALLIC CONDUIT AND DUCTS

A. General: Minimum trade size: 3/4 inch.

B. Underground PVC Plastic Utilities Duct: NEMA TC6, Type I for encased burial in concrete, Type II for direct burial.

C. Duct Fittings: NEMA TC9, match to duct type and material.

2.3 CONDUIT, TUBING, AND DUCT ACCESSORIES

A. Provide conduit, tubing and duct accessories of types and sizes, and materials, complying with manufacturer's published product information, which mate and match conduit and tubing. Provide manufactured spacers in all duct bank runs.

2.4 LOCKNUTS, BUSHINGS, CONNECTORS, COUPLINGS, AND SUPPORTS

A. General: Provide malleable bushings, except that plastic bushings may be used in lieu of phenolic-lined malleable bushings where "insulating bushings" are required.

B. Provide "double-locknut" system (2 locknuts) throughout, each being tightened wrench tight as to effectively bond outlet box or cabinet to conduit.

C. Sealing Bushing: OZ Type FSK, WSK, or CSMI as required by application. Provide OZ type CSB internal sealing bushings.

D. Provide insulated-through type ground bushing of the malleable type.

E. Provide connectors or couplings that are proper for the conduit they are used with. Make watertight when required.

F. Provide cadmium plated or galvanized fittings.

G. Provide fittings with die-cut threads unless approved otherwise.

H. EMT connectors used with #4 and larger cable shall have throat liners of suitable

plastic insulation.

2.5 CONDUIT OUTLET BOXES

A. Refer to Section 26 05 34.

2.6 SCHEDULE OF LOCATIONS

A. As this is an existing pump station, all conduit shall be exposed Galvanized Steel Conduit.

B. Make connections to motors and equipment with PVC jacketed flexible conduit and liquid tight connectors. Provide 1/2 inch minimum size for motor connections.

C. Provide flexible conduit for fixture and control wiring with sufficient length of flexible conduit to avoid transmission of vibration.

D. Conduits to motors shall be installed on a tray/support system as required.

PART 3 EXECUTION

3.1 INSTALLATION

A. Install conduit concealed in all areas, excluding mechanical and electrical rooms, connections to motors, and connections to surface cabinets.

B. For exposed runs attach surface-mounted conduit with clamps.

C. Install conduit free from dents and bruises. Plug ends to prevent entry of dirt and moisture.

D. Clean out conduit before installation of conductor.

E. Alter conduit routing to avoid structural obstructions, minimizing crossovers.

F. Fill end of conduit with fiberglass where conduits leave heated area and enters unheated area.

G. Provide flashing and pitchpockets, making watertight joints where conduits pass through roof or waterproofing membranes.

H. Install UL approved expansion fittings complete with grounding jumpers where conduits cross building expansion joints. Provide bends or offsets in conduit adjacent to building expansion joints where conduit is installed above suspended buildings.

I. Route all exposed conduits parallel or perpendicular to building lines.

J. Make interconnections between difference types of raceways with manufactured fittings approved by UL.

K. Size raceways per NFPA 70 tables. Do not reduce from any sized indicated.

L. Do not exceed sizes permitted in slabs or walls.

M. Do not exceed number of bends allowed in conduit by NFPA 70.

N. Make joints wrench tight or otherwise with minimum resistance tothe flow of fault currents.

O. Use furred spaces and chases to an advantage in concealing conduits.

P. Make field bends only where needed and then carefully to minimize wire pulling tensions and for best appearance in exposed runs.

Q. Test conduit runs with lignum vitale ball (mandrel) of 85-percent of conduit diameter.

R. Cut conduit with hacksaw or other approved pipe cutting tool and ream ends to clean out all burrs before connecting.

S. Keep conduits at least 6-inches away from steam or hot water pipes, breaching, and boilers, but in no case permit conductors to reach higher than rated temperatures. Avoid traps in runs and slope conduit to drain.

T. Fasten raceways securely in place. Firmly fasten conduit within 3-feet of each outlet, junction box, cabinet, or fitting. Support metallic conduit, rigid (heavy wall) at least every 10-feet. Support rigid nonmetallic conduit in strict accordance with NFPA70. Use raceway fasteners designed for the purpose.

3.2 SPECIAL CONDUIT FITTINGS

A. Use special conduit fittings as required or indicated. Use UL approved fittings suitable for location and usage made.

B. At expansion joints use special fittings if cast in concrete slabs.

C. Building Expansion Joints: Where surface conduits, raceways, panels, or light fixtures, span building expansion joints, make satisfactory arrangements to provide the movement provided for in building structure plus or minus nominal joint width.

3.3 PULL BOXES, WIREWAYS, AND GUTTERS

A. Furnish as indicated, plus any such items required to assemble conduits and other raceways. Provide Section 26 05 34 pull boxes as dictated by wire pulling requirements.

B. Construction: Code gage galvanized sheet steel and sized strictly in conformance with NFPA 70 requirements.

C. Finish: Free of burrs, sharp edges, un reamed holes, and sharp-pointed screw or bolts. Paint both inside and out.

D. Coating: When mounted direct to concrete or masonry walls that are below grade or where there will be sweating or other moisture present on wall surface, coat backs of boxes with a heavy coat of black asphalt paint before mounting.

E. Protection: Adequate provisions for preventing damage to conductors either during pulling in or from weights and tensions when in place.

F. Weatherproof, rain-tight, or special type when indicated or when required by NFPA 70.

3.4 ANCHORS, FASTENERS, AND MISCELLANEOUS SUPPORTS

A. Use compatible anchors in roof or ceiling slabs of concrete fromwhich a load is suspended and anchors used to fasten heavy equipment without lead in their construction.

B. Make exposed conduit fastenings with one-piece, malleable conduit clamps. Two hole, galvanized sheet metal pipe straps may be used on all concealed installations.

C. Use companion bases or backs with conduit clamps when conduit is exposed to weather or continuous moisture.

D. Use ring type hangers on individual runs of conduit 3-inches and larger if suspended, complete with threaded rods. Use adjustable turnbuckles when specified or otherwise as an option.

E. Support multiple runs of suspended conduits from trapeze style hangers suspended with rigid threaded steel rods and with suitable conduit clamps or straps of the same make as cross channels used.

F. Mount multiple runs of conduit on ceiling or wall surfaces.

G. Do not hang or support electrical equipment and materials from roof decks.

- END OF SECTION -

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SECTION 26 05 34
ELECTRICAL BOXES AND FITTINGS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Types of electrical boxes and electrical fitting work.

1.2 REFERENCES

A. NEMA OS 1: Sheet-Steel Outlet Boxes, Device Boxes, Covers, and Box Supports.

B. NEMA OS 2: Nonmetallic Outlet Boxes, Device Boxes, Covers, and Box Supports.

C. NFPA 70: National Electric Code.

D. UL: Underwriters' Laboratories, Inc.

1.3 QUALITY ASSURANCE

A. Comply with NFPA 70 as applicable for installation of electrical boxes and fittings.

B. Comply with NEMA OS 1 and NEMA OS 2 as applicable for outlet boxes, device boxes, covers and box supports.

C. Provide electrical boxes and fittings which have been UL-listed and labeled.

PART 2 PRODUCTS

2.1 INTERIOR OUTLET BOXES

A. One piece, cast iron or cast aluminum outlet wiring boxes, of types shapes and sizes, including box depths, to suit each respective location and installation. If of aluminum, essentially "copper free". Do not use on conduits of dissimilar metals, except with written permission.

B. Minimum depth 1-1/4 inches or 2-1/8 inch depth for boxes with 3 or more conduit entries.

C. Use in combination with factory or field bends when indicated or advised. Complete outlet bodies with mounting brackets, hangers, extension rings, fixture studs, cable clamps, metal straps, gaskets, cover, hubs, reducers, and other accessories.

2.2 JUNCTION AND PULL BOXES

A. Building Structure Type: Code-gage sheet steel with screw-on covers; of types, shapes and sizes to suit each respective location and installation; with welded seams and equipped with galvanized steel bolts, nuts and accessories.

PART 3 EXECUTION

3.1 PREPARATION

A. Coordinate installation of electrical boxes and fittings with wire/cable and raceway installation work.

B. Provide knockout closures to cap unused knockout holes where blanks have been removed.

3.2 INSTALLATION

A. A. Install where indicated, complying with manufacturer's written instruction, applicable requirements of NFPA 70 and NEMA's "Standard of Installation", and in compliance with recognized industry practices to ensure that products fulfill requirements.

B. Install coverplates for all boxes; weatherproof outlets for interior and exterior locations exposed to weather or moisture.

C. Install boxes and fittings to ensure ready accessibility of electrical wiring. Install recessed boxes with face of box or ring flush with adjacent surface.

D. Fasten boxes rigidly to substrates or structural surfaces to which attached, or solidly embed boxes in concrete or masonry. Use bar hangers for stud construction. Use of nails for securing boxes is prohibited. Set boxes on opposite sides of common wall with minimum 10-inches of conduit between them.

- END OF SECTION -

SECTION 26 29 23
VARIABLE FREQUENCY DRIVES

PART 1 GENERAL

1.1 SUMMARY

A. Section includes enclosed variable frequency controllers.

1.2 RELATED WORK

A. Related Work specified in other Sections:

1. Section 01 33 00 Submittal Procedures
2. Section 01 75 50 Project Closeout
3. Section 26 06 05 Electrical Equipment
4. Section 26 05 13 Conductors and Cables

1.3 REFERENCES

A. IEEE C62.41 (Institute of Electrical and Electronics ENGINEER=s) - Recommended Practice on Surge Voltages in Low-Voltage AC Power Circuits.

B. NEMA FU 1 (National Electrical Manufacturers Association) - Fuses.

C. NEMA ICS 3.1 (National Electrical Manufacturers Association) - Safety Standards for Construction and Guide for Selection, Installation and Operation of Adjustable-Speed Drive Systems.

D. NEMA ICS 7 (National Electrical Manufacturers Association) - Industrial Control and Systems:
1. Speed Drives.

E. NEMA 250 (National Electrical Manufacturers Association) - Enclosures for Electrical Equipment (1000 Volts Maximum).

F. NETA ATS (International Electrical Testing Association) - Acceptance Testing Specifications for Electrical Power Distribution Equipment and Systems.

1.4 SUBMITTALS

A. Shop Drawings: Indicate front and side views of enclosures with overall dimensions and weights shown; conduit entrance locations and requirements; and nameplate legends.

B. Product Data: Submit catalog sheets showing voltage, controller size, ratings and size of switching and overcurrent protective devices, short circuit ratings dimensions, and enclosure details.

C. Test Reports: Indicate field test and inspection procedures and test results.

D. Manufacturers Field Reports: Indicate start-up inspection findings.

E. Five copies, plus the number of copies the CONTRACTOR wishes returned, shall be submitted to the ENGINEER for approval.

F. Manufacturer=s warranty.

1.5 SUBMITTED AT SHIPMENT

A. Include system manuals, complete with wiring diagrams, schematics, operating, and maintenance instructions, shall be provided with the VFD and VFD systems at the time of shipment, on both hard and digital copies.

1.6 CLOSEOUT SUB MITTALS

A. Section 01 78 50 - Project Closeout.

B. Operation and Maintenance Data: Submit instructions complying with NEMA ICS 3.1. Include procedures for starting and operating controllers, and describe operating limits that may result in hazardous or unsafe conditions. Include routing preventive maintenance schedule.

1.7 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing products specified in thissection with minimum three years experience and service facilities within 100 miles of the project.

1.8 STANDARDS

A. The VFD shall be UL listed and not require external fuses except where input power is supplied from multiple transformer secondaries.

B. All VFD and VFD systems shall be designed in accordance with applicable portions of NEMA standards, and panel build ups manufactured by a UL508 listed manufacturer.

C. The VFD shall be compatible with the installation requirements of interpretive codes such as National Electric Code (NEC) and Occupational Safety & Health Act (OSHA).

D. The VFD shall be capable of operating in compliance with IEEE 519-1992.

E. The VFD shall meet IEC 612 00-2 for vibration levels.

1.9 DELIVERY, STORAGE, AND HANDLING

A. Store in a clean, dry space. Maintain factory wrapping or provide an additional heavy canvas or heavy plastic cover to protect units from dirt, water, construction debris, and traffic.

B. Handle in accordance with manufacturer's written instructions. Lift only with lugs provided for the purpose. Handle carefully to avoid damage to components, enclosure, and finish.

1.10 ENVIRONMENTAL REQUIREMENTS

A. Section 26 05 00 - Electrical General Requirements.

B. Conform to NEMA ICS 7 service conditions during and after installation of variable frequency controllers.

1.11 WARRANTY

A. Equipment furnished under this Section shall be guaranteed against defective parts and workmanship for 1 year from date of Final Acceptance of the system and shall in include labor and travel time for necessary repairs at the job site.

B. The manufacturer shall provide the service of a factory-trained service representative to verify the correctness of the CONTRACTOR=s completed installation; to check all electronic circuitry and mechanical components to assure their proper function; and to make all necessary measurements in and around the unit to ensure proper operation. A minimum of 1-day startup service shall be provided. The manufacturer shall provide through the CONTRACTOR to OWNER a written certification that the installation is complete, correct and properly calibrated.

1.12 MAINTENANCE SERVICE

A. Provide service and maintenance of variable frequency controller for one year from Date of Final Acceptance.

1.13 MAINTENANCE MATERIALS

A. Supply two of each air filter.

B. Provide three of each fuse size and type.

PART 2 PRODUCTS

2.1 VARIABLE FREQUENCY CONTROLLER

A. Manufacturers:

1. Allen-Bradley
2. Square D, Altivar Process 630 Drive
3. WEG
4. Or Approved Equals

B. Product Description: NEMA ICS 7, enclosed 6 pulse variable frequency controller suitable for operating the indicated loads. Select unspecified features and options in accordance with NEMA ICS 3.1.

2.2 RATINGS

A. Rated Input Voltage: 480 Volts, three phase, 60 Hertz. The VFD shall be able to withstand voltage variations of -15% to +10% without tripping or affecting VFD performance.

B. Motor Nameplate Voltage: 460 Volts, three phase 60 Hertz.

C. Motor Nameplate Horse power: 60 horsepower design B.

D. Displacement Power Factor: Between 1.0 and 0.95 lagging over entire range of operating speed and load.

E. Operating Ambient: 0 degrees C to 50 degrees C.

F. Relative Humidity: 5 to 95 percent non-condensing.

G. Minimum Efficiency at Full Load: 96 percent.

H. Elevation: The VFD shall be suitable for operations up to 4,500 feet.

2.3 DESIGN FEATURES

A. Employ microprocessor-based inverter logic isolated from power circuits.

B. Employ pulse-width-modulated inverter system.

C. Design for ability to operate controller with motor disconnected from output.

D. Design to attempt five automatic restarts following fault condition before locking out and requiring manual restart.

E. The VFD shall be capable of 4 different acceleration and different deceleration rates, each rate independently adjustable from 0.01 to 3600 seconds. Selectable accel/decel patterns to include linear, S-curve, and non-linear for variable torque loads.

F. The VFD shall have the capability of determining motor characteristics to optimize its operation with the use of pre-programmed motor data information or self-tuning operation. Self-tuning is to be available with or without the motor coupled to the load. Tuning shall also include an online mode that automatically and dynamically compensates the VFD regulator for changes in motor temperature.

2.4 INDICATORS AND MANUAL CONTROLS

A. Input Signal: 4 - 20 mA DC.

B. Display:

1. Provide integral LCD display to indicate output voltage, output frequency, output current, fault codes and drive status.

2. Upon a fault condition, the LCD shall display VFD output current, voltage, frequency, torque, DC link voltage, operating hours, I/O terminal status, and temperature at the time of fault. The last four (4) faults will be stored in memory and selectively be displayed on the LCD.

C. Indicator Lights:

1. Provide an indicator light to indicate VFD failure.

D. The drive shall have a built-in keypad that is installed on the outside cover and shall include Forward/Reverse/Stop/Jog keys, Drive reset key and Reference increment/decrement keys.

E. Volts Per Hertz Adjustment: Plus or minus 10 percent.

F. Current Limit Adjustment: 60 - 110 percent of rated.

G. Acceleration Rate Adjustment: 0.5 - 30 seconds.

H. Deceleration Rate Adjustment: 1 - 30 seconds.

I. HAND-OFF -AUTOMATIC selector switch and manual speed control.

J. Control Power Source: Integral control transformer.

2.5 SAFETIES AND INTERLOCKS

A. Includes undervoltage release.

B. Door Interlocks: Mechanical means to prevent opening of equipment with power connected, or to disconnect power if door is opened; include means for defeating interlock by qualified persons.

C. Safety Interlocks: Terminals for remote contact to inhibit starting under both manual and automatic mode.

D. Control Interlocks: Furnish terminals for remote contact to allow starting in automatic mode.

E. The VFD shall be able to automatically reset up to ten (10) times after over-current, over-voltage, overheating, and overload faults. Reset attempts and reset intervals must be programmable.

F. Disconnecting Means: Integral circuit breaker on the line side of each controller.

2.6 VFD INPUT/OUTPUT PARAMETERS

A. The VFD shall accept and follow a selectable external frequency reference of either analog 0-5 VDC, 0-10 VDC, 4-20m A with signal inversion.

B. The VFD shall maintain the output frequency to within 0.2% of reference when the

reference is analog, and to within .01% of reference when the reference is digital (Speed level inputs from keypad, contact closure, digital interface, or serial communication).

C. The VFD shall have a reference filter to reduce noise in the analog signals and a low noise control power supply system.

D. The VFD shall accept inputs from external dry contacts for the following functions:

1. Run forward command
2. Run reverse command
3. Multi-step frequency selection
4. Acceleration/Deceleration time selection
5. Stop command
6. Coast to stop command
7. Alarm reset
8. Trip command (external fault)
9. Jogging operation
10. Frequency reference selection (2)
11. DC brake command
12. Torque limits (2)
13. Switching operation between line and inverter (50 and 60 Hz)
14. Speed Increase command
15. Speed Decrease command
16. Write enable for keypad
17. PID control cancel
18. Inverse mode changeover
19. Interlock signal
20. Serial communications enable
21. Universal DI
22. Pick up start mode
23. Forced stop command
24. Forced stop command with Deceleration time

E. The frequency reference shall be from, selectively, an external speed potentiometer, external analog signals (0-5 VDC, 0-10 VDC, 4 to 20mA with signal inversion), from the built in keypad, or from serial communication.

1. The VFD shall provide five selectable digital outputs indicating the following:
    a. Inverter running
    b. Frequency equivalence signal
    c. Frequency level detection
    d. Torque polarity
    e. Torque limiting
    f. Auto-restarting
    g. Overload early warning
    h. Keypad operation mode
    i. Inverter stopping
    j. Ready input
    k. Line/Inverter changeover
    l. Motor 2 / Motor 1

m. Auxiliary terminal
n. Time-up signal
o. Cycle completion time
p. Stage No Indication (1, 2, and 4)
q. Alarm Indication (1, 2, 4, and 8)
r. Fan operation signal
s. Auto resetting
t. Universal DO
u. Overheat early warning
v. Second frequency level detection
w. Second overload early warning
x. Terminal C1 off signal

2.7 PROTECTIVE AND DIAGNOSTIC FEATURES

A. When a fault occurs, the VFD shall have a controlled shut down sequence. A Form C relay fault output shall be available. The reason for the fault condition shall be enunciated on the LED display, and the LCD graphic screen shall display the current, temperature, frequency, and voltage at the time of the fault as well as potential reasons for the condition. The VFD shall monitor, sense, and display the following fault conditions:

1. Over-current during acceleration
2. Over-current during deceleration
3. Over-current during constant speed operation
4. Ground fault
5. Input phase loss
6. Fuse blown
7. Over-voltage during acceleration
8. Over-voltage during deceleration
9. Over-voltage during constant speed operation
10. Under-voltage
11. Overheating of heatsink
12. External thermal relay
13. Over-temperature of internal air
14. Overheating at Dynamic Braking circuit
15. Motor 1 overload
16. Motor 2 overload
17. Inverter unit overload
18. Over-speed
19. Memory Error
20. Keypad panel communication error
21. CPU error
22. Option error
23. Operational procedure error
24. Output wiring error / Impedance imbalance
25. Modbus-RTU error

B. The VFD shall have a selectable Torque Limiting function for both motoring and braking that will sense an overload condition and will reduce frequency and current temporarily until the load reaches acceptable levels. If the overload condition is not

settled in the proper amount of time, the Drive will trip on overload. The Torque Limiting shall be programmable from 20-150% of Drive rated motor torque (30 HP and below) and from 20-150% of Drive rated motor torque (40 HP and above), with 1% resolution.

C. The VFD shall have a selectable electronic inverse time thermal overload function as required by NEC and UL Standard 991 for an AC Induction Motor (Refer to applicable codes for specific installation requirements). The overload shall be programmable from 20 - 135% of Drive rated current.

D. The VFD shall have an over-voltage protection function that operates if supply voltage rises above rated value or by motor's regeneration.

E. The VFD shall treat short circuits in either the output load or the output module as an over-current.

F. If the VFD heat sink temperature exceeds approximately 100-degrees C, the Drive will shut down on over temperature fault.

G. The VFD shall provide output ground fault protection.

H. The VFD shall provide LED indication of DC bus voltage, which, when lit, will signify to maintenance people the presence of potentially dangerous voltage.

2.8 VFD CONSTRUCTION

A. The VFD shall be a sinusoidal PWM type Drive with sensor-less vector control capability. The VFD Supplier shall provide open chassis, IP20, NEMA 1 enclosures at all ratings as required for the application. Drive shall be of modular construction for ease of access to control and power wiring, and maintenance. It shall consist of the following general components:

1. Full wave diode AC/DC rectifier, to eliminate line voltage notching of the three phase source and maintain an input displacement power factor of 0.95 or greater, regardless of speed or load. SCR front ends with gate firing electronics are unacceptable.
2. DC link capacitors standard, DC link reactor available at all ratings, standard on systems 100HP+.
3. Input surge protection performed by internal MOV'S (metal oxide varistors) or devices providing equal protection.
4. Insulated Gate Bipolar Transistor (IGB T) power section. The power section control shall use vector dispersal pulse width modulated (PWM) control and fourth generation soft switching IGBTs to reduce noise and allow longer cable length from VFD to motor without the need for output filters.
5. The VFD shall be microprocessor based and fully transistorized with a 32 bit MCU and 33 MIPS processing speed.
6. Separate control and power terminal boards, with option plug shall be provided by the VFD to allow for remote operation.
7. The VFD shall have an RS485 serial communications port as a standard with options for communicating with recognized industry standard device level networks such as Ethernet and Modbus Plus. A universal ethernet adapter

shall be provided as an interface with the serial communications port.

8. The VFD shall have a Keypad capable of copying, uploading and downloading Drive function codes.

2.9 INPUT FILTER

A. Harmonic Filter: Provide a Matrix Harmonic Filter to reduce the harmonic currents going back into the utility power grid and power system. The total harmonic voltage distortion factor (DF) at the main 480 volt bus for voltage shall be less than 5 percent.

B. The filter shall include a contactor that shall de-energize the capacitors when the drive is less than 30% output.

2.10 PROCESS ALARM SWITCH

A. Manufacturer/Model:

1. CR Magnetics/CR3595.
2. Or approved equal.

B. Description - Provide a process alarm switch to monitor the VFD output Hz. When the control loop exceeds the set point the relay becomes energized and the on-board LED illuminates.

C. Input Power: 24 VDC.

D. Output: Form C Relay, 10A at 125 VAC.

E. Process variable: 4-20 mA DC

F. DIN Rail mounting.

2.11 SURGE PROTECTIVE DEVICE

A. TVSS Manufacturer:
1. **Eaton**
2. **Raycap**
3. **Square D**
4. Or Approved equal.

B. This Section describes the materials and installation requirements for an integrated Transient Voltage Surge Suppressor (TVSS), also referred to as Surge Protective Device (SPD), inside VFD enclosure. These devices are used to protect AC electrical circuits from the effect of lightning induced currents, substation switching transients and internally generated transients resulting from inductive and or capacitive load switching.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify that building environment can be maintained within the service conditions required by the manufacturer.

3.2 INSTALLATION

A. Install in accordance with NEMA ICS 3.1.

B. Tighten accessible connections and mechanical fasteners after placing controller.

C. Select and install overload heater elements in motor controllers to match installed motor characteristics.

D. Provide engraved plastic nameplates under the provisions of Section 26 05 00.

E. Motor Data: Neatly type label inside controller door identifying motor served, nameplate horsepower, full load amperes, code letter, service factor, and voltage/phase rating. Place label in clear plastic holder.

F. Ground and bond controller under the provisions of Section 26 05 26.

3.3 QUALITY ASSURANCE

A. All VFD's shall be 100 % factory tested to ensure proper performance upon delivery.

B. VFD's installed in panels shall be 100% factory tested as a system by the VFD supplier.

3.4 FIELD QUALITY CONTROL

A. Inspect and test in accordance with NETA ATS, except Section 4.

B. Perform inspections and tests listed in NETA ATS, Section 7.16 and NEMA ICS 3.1.

3.5 MANUFACTURER'S FIELD SERVICES

A. Prepare and startup variable frequency controller.

B. VFD operational and maintenance training and startup service shall be provided by the VFD supplier. The VFD vendor shall have factory trained personnel at field locations convenient to the installation site, available for trouble shooting and/or startup assistance 24/7.

C. Coordinate factory startup with the VFD, motor and Motor Protector factory representatives.

D. Coordinate VFD settings and the Backup Power Generator so that the facility operates as intended on both utility power and on backup generator power.

3.6 DEMONSTRATION AND TRAINING

A. Provide 4 hours of instruction each for 6 persons, to be conducted at Project Site with manufacturer's representative.

3.7 WARRANTY

A. The VFD vendor shall provide a warranty for material and workmanship, for a period of twenty-four months after Final Completion.

B. Warranty and non-warranty service shall be available in house and in the field. There shall be authorized service centers locally available within 4 hours.

3.8 SPARE PARTS

A. Provide a list of all spare parts to the OWNER at Substantial Completion.

- END OF SECTION -

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SECTION 33 05 05
DUCTILE IRON PIPE

PART 1 GENERAL

1.1 DESCRIPTION

A. CONTRACTOR shall furnish and install all pipe, fittings, closure pieces, supports, bolts, nuts, gaskets, jointing material, and appurtenances as shown and specified, and as required for a complete and workable piping system.

B. Hydrostatic testing shall meet the requirements of Section 33 13 00 – Pipeline Testing.

C. If there is a discrepancy between this Section or applicable AWWA Standards, the more stringent requirement shall apply.

1.2 RELATED WORK

A. Related Work specified in other Sections includes, but is not limited to:

1. Section 01 33 00 Submittal Procedures
2. Section 09 90 00 Painting and Finishes
3. Section 33 12 00 Mechanical Appurtenances
4. Section 33 13 00 Pipeline Testing

1.3 REFERENCES

A. The Work covered by this Specification shall meet or exceed the provisions of the latest editions of the following Codes and Standards in effect at the time of award of the Contract. The publication is referred to in the text by basic designation only.

B. AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)

1. ASTM D 2041 Cast-Iron Pipe Flanges and Flanged Fittings Class 25, 125, and 250

C. AMERICAN STANDARDS FOR TESTING AND MATERIAL (ASTM)

1. ASTM A 193 Standard Specification for Alloy-Steel and Stainless-Steel Bolting for High Temperature or High-Pressure Service and Other Special Purpose Applications
2. ASTM A 194 Standard Specification for Carbon Steel, Alloy Steel, and Stainless-Steel Nuts for Bolts for High Pressure or High Temperature Service, or Both
3. ASTM A 283 Standard Specification for Low and Intermediate Tensile Strength Carbon Steel Plates
4. ASTM A 536 Standard Specification for Ductile Iron Castings
5. ASTM E 96 Standard Test Methods for Gravimetric Determination of Water Vapor Transmission Rate of Materials

D. American Society of Mechanical Engineers (ASME)

1. ASME B1.1 Unified Inch Screw Threads, (UN And UNR Thread Form)
2. ASME B18.2.1 Square, Hex, Heavy Hex, And Askew Head Bolts and Hex, Heavy Hex, Hex Flange, Lobed Head, And Lag Screws (Inch Series)
3. ASME B18.2.2 Nuts for General Applications: Machine Screw Nuts, Hex, Square, Hex Flange, And Coupling Nuts (Inch Series)

E. AMERICAN WATER WORKS ASSOCIATION (AWWA)

1. AWWA C 104 Standard for Cement-Mortar Lining for Ductile-Iron Pipe and Fittings
2. AWWA C 105 Standard for Polyethylene Encasement for Ductile-Iron Pipe Systems
3. AWWA C 110 Standards for Ductile-Iron and Gray-Iron Fittings, 3-inch Through 48-inch, for Water
4. AWWA C 111 Standard for Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings
5. AWWA C 115 Standard for Flanged Ductile-Iron Pipe with Ductile Iron or Gray-Iron Threaded Flanges
6. AWWA C 150 Standard for the Thickness Design of Ductile-Iron Pipe
7. AWWA C 151 Standard for Ductile-Iron Pipe, Centrifugally Cast, for Water
8. AWWA C 153 Standard for Ductile-Iron Compact Fittings, 3-inch Through 64-inch for Water
9. AWWA C 219 Standard for Bolted, Sleeve-Type Couplings for Plain-End Pipe
10. AWWA C 600 Standard for Installation of Ductile-Iron Water Mains and Their Appurtenances
11. AWWA C 606 Standard for Grooved and Shouldered Joints

1.4 SUBMITTALS

A. Submit catalog information on all pipe, fittings, valves, couplings, gaskets, tapes, bolts and nuts, wraps, safety tapes, and tracer wires as shown on the Contract Drawings. Information shall indicate manufacturer specification compliance and dimensional data.

B. Submit shop drawings on all fabricated piping and pipe supports.

C. Submit bolting patterns, procedures, and bolting equipment data, and calculations for target torque calculations.

D. Certified affidavit of compliance for pipe and fittings or other materials furnished under this Section and as specified in the referenced standards.

1.5 QUALITY ASSURANCE

A. Except as modified herein, materials used in the manufacture of the pipe shall be tested in accordance with the requirements of the referenced standards as applicable.

PART 2 PRODUCTS

2.1 DUCTILE IRON PIPE

A. Ductile iron pipe shall conform to the requirements of the AWWA C151 and AWWA C150. The pipe thickness rating shall be minimum Class 53 unless otherwise noted on the Contract Drawings. The pipe shall be provided with rubber gaskets, specials, and fittings as required.

2.2 FITTINGS

A. Ductile Iron flanges shall have either raised or plain faces and shall have a minimum working pressure rating as required for the Project conditions. CONTRACTOR shall be responsible for providing flanges that match connecting equipment and fittings.

2.3 DUCTILE IRON PIPE JOINTS

A. Ductile iron pipe and fittings shall be furnished with mechanical joints, push-on joints, flanged joints, or restrained joints as required.

1. Mechanical and push-on joints shall conform to the requirements of AWWA C111.
2. Flanged joints shall conform to the requirements of AWWA C115.
3. Restrained joints shall conform to the requirements of AWWA C151. Restrained joints shall **be Flex-Ring, Field Flex-Ring, or Lok-Ring by American Ductile Iron Pipe, Field Lok, TR-Flex by U.S. Pipe**, or approved equal.
4. Joint restraining devices that impart point loads on the pipe wall or that require a tapped anchor as a means of joint restraint shall not be allowed unless there are no other options available. The joint restraint devices shall be **MegaLug Model 1100 by EBAA Iron**, or approved equal.

2.4 SOLID SLEEVE-TYPE COUPLINGS

A. Solid sleeve-type couplings shall be provided where shown on the Contract Drawings. Coupling shall be of ductile iron and shall be of the size to fit the pipe and fittings shown. Coupling shall be pressure rated 250 psi and comply with AWWA C110. Restraints shall be provided where indicated on the Contract Drawings.

2.5 DISMANTLING JOINT

A. Provide dismantling joints were shown on the Contract Drawings. CONTRACTOR will not be allowed to substitute any other type of dismantling joint unless approved by ENGINEER. The coupling shall be rated as indicated on the Contract Drawings or to match the pressure rating of the adjoining pipe.

B. Dismantling joint bodies shall be fabricated from steel, ASTM A512 or A 513 or Ductile Iron ASTM A536, without pipe stop. The body shall not be less than 1/4-inch thick or at least the same wall thickness as the pipe to which the joint is connected. If the strength of the body material is less than the strength of the pipe material, the thickness of the middle ring shall be increased to have the same strength as the pipe. The follower ring shall be fabricated from steel, ASTM A576 or A36.

C. For dismantling joints installed in piping systems rated for positive pressure, the joint shall be restrained with harness bolts or tie rods. Other means of restraining the joint such as set screws will not be accepted. Harnesses shall be designed in accordance with AWWA Manual 11, or as indicated. Harness sets shall be designed for the maximum test pressure of the pipe in which they are installed.

D. Gaskets shall be composed of a rubber-compound material that will not deteriorate from age or exposure to air under normal storage or use conditions.

E. Dismantling joints shall be **Model 975 by Smith-Blair, Model 309 by JCM, Model DJ400 by Romac**, or approved equal.

2.6 GASKETS

A. Except as otherwise provided, gaskets for flanged joints shall be full face, 1/8-inch thick SBR elastomer and shall have at least two (2) bulb type rings molded into both faces of the gasket. Class 250 or less flange gaskets shall be **Flange-Tyte by U.S. Pipe, Toruseal Flange Gasket by American Ductile Iron Pipe,** or approved equal. Wherever blind flanges are shown, the gaskets shall consist of 1/8-inch thick cloth-inserted rubber sheet which shall cover the entire inside surface of the blind flange and shall be cemented to the surface of the blind flange.

2.7 BOLTS AND NUTS

A. Bolts and nuts shall be rated for the system working pressure with a minimum safety factor of three. Bolts and nuts buried, submerged, and inside vaults shall be Type 304 stainless steel. Bolts and nuts above grade, exposed or inside structures, shall be Type 304 stainless steel. Bolts and nuts in exposed to wastewater or in corrosive environments shall be Type 316 stainless steel.

B. All flange bolt lengths shall be selected by CONTRACTOR such that three full threads, as a minimum, protrude from the hex nut and washer after assembly.

C. Flange bolts shall have ASME B1.1, Class 2A threads, and be manufactured of ASTM A 193, Grade B7 steel. Bolts shall conform to ASME B18.2.1.

D. Flange nuts shall have Class 2B fit, and be manufactured of ASTM A 194, Grade 2H steel, having square or hex heavy dimensions in accordance with ASME B18.2.2.

2.8 CERAMIC EPOXY LINING

A. All ductile pipe and fittings shall be furnished with a Protecto 401 Ceramic Epoxy lining. The material shall be an amine cured novolac epoxy containing at least 20% by volume of ceramic quartz pigment. The lining shall meet the following requirements.

1. A permeability rating of 0.00 when tested according to Method A of ASTM E-96, Procedure A with a test duration of 30 days.
2. An abrasion resistance of no more than 3 mils (.075 mm) loss after one million cycles using European Standard EN 598: 1994 Section 7.8 Abrasion Resistance.

2.9 PIPE COATINGS

A. All exposed piping, valves, and fittings including inside vaults and buildings and exposed to the atmosphere shall be painted as specified in Section 09 90 00 – Painting and Finishes. Exposed piping, valves, and fittings to be painted shall be primed by the manufacturer in preparation for painting. CONTRACTOR shall provide verification from the finish coating supplier that the field applied coatings are compatible with the manufacturer's prime coat. Pipe to be painted shall not have asphalt emulsion coating. The exterior of buried pipe and fittings shall be an asphaltic coating approximately one-mil thick.

PART 3 EXECUTION

3.1 INSTALLATION

A. Ductile iron fittings shall be installed in accordance with the ANSI/AWWA C 600. Inspect each pipe and fitting prior to installation to verify there is no damage and clean each pipe and fitting prior to installation.

B. Valves shall be handled in a manner to prevent damage to any part of the valve. CONTRACTOR shall adjust stem packing and operate each valve prior to installation to ensure proper operation. Valves shall be installed so that the valve stems are plumb and, in the location, indicated on the Contract Drawings.

3.2 LINING APPLICATION

A. Applicator

1. The lining shall be applied by a certified firm with a successful history of applying linings to the interior of ductile iron pipe and fittings. All applicators must be independently inspected at least two times per year to ensure compliance with the requirements of this specification. This inspection must be coordinated and reviewed by the manufacturer of the lining material and any deviation from the application and/or quality requirements shall be corrected by the applicator. All inspections shall be in writing and a permanent record maintained.

B. Surface Preparation

1. Prior to abrasive blasting, the entire area to receive the protective compound shall be inspected for oil, grease, etc. Any areas with oil, grease, or any substance that can be removed by solvent, shall be solvent cleaned to remove those substances. After the surface has been made free of grease, oil or other substances, all areas to receive the protective compounds shall be abrasive blasted using sand or grit abrasive media. The entire surface to be lined shall be struck with the blast media so that all rust, loose oxides, etc., are removed from the surface. Only slight stains and tightly adhering oxide may be left on the surface. Any area where rust reappears before lining must be re-blasted.

C. Lining

1. After surface preparation and within 12 hours of surface preparation, the interior of the pipe shall receive 40 mils nominal dry film thickness. No lining shall take place when

the substrate or ambient temperature is below 40 degrees F. The surface also must be dry and dust free. If flange pipe or fittings are included in the project, the lining shall not be used on the face of the flange

D. Coating of Bell Sockets and Spigot Ends

1. Due to the tolerances involved, the gasket area and spigot end up to 6 inches back from the end of the spigot end must be coated with 6 mils nominal, 10 mils maximum using Protecto 401™ Joint Compound. The Joint Compound shall be applied by brush to ensure coverage. Care should be taken that the Joint Compound is smooth without excess buildup in the gasket seat or on the spigot ends. Coating of the gasket seat and spigot ends shall be done after the application of the lining.

E. Number of Coats

1. The number of coats of lining material applied shall be as recommended by the lining manufacturer. However, in no case shall this material be applied above the dry thickness per coat recommended by the lining manufacturer in printed literature. The maximum or minimum time between coats shall be that time recommended by the lining material manufacturer. To prevent delamination between coats, no material shall be used for lining which is not indefinitely recoatable with itself without roughening of the surface.

F. Touch-Up and Repair

1. Protecto 401™ Joint Compound shall be used for touch-up or repair in accordance with manufacturer's recommendations.

3.3 LINING INSPECTION AND CERTIFICATION

A. Inspection

1. All ductile iron pipe and fitting linings shall be checked for thickness using a magnetic film thickness gauge. The thickness testing shall be done using the method outlined in SSPC PA-2 Film Thickness Rating.
2. The interior lining of all pipe barrels and fittings shall be tested for pinholes with a non-destructive 2,500 volt test. Any defects found shall be repaired prior to shipment.
3. Each pipe joint and fitting shall be marked with the date of application of the lining system along with its numerical sequence of application on that date and records maintained by the applicator of his work.

B. Certification

1. The pipe or fitting manufacturer must supply a certificate attesting to the fact that the applicator met the requirements of this specification, and that the material used was as specified.

3.4 LINING HANDLING

A. Lined pipe and fittings must be handled only from the outside of the pipe and fittings. No forks, chains, straps, hooks, etc. shall be placed inside the pipe and fittings for lifting, positioning, or laying. The pipe shall not be dropped or unloaded by rolling.

B. Care should be taken not to let the pipe strike sharp objects while swinging or being off loaded. Ductile iron pipe should never be placed on grade by use of hydraulic pressure from an excavator bucket or by banging with heavy hammers.

3.5 BOLTING PROCEDURES FOR FLANGED JOINTS

A. Flange joints shall be assembled according to the gasket manufacturer's instructions and as specified herein. Utilize calibrated bolting equipment capable of applying a measured torque to flange bolts during joining. Bolting patterns, procedures, and bolting equipment data shall be submitted prior to pipe fitting and bolting.

B. Gaskets, bolts, and anti-seize lubricant used in the bolting procedure shall be selected from those specified herein. Submit target torque calculations for each application. Calculations shall identify specific gasket (manufacturer, model, size, configuration, material), bolts (size and material), and anti-seize lubricant. The calculations shall document and take into consideration the pipe service, working and test pressures, pipe diameter, gasket data sheet, bolt material, gasket supplier-recommended assembly stress, and gasket-supplier recommended bolt stress. Calculations shall be stamped by a professional engineer. Target torque calculations shall be used in the assembly of bolted joints.

C. Flange bolts, nuts, and washers shall be visually inspected and cleaned prior to bolting. Lubricate bolts and nuts; if hardened washers are not used, lubricate the flange surface around the bolt holes. This lubricant must be removed by cleaning solvent prior to applying a coating system. Hand-tighten all nuts and bolts then tighten them to 10 to 20 percent of the target torque. The initial torque shall not exceed 20 percent of the target torque. The bolts shall be tightened according to the pattern included in AWWA Manual M11, Figure 12-3.

D. For flanges having 4 to 8 bolts there shall be three rounds of tightening, after hand tightening, to 30 percent, 60 percent and then 100 percent of the target torque. For flanges having 12 or more bolts there shall be four rounds of tightening, after hand tightening, to 20 percent, 40 percent, 80 percent and 100 percent of the target torque. At 100 percent of target torque the flange gap shall be measured at every other bolt to confirm uniformity. The bolts shall be re-tightened to the target torque 24 hours after completion of the initial bolting sequence.

3.6 HYDROSTATIC FIELD TESTING OF PIPE

A. CONTRACTOR shall provide additional temporary blow-off valves and fittings as required to flush and disinfect new pipelines as required in Section 33 13 00 – Pipeline Testing and Disinfection. Temporary blow-off valves and fittings shall be removed prior to placing pipeline into service.

B. Source of Water

1. CONTRACTOR shall assume all responsibility to obtain the necessary water supplies for pressure testing of the pipeline.

C. Testing Procedure

1. The pipe working pressure is 40 psi unless noted otherwise on the Contract Drawings.

2. Pipe test pressure shall not exceed 125% of the working pressure unless taken into consideration during design. The test pressure shall not exceed the thrust-restraint design pressure or 1.5 times the pressure rating of the pipe or joint, whichever is less.
3. For projects with long pipeline segments, the test pressure shall not be less than 125% of the design operating pressure at the highest elevation on the pipeline and shall not be less than 150% of the working operating pressure at the lowest elevation on the pipeline.
4. Hydrostatic testing shall be in accordance with the requirements of AWWA C 600 and Section 33 13 00 - Pipeline Testing. In the event of a conflict between these two references, the more stringent requirement shall be followed.
5. In the case of pipelines that fail to pass the leakage test, CONTRACTOR shall determine the cause of the excessive leakage, shall take corrective measures necessary to repair the leaks, and shall repeat the pipeline test, all at no additional cost to OWNER.
6. ENGINEER shall be notified at least 48 hours before the pipeline is to be tested so that ENGINEER may be present during the test
7. Air pressure testing will not be allowed.

D. Exposed piping and valves shall show no visible leaks and no pressure loss during the test.

3.7 PAINTING

A. All exposed piping including inside vaults and structures shall be coated as specified in Section 09 90 00 – Painting and Finishes.

- END OF SECTION –

SECTION 33 05 26
UTILITY IDENTIFICATION

PART 1 GENERAL

1.1 DESCRIPTION

A. CONTRACTOR shall provide and install identification markers for all exposed valves, piping, equipment, tanks, and warning signs, all in accordance with these specifications and the Contract Documents.

1.2 RELATED WORK

A. Related work specified in other Sections includes, but is not limited to:

1. Section 01 33 00 Submittal Procedures
2. Section 09 90 00 Painting and Finishes

1.3 REFERENCES

A. The latest edition of the following publications form a part of this Specification to the extent referenced. The publications are referred to in the text by basic designation only.

B. AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)

1. ANSI A13.1 Scheme for the Identification of Piping Systems
2. ANSI Z535 Safety Signs and Colors

C. AMERICAN SOCIETY FOR TESTING MATERIALS (ASTM)

1. ASTM D 1593 Standard Specification for Nonrigid Vinyl Chloride Plastic Film and Sheeting
2. ASTM D 3652 Standard Test Method for Thickness of Pressure-Sensitive Tapes

1.4 SUBMITTALS

A. Provide submittals in accordance with Section 01 33 00 – Submittal Procedures.

B. Submit manufacturer’s data sheets showing wording, symbols, letter size, and color coding.

C. Submit one sample of each type of identification device to be used.

D. Submit sample of each proposed color required by the color schedule.

E. Submit the manufacturer’s installation instructions.

1.5 QUALITY ASSURANCE

A. Product manufacturer shall be ISO 9001 Quality Certified.

PART 2 PRODUCTS

2.1 VALVE TAGS

A. General: Provide each valve of size 2-inch and larger with an identification tag. Tag shall show the pipeline station (if applicable), type, manufacturer, date of manufacture, and pressure rating.

B. Metal Tags:

1. Stainless Steel: 0.6 mm (0.025 inch) thick, Grade 304 stainless steel. Manufacturer shall be **Seton, Brady**, or approved equal.
2. Lettering: Engraved letters; character size and words according to ANSI A13.1.

C. Beaded Chains: No. 6 stainless steel, 114 mm (4-1/2 inch) long, with locking link.

D. Chart: Typewritten letter size list in anodized aluminum frame.

2.2 PIPE MARKERS

A. General: Labels for piping shall bear the full piping system name. Provide flow arrows and working pressure next to each label.

B. Mechanically Fastened Pipe Markers:

1. Vinyl: Factory fabricated vinyl, 0.020 inch to 0.030 inch thick, performed to fit around pipe or pipe covering. Model **Setmark by Seton, B-915 Brady SnapOn Vinyl by Brady**, or approved equal.
2. Polyester: Factory fabricated polyester, 0.1 mm (4 mil) thick, laminated with UV-resistant poly vinyl fluoride (PVF), preformed to fit around pipe or pipe covering. Model **Ultramark by Seton, B-689 High Performance by Brady**, or approved equal.

C. Self-Adhesive Pipe Markers:

1. Vinyl: Factory fabricated vinyl, 0.102 mm (5 mil) thick, preformed to fit around pipe or pipe covering. Model **Opti-Code by Seton, B-946 by Brady**, or approved equal.
2. Polyester: Factory fabricated polyester, 0.05 mm (2 mil) thick, coated with acrylic adhesive. Model **Poly-Code by Seton**, or approved equal.
3. Plastic: Factory fabricated plastic film, roll formed, clear laminated to protect lettering.

D. Identify fluid being conveyed and include flow direction arrow.

1. Language: English.
2. Lettering: Size and Color according to ANSI A 13.1.

E. Color and Text per the Schedule at the end of this Section.

2.3 LABELS FOR AUTOMATIC START/STOP EQUIPMENT

A. Provide a sign reading “CAUTION – EQUIPMENT STARTS AND STOPS AUTOMATICALLY” on equipment as shown on the drawings on identified in the specifications. Signs shall be vinyl with self-adhesive for application to the equipment.

Minimum size shall be 7-inches by 10-inches. Manufacturer shall be **Brady, Seton**, or approved equal.

PART 3 EXECUTION

3.1 GENERAL

A. Markers and identification tags shall be installed in accordance with the manufacturer's printed instructions and shall be neat and uniform in appearance. Tags and markers shall be readily visible from all normal working locations.

3.2 PREPARATION

A. Degrease and clean surfaces to receive adhesive for identification materials.

3.3 INSTALLATION

A. Valve Tags:

1. Install tags with corrosion resistant chains.
2. Identify valves in main and branch piping with tags.
3. Identify small devices, such as in-line pumps, with tags.
4. Tag automatic controls, instruments, and relays.

B. Pipe Markers:

1. Identify all above grade piping. Include service, flow direction, and working pressure.
2. Provide snap-on type markers for pipes 6-inch diameter and smaller. Provide strap-on type for pipes over 6-inch diameter.
3. Each pipe shall me marked at:
   a. Intervals of 20-feet in straight runs.
   b. At least once in every room.
   c. Within 2 –feet of bends and valves.
   d. On the upstream side of Tees, branches, and other distribution points.
   e. On both sides of walls and floors through which the piping passes.

3.4 SCHEDULES

Color Schedule				
Pipe Contents		Pipe Color	Marker Color	Letter Color
Abbreviation	Identification			
SS	Sanitary Sewer Suction and Discharge Piping	Dark Brown	Yellow	Black

- END OF SECTION –

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SECTION 33 12 00
MECHANICAL APPURTENANCES

PART 1 GENERAL

1.1 SUMMARY

A. CONTRACTOR shall furnish and install all valves, and equipment, complete and operable in accordance with the Specifications.

B. Where 2 or more valves or equipment of the same type and size are required, the valves shall be furnished by the same manufacturer.

C. CONTRACTOR shall verify that flanges on pipe match the bolt hole pattern of the flanges on the mechanical appurtenances.

D. All appurtenances shall be NSF 61 certified if used in potable water systems.

E. Unless noted otherwise below or in the Contract Drawings, all system components shall be rated for the maximum system pressure or higher.

1.2 RELATED WORK

A. Related Work specified in other Sections includes, but is not limited to:

1. Section 01 33 00 Submittal Procedures
2. Section 01 45 00 Quality Control & Materials Testing
3. Section 01 50 00 Temporary Construction Utilities and Environmental Controls
4. Section 33 05 05 Ductile Iron Pipe and Fittings

1.3 REFERENCES

A. The latest edition of the following publications form a part of these Specifications to the extent referenced. The publications are referred to in the text to by basic designation only.

B. AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

1. A 126 Standard Specification for Gray Iron Castings for Valves, Flanges, and Pipe Fittings
2. A 216 Standard Specification for Steel Castings, Carbon, Suitable for Fusion Welding, for High-Temperature Service
3. B 584 Standard Specification for Copper Alloy Sand Castings for General Applications

C. AMERICAN WATER WORKS ASSOCIATION (AWWA)

1. AWWA C 517 Resilient-Seated Cast-Iron Eccentric Plug Valves
2. AWWA C 518 Dual-Disc Swing-Check Valves for Waterworks Service
3. AWWA C 550 Protective Interior Coatings for Valves and Hydrants

D. AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)

1. ANSI B 16.1 Gray Iron Pipe Flanges and Flanged Fittings
2. ANSI B 16.34 Valves – Flanged, Threaded, and Welding End

1.4 SUBMITTALS

A. Provide submittals in accordance with Section 01 33 00 – Submittal Procedures.

B. Submit catalog cut sheets on all mechanical appurtenances including fittings, valves, or other items shown on the Contract Drawings referencing each item by mark number. Information shall indicate manufacturer specification compliance, Cv factor, pressure rating, and dimensional data.

PART 2 PRODUCTS

2.1 PLUG VALVES

A. Plug valves shall be 100% port (full pipe area) eccentric type suitable for wastewater service and shall conform to the requirements of AWWA C 517. Plug valves shall be quarter-turn, non-lubricated with resilient encapsulated plug with ANSI B16.1 Class 125 flange ends. Plug valves shall be **Model 5800R by Val-Matic, DeZurik Eccentric Plug Valve**, or approved equal.

B. Plug valves shall have shaft seals which consist of V-type packing in a fixed gland with an adjustable follower designed to prevent over compression of the packing and to meet design parameter of the packing manufacturer. Removable shims shall be provided under the follower flanges to provide for adjustment and prevent over tightening. Permanently lubricated, radial shaft bearings shall be supplied in the upper and lower bearing journals. Thrust bearings shall be provided in the upper and lower journal areas. Both packing and bearings in the upper and lower journals shall be protected by a drip tight Buna-N shaft seal located on the valve shaft to minimize the entrance of grit into the bearing journal and shaft seal areas.

C. Valve bodies and covers shall be constructed of ASTM A 126 Class B cast iron for working pressure up to 175 psi. The words “SEAT END” shall be cast on the exterior of the body seat end. Plugs shall be of one-piece construction and made of ASTM A 126 Class B cast iron or ASTM A 536 Grade 65-45-12 ductile iron and fully encapsulated with resilient facing per ASTM D 2000-BG and AWWA C 517 requirements. Radial shaft bearings shall be constructed of self-lubricating Type 316 stainless steel. The top thrust bearing shall be Teflon. The bottom thrust bearing shall be self-lubricating Type 316 stainless steel. Cover bolts shall be corrosion resistant with zinc plating.

D. Actuators

1. Plug valves shall include a totally enclosed and sealed worm gear actuator with position indicator and externally adjustable open and closed stops. The worm segment gear shall be ASTM A 536 Grade 65-45-12 ductile iron with a precision bore and keyway for connection to the valve shaft. Bronze radial bearings shall be provided for the segment gear and worm shaft. Alloy steel roller thrust bearings shall be provided for the hardened worm.

2. Gear actuators shall be designed to withstand, without damage, a rim pull of 200 lb. on the hand wheel and an input torque of 300 ft-lbs. for nuts. Minimum handwheel size shall be 12-inches.
3. Exposed worm shafts shall be stainless steel.
4. Provide chainwheel with stainless steel chain for all valves 7'-0" above finished floor.

E. Plug valves shall be provided with a minimum 8-inch diameter handwheel. Provide a chainwheel for all valves above 7'-0" above finished floor or where indicated on the Drawings.

F. Plug valves shall be lined and coated with a fusion bonded epoxy.

2.2 SWING CHECK VALVES

A. General: Swing Check Valves shall be suitable for raw wastewater service for cold working pressures of 250 psig. The Swing Check Valve shall be of the full waterway body type, with a domed access cover and vent port. The check valve shall be provided with a lever and weight. The check valve shall be manufactured in accordance with AWWA C 508.

B. Valve Design

1. Swing Check Valves shall be provided with flanges in accordance with ASME B16.1, Class 125 iron flanges or ASME B16.42, Class 150 for ductile iron flanges.
2. The Swing Check valve body shall be full flow equal to nominal pipe diameter area at all points through the valve and shall be equipped with a threaded adjustable open stop. The body seat shall be O-ring sealed and field replaceable without removing the valve from the line. The end flanges shall contain integrally case mounting pads.
3. The top access port shall be full size, allowing removal of the disc without removing the valve from the line. The access cover shall be domed in shape to provide flushing action over the disc for operating in lines containing high solids content.
4. The disc shall be of one-piece construction and connected to the shaft with a disc arm and two pivot pins to provide pivot action to allow self-adjusting seating at all pressures. Discs 14-inch and larger shall be convex shape for lift, stabilization and strength.
5. The disc seat shall be resilient with integral O-ring type sealing surface for drop tight shut-off at high and low pressures and for easy replacement in the field without removing the valve from the line.
6. The shaft seals shall consist of V-type packing in a fixed gland with an adjustable follower designed to prevent over compression of the packing and to meet design parameter of the packing manufacturer. Removable, slotted shims shall be provided under the follower flanges to provide for adjustment and prevent overloading of the packing.
7. Swing Check Valves shall be factory equipped with a lever and weight assembly. The lever shall be equipped with three holes for adjusting the bolted weight assembly. When the valve is closed, the lever and weight shall be located 30 degrees below horizontal.

C. Valve Materials

1. The valve body, cover and disc shall be constructed of ASTM A536 Grade 65-45-12 ductile iron for sizes 2 inch through 24 inch and ASTM A126 class B, gray iron for sizes 30 inch through 48 inch.
2. The exterior and interior of the valve shall be coated with a fusion bonded epoxy coating.
3. The removable body seat shall be constructed of ASTM A276, Type 304 stainless steel.
4. The removable resilient seat shall be precision molded Buna-N (NBR), ASTM D2000-BG.
5. The disc arm and external levers shall be ductile iron.

D. Swing Check Valves manufacturer shall be **ValMatic Series 7800-LW/DI/BN (resilient seated**) or approved equal.

2.3 FLOW METER

A. See Section 40 91 23 – Miscellaneous Properties Measurement Devices.

PART 3 EXECUTION

3.1 INSTALLATION

A. Valves, valve-operating units, stem extensions and other accessories shall be installed by CONTRACTOR where shown, or where required in the opinion of ENGINEER, to provide for convenience in operation. Where buried valves are indicated, CONTRACTOR shall furnish and install valve boxes at grade with concrete collars. All valves and boxes shall be new and recently manufactured.

B. Install mechanical appurtenances as indicated in the Contract Drawings and in accordance with the manufacturer's written instructions.

- END OF SECTION -

SECTION 33 13 00
PIPELINE TESTING

PART 1 GENERAL

1.1 DESCRIPTION

A. This section covers testing of the pipeline.

B. Hydrostatic testing shall meet the requirements of this Section, or the requirements provided in each individual pipeline Section, whichever is more stringent.

C. If there is a discrepancy between this Section, the individual pipe Sections, or applicable AWWA Standards, the more stringent requirement shall apply.

1.2 RELATED SECTIONS

A. Related Work specified in other Sections includes but is not limited to:

1. Section 01 33 00 Submittal Procedures
2. Section 33 05 05 Ductile Iron Pipe

1.3 REFERENCES

A. The Work covered by this Specification shall meet or exceed the provisions of the latest editions of the following Codes and Standards in effect at the time of award of the Contract. The publications are referred to in the text by basic designation only.

1. AWWA C 600 Standard Installation of Ductile-Iron Mains and Their Appurtenances

1.4 SUBMITTALS

A. Provide submittals in accordance with Section 01 33 00 – Submittal Procedures.

B. Furnish a written testing plan and schedule, including water source and methods for conveyance to the project, sequence, control, and disposal.

PART 2 MATERIALS

2.1 DESCRIPTION

A. All test equipment, temporary valves, bulkheads, and other water control equipment shall be as determined by CONTRACTOR. No materials shall be used which damage the project pipelines for future conveyance of potable water.

PART 3 EXECUTION

3.1 GENERAL

A. Source of Water

1. CONTRACTOR shall assume all responsibility to obtain the necessary water for testing and disinfection of the water line system. All testing water used in the pipeline shall be potable water from a State approved drinking water system.
2. All pressure pipelines shall be tested.

3.2 HYDROSTATIC TESTING OF PIPELINES PROCEDURE

A. Prior to hydrostatic testing, pipelines shall be flushed or blown out as appropriate. CONTRACTOR may test pipelines in sections. Sections to be tested shall be defined by isolation valves in the pipeline. Where such valves are not present, CONTRACTOR shall install temporary bulkheads or plugs for the purpose of testing. Sections that do not have isolation valves shall be tested in approximate one-mile segments. Sections that have a zero-leakage allowance may be tested as a unit. No section of the pipeline shall be tested until field-placed concrete or mortar has attained an age of 14 Days. The test shall be made by closing valves when available or by placing bulkheads and filling the line slowly with water (maximum filling velocity shall not exceed 0.25 foot per second, calculation based on the full area of the pipe). CONTRACTOR shall be responsible for ascertaining that test bulkheads are suitably restrained to resist the thrust of the test pressure without damage to or movement of the adjacent pipe. Unharnessed sleeve-type couplings, expansion joints, or other sliding joints shall be restrained or suitably anchored prior to the test to avoid movement and damage to piping and equipment. Remove or protect any pipeline-mounted devices that may be damaged by the test pressure. CONTRACTOR shall provide sufficient temporary tappings in the pipelines to allow for trapped air to exit or for water to be drained. After completion of the tests, such taps shall be permanently plugged. Care shall be taken that air relief valves are open during filling.

B. The hydrostatic test shall consist of holding 125% of the working operating pressure on the pipeline segment for a period of 2 hours. For projects with long pipeline segments, the test pressure shall not be less than 125% of the design operating pressure at the highest elevation on the pipeline and shall not be less than 150% of the working operating pressure at the lowest elevation on the pipeline. The test pressure shall never exceed the pipe of thrust-restraint design pressure or the pressure rating of the pipe unless allowed per the type of pipe specifications.

C. Visible leaks that appear during testing shall be repaired regardless of the amount of leakage.

D. Add water to restore the test pressure if the pressure decreases 5 psi below test pressure during the test period. Record the amount of water added.

E. Exposed piping and valves shall show no visible leaks and no pressure loss during the test.

F. Blowoff isolation gate valves and plug valves (throttling valves) shall be operated and tested during a simulated blow down operation to demonstrate functionality of the valves to the satisfaction of ENGINEER. Isolation valves (gate valves) shall not be used for throttling.

- END OF SECTION –

SECTION 40 91 23
MISCELLANEOUS PROPERTIES MEASUREMENT DEVICES

PART 1 GENERAL

1.1 DESCRIPTION

A. This section covers the Work necessary to install a ready to use and tested process and analysis system. CONTRACTOR shall provide all components required for a complete and functional system.

1.2 RELATED WORK

A. Related Work specified in other Sections includes, but is not limited to:

1. Section 01 33 00 Submittal Procedures

1.3 REFERENCES

A. Work covered by this Specification shall meet or exceed the provisions of the latest editions of the following Codes and Standards in effect at the time of award of the Contract. The publication is referred to in the text by basic designation only.

B. AMERICAN WATER WORKS ASSOCIATION (AWWA)

1. AWWA C 207 Steel Pipe Flanges for Waterworks Service—Sizes 4 In. Through 144 In. (100 mm Through 3,600 mm)
2. AWWA C 751 Magnetic Inductive Flowmeters

1.4 SUBMITTALS

A. Provide submittals in accordance with Section 01 33 00 – Submittal Procedures.

B. Submit catalog cuts on all process equipment including switches, meters, sensors, or other items shown on Contract Drawings referencing each item by mark number. Information shall indicate manufacturer specification compliance and dimensional data.

C. CONTRACTOR shall supply operation and maintenance manuals for all process equipment.

1.5 WARRANTY

A. Manufacturer shall provide to OWNER written guarantee against defects in material or workmanship for a period of one (1) year.

1.6 DELIVERY AND STORAGE

A. All equipment delivered and placed in storage shall be stored with protection from the weather, humidity and temperature variation, dirt and dust, or other contaminants. Each system shall be factory calibrated and certified prior to delivery.

1.7 QUALITY ASSURANCE

A. Equipment to be furnished under this section shall be the product of manufacturers regularly engaged in the design and manufacturing of this type of equipment. The manufacturer shall assume responsibility for, and guarantee performance of equipment furnished. However, this shall not be construed as relieving CONTRACTOR from responsibility for the proper installation and functionality of the work.

PART 2 PRODUCTS

2.1 GENERAL

A. Each process measurement system shall typically consist of a sensor and analyzer/transmitter. Where shown on the Contract Drawings, the analyzer/transmitter may be utilized for multiple sensors. When an analyzer/transmitter is used for multiple sensors, it shall be capable of displaying simultaneously each process measurement.

B. Each analyzer/transmitter shall be equipped with a means to transmit process measurement data to the plant SCADA system.

1. For hardwired signals, unless indicated otherwise in Contract Drawings, provide the following:
   a. 4-20 mA output signals for each process measurement (for up to 500 Ohm loads).
   b. Two programmable SPDT relay outputs, rated at 5A up to 230 VAC, for each process measurement.
2. Where shown on the Contract Drawings, provide the following digital communications to the pump station SCADA system:
   a. HART Protocol
   b. PROFIBUS
   c. MODBUS
3. **Magnetic flow meters shall be provided with an EtherNet/IP digital communication port.**

C. Each analyzer/transmitter shall be powered by 115VAC (+/- 10%) at 60 Hz unless shown on Contract Drawings as being powered by 24 VDC (+/- 15%). Each analyzer/transmitter shall retain its programmable settings in non-volatile memory. Battery powered instruments, analyzer, or transmitters will not be accepted.

D. Each sensor and corresponding analyzer/transmitter shall be supplied as a complete and operable system. This includes all cabling, mounting hardware and fasteners. When installed outdoors, the analyzer/transmitter shall be protected from the sun such that direct sunlight will not shine on the display.

E. All analyzers/transmitters shall be waterproof and made from corrosion resistant materials.

F. All sensors to be immersed in liquids shall be rated for permanent submersion and shall be corrosion resistant.

2.2 MAGNETIC FLOW METERS

A. Magnetic flow meters shall be the low frequency induction type which produces a DC pulsed signal directly proportional to and linear with the flow rate. Liners shall be polyurethane. Flow meters shall be rated at 250 psi. Standard output shall be an analog 4-20 mA signal with a local indication from a liquid crystal display (LCD) reading in gallons per minute flow. The meter shall also have a totalizer (with pulsed output), and non-full pipe detection. Meters shall have a minimum of 2 self-cleaning electrodes. CONTRACTOR shall field verify length of cable for connection.

B. Flanged connections shall be constructed of Type 304 or Type 316 stainless steel with pressure ratings to match the connecting pipe.

C. Liner shall be polyurethane or PTFE and electrodes stainless steel suitable for potable water service. Liners and electrodes for service other than potable water shall be constructed of materials conforming to the manufacturer's recommendation for the intended service.

D. Meter housing shall be rated for NEMA 6 for submersible operation.

E. Meters shall include grounding rings.

F. The transmitter shall have six digit LCD displays for flow rate, percent of span, and totalization; be capable of measuring flow in both directions; automatic range change; capability to convert DC pulse signal from the tube to a standardized 4 to 20 mA DC signal into a minimum of 700 ohms; self-diagnostics and automatic data checking, and a scaleable frequency output, 0 to 100 Hz.

G. The flow measuring system shall conform to the following:

1. Time constant: 0.5 to 1000 seconds; galvanic or optic isolation
2. Accuracy: 0.50 percent of flow rate from 10 to 100 percent full scale velocities over 3 feet per second.
3. Repeatability: 0.25 percent of full scale
4. Power consumption: 30 watts or less
5. Power requirements: 120 VAC, plus or minus 10 percent, unless indicated otherwise on the Contract Drawings. Battery powered flow meters will not be accepted.

H. Magnetic flow meters shall be **Proline Promag W400 by Endress+Hauser, 8700 Series by Rosemount**, or approved equal.

PART 3 EXECUTION

3.1 INSTALLATION

A. All equipment shall be mounted and installed as per manufacturer recommendations. Coordinate final location with ENGINEER.

3.2 FLOW METER FIELD QUALITY CONTROL

A. Each instrument shall be tested before commissioning and ENGINEER shall witness the interface capability in the PLC control system and associated registers.

1. Each instrument shall provide direct programming capability through the PLC
2. Each instrument shall provide direct control of totalizer reset functions through the PLC
3. Each instrument shall be supported with a device profile permitting direct integration in the PLC

B. ENGINEER shall witness all instrument verifications in the field.

C. Manufacturers Field Services shall be provided for start-up and commissioning by a Factory field service representative or a manufacturer's authorized service provider (ASP).

1. Manufacturer representative shall verify installation of all installed flow tubes and transmitters.
2. Manufacturer representative shall notify ENGINEER in writing of any problems or discrepancies and proposed solutions.
3. Manufacturer representative shall perform field verification at the time of installation for long-term analysis of device linearity, repeatability and electronics health. A comparative report shall be generated for each meter tested.
4. Manufacturer representative shall generate a configuration report for each meter.

3.3 TESTING

A. After installation of the equipment is complete, operating tests shall be carried out to ensure that the equipment operates properly. All piping shall be tested hydrostatically and for leaks. If any deficiencies are revealed during any tests, such deficiencies shall be corrected, and the tests shall be reconducted.

- END OF SECTION –

PART 5
DRAWINGS

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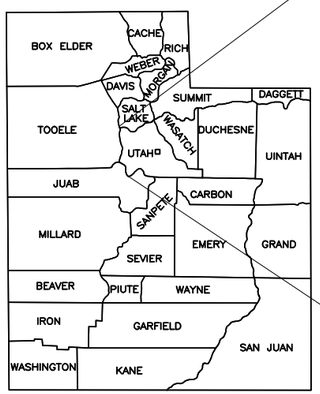
VINEYARD CITY

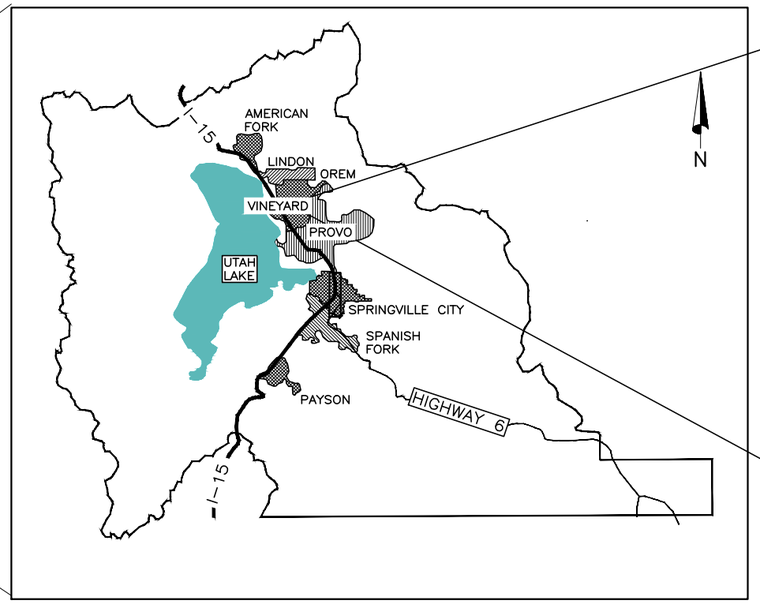
LIFT STATION #2 UPGRADE

OCTOBER 2025

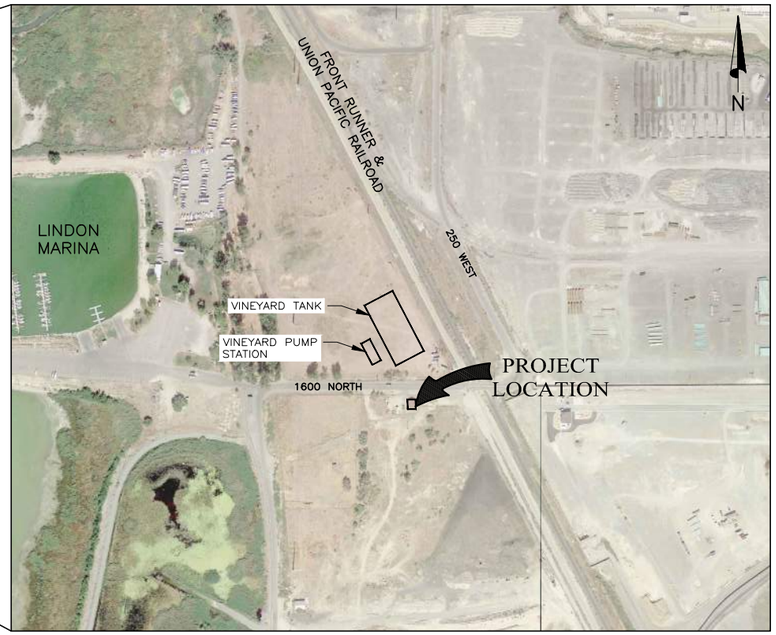
BIDDING DOCUMENTS



STATE OF UTAH



UTAH COUNTY



PROJECT LOCATION

HANSEN, ALLEN & LUCE DESIGN TEAM

MARVIN E. ALLEN, P.E. – PRINCIPAL IN CHARGE
MICHAEL M. CHAMBERS, P.E. PMP – PROJECT MANAGER (PUMP STATION)

ROBERT C. CONDER, S.E. – STRUCTURAL ENGINEER
(CONDER ENGINEERING)

KEITH B. HEGERHORST, P.E. – ELECTRICAL ENGINEER
(HPE, INC. ELECTRICAL ENGINEERS)

TAYLOR GROBERG, P.E. – HVAC
(BLUEFIELD ENGINEERING)

HANSEN ALLEN & LUCE inc
ENGINEERS

859 W. SOUTH JORDAN PKWY,
STE. 200
SOUTH JORDAN, UTAH 84095
(801) 566-5599

VINEYARD CITY

NASEEM GHANDOUR P.E. – PUBLIC WORKS DIRECTOR
801-960-3883

JUSTINE MARSHALL – PROJECT MANAGER
385-400-1550

DEVAN PETERSON – ENVIROMENTAL UTILITIES MANAGER
801-787-0663

CITY OFFICE
125 SOUTH MAIN STREET
VINEYARD, UTAH 84059

PROJECT ADDRESS
282 WEST 1600 NORTH
VINEYARD, UTAH 84059

REGISTERED PROFESSIONAL ENGINEER
No. 182750
MICHAEL M. CHAMBERS
STATE OF UTAH
10/7/25

FILE NAME: PROJECTS\319 - VINEYARD\13.100 - LIFT STATION 2 UPGRADES\CAD\G-1 COVER.DWG
FILE DATE: 10.7.2025 16:02:32 (CAM)

1/93

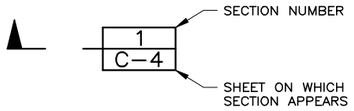
SECTION, DETAIL & ELEVATION IDENTIFICATION

NOTES:

1. IF SECTION CUT AND SECTION OR DETAIL CALL-OUT AND DETAIL ARE SHOWN ON SAME SHEET, SHEET NUMBER IS REPLACED BY A LINE.
2. DETAIL LETTERS "I" AND "O" NOT USED.

SECTION IDENTIFICATION

SECTION CUT ON SHEET C-1:



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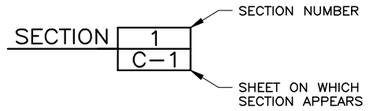

DETAIL IDENTIFICATION

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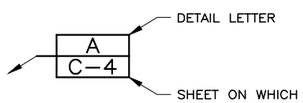

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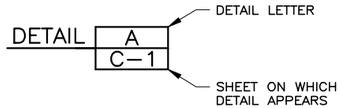


LEGEND

EXISTING

- 4-G — EXISTING GAS LINE W/ SIZE
- GS — GS — GS — EXISTING GAS SERVICE
- 10-W — EXISTING WATER LINE W/ SIZE
- WS — WS — WS — EXISTING WATER SERVICE
- 15-SS — EXISTING SANITARY SEWER W/ SIZE
- SL — SL — SL — EXISTING SANITARY SEWER LATERAL
- 24-SD — EXISTING STORM DRAIN W/ SIZE
- 12-IRR — EXISTING IRRIGATION W/ SIZE
- FO-UG — EXISTING FIBER OPTIC LINE
- T-UG — EXISTING UNDERGROUND TELEPHONE
- C-TV-UG — EXISTING CABLE TV
- P-UG — EXISTING UNDERGROUND POWER LINE
- P-OH — EXISTING OVERHEAD POWER LINE
- TBC — EXISTING TOP BACK OF CURB
- LOG — EXISTING LIP OF GUTTER
- X — EXISTING FENCE LINE
- EXISTING RAILROAD TRACKS
- EXISTING PROPERTY LINE
- R O W — EXISTING RIGHT-OF-WAY
- EXISTING ASPHALT
- 4200 — EXISTING MAJOR CONTOUR
- EXISTING MINOR CONTOUR

- EXISTING FIRE HYDRANT
- EXISTING POWER POLE
- EXISTING POWER / LIGHT POLE COMBO
- EXISTING LIGHT POLE
- EXISTING GUY WIRE
- P — EXISTING POWER BOX
- EM — EXISTING POWER METER
- T — EXISTING TELEPHONE BOX
- F — EXISTING FIBER OPTIC BOX
- EXISTING CABLE BOX
- EXISTING SIGNAL POLE
- EXISTING SIGNAL / LIGHT POLE COMBO
- EXISTING SIGNAL BOX
- EXISTING TRAFFIC LOOP
- EXISTING TRAFFIC BOX
- EXISTING IRRIGATION BOX
- EXISTING SIGN
- EXISTING TREE

- SS — EXISTING SANITARY SEWER MANHOLE
- SD — EXISTING STORM DRAIN MANHOLE
- W — EXISTING WATER MANHOLE
- G — EXISTING GAS MANHOLE
- P — EXISTING POWER MANHOLE
- T — EXISTING TELEPHONE MANHOLE
- F — EXISTING FIBER OPTICS MANHOLE
- IRR — EXISTING IRRIGATION MANHOLE
- WM — EXISTING WATER METER
- CO — EXISTING SEWER CLEANOUT
- EXISTING VALVES
- EXISTING REDUCERS
- EXISTING SD CATCH BASIN
- EXISTING SD CATCH BASIN / JUNCTION BOX
- EXISTING SD JUNCTION BOX
- SD — EXISTING SD CLEANOUT BOX
- SD — EXISTING SD COMBO CATCH BASIN / CLEANOUT BOX

NEW

- 4200 — PROPOSED MAJOR CONTOUR
- PROPOSED MINOR CONTOUR
- NEW PROPERTY LINE
- NEW UTILITY LINE
- P/E — PERMANENT EASEMENT
- C/E — CONSTRUCTION EASEMENT
- R — RIDGE LINE
- GB — GRADE BREAK
- FLOW LINE
- RETAINING WALL

- NEW MANHOLE
- NEW STORM DRAIN BOX
- NEW INLET BOX
- NEW FIRE HYDRANT
- NEW WATER VALVE
- NEW GATE VALVE
- NEW BUTTERFLY VALVE
- NEW PLUG VALVE
- NEW CAP

CONTROL SYMBOLS

- BM-## — EXISTING BENCH MARK
- EXISTING HORIZONTAL CONTROL POINT
- EXISTING VERTICAL CONTROL POINT
- EXISTING HORIZONTAL & VERTICAL CONTROL POINT
- EXISTING SURVEY MONUMENT
- EXISTING SECTION MONUMENT
- GEOTECHNICAL BORING

NOTE:
SURVEY OF EXISTING RING & COVER IS FROM CENTER OF THE COVER.

MISCELLANEOUS

- (4) — FITTING SCHEDULE
- (6) — KEY NOTES
- A — COORDINATE POINT
- ø — DIAMETER
- ∠ — ANGLE
- ℄ — CENTERLINE

ABBREVIATIONS

@	=	AT	CONT	=	CONTINUOUS / CONTINUED	GIP	=	GALVANIZED IRON PIPE	PE	=	PLAIN END / POLYETHYLENE	W/	=	WITH
APPROX	=	APPROXIMATE	DIA	=	DIAMETER	GPM	=	GALLONS PER MINUTE	PSI	=	POUNDS PER SQUARE INCH	WSP	=	WELDED STEEL PIPE
B&S	=	BELL & SPIGOT	DIP	=	DUCTILE IRON PIPE	ID	=	INSIDE DIAMETER	PVC	=	POLYVINYL CHLORIDE	YD	=	YARD
CB	=	CATCH BASIN / CURB	DWG	=	DRAWING	I.F.	=	INSIDE FACE	RCP	=	REINFORCED CONCRETE PIPE			
CC	=	CENTER TO CENTER	EF	=	EACH FACE / EXHAUST FAN	INV	=	INVERT	SCR	=	SCREWED			
CIP	=	CAST IRON PIPE / CAST IN PLACE	EL	=	ELEVATION	L.O.G.	=	LIP OF GUTTER	SF	=	SQUARE FOOT (FEET)			
CL	=	CENTERLINE	EO	=	EDGE OF OIL	MAX	=	MAXIMUM	SQ	=	SQUARE			
CLR	=	CLEAR / CLEARANCE	EW	=	EACH WAY	MH	=	MANHOLE	SS	=	STAINLESS STEEL / SANITARY SEWER			
CLSM	=	CONTROLLED LOW STRENGTH MATERIAL	FL	=	FLOWLINE	MIN	=	MINIMUM / MINUTE	STA	=	STATION			
CMP	=	CORRUGATED METAL PIPE	FLG	=	FLANGE / FLOORING	MJ	=	MECHANICAL JOINT	TBC	=	TOP BACK OF CURB			
CONC	=	CONCRETE / CONCENTRIC	FPS	=	FEET PER SECOND	NTS	=	NOT TO SCALE	TOC	=	TOP OF CONCRETE			
			GA	=	GAGE / GAUGE	OC	=	ON CENTER	TYP	=	TYPICAL			
			GAL	=	GALLON	O.F.	=	OUTSIDE FACE / OVERFLOW	UBC	=	UNTREATED BASE COURSE			

INDEX OF DRAWINGS

SHEET NO. — GENERAL

G-1	COVER SHEET
G-2	ABBREVIATIONS, LEGENDS & INDEX OF DRAWINGS
G-3	GENERAL NOTES & SYSTEM CURVES

CIVIL

C-1	PUMP LEVEL PIPING PLAN
C-2	LIFT STATION SECTIONS
C-3	MISCELLANEOUS DETAILS

ELECTRICAL

E-1.0	LEGEND
E-1.1	TABLES
E-2.0	EXISTING SCHEDULES
E-2.1	NEW SCHEDULES
E-3.0	POWER ONE-LINE DIAGRAMS
E-3.1	I&C ONE-LINE DIAGRAM
E-3.2	TYPICAL VFD CONTROL DIAGRAM
E-4.0	MAIN LEVEL ELECTRICAL PLAN
E-4.1	DRY WELL ELECTRICAL PLAN
E-5.0	ELECTRICAL DETAILS

INSTRUMENTATION

I001	PLC DRAWINGS – BOM AND LEGEND
I101	PLC DRAWINGS – PANEL LAYOUT
I301	PLC DRAWINGS – AC POWER WIRING DIAGRAM
I1401	PLC DRAWINGS – PANEL DC POWER WIRING DIAGRAM
I1501	PLC DRAWINGS – DISCRETE INPUTS WIRING DIAGRAM 1
I1502	PLC DRAWINGS – DISCRETE INPUTS WIRING DIAGRAM 2
I1503	PLC DRAWINGS – DISCRETE INPUTS WIRING DIAGRAM 3
I1504	PLC DRAWINGS – DISCRETE INPUTS WIRING DIAGRAM 4
I1505	PLC DRAWINGS – DISCRETE INPUTS WIRING DIAGRAM 5
I1601	PLC DRAWINGS – DISCRETE OUTPUTS WIRING DIAGRAM
I1701	PLC DRAWINGS – ANALOG INPUTS WIRING DIAGRAM
I1801	PLC DRAWINGS – ANALOG OUTPUTS WIRING DIAGRAM 1
I1802	PLC DRAWINGS – ANALOG OUTPUTS WIRING DIAGRAM 2

ATTACHMENT A

H-101	HVAC PLANS, SCHEDULES & DETAIL RECORD DRAWING

FILE NAME: PROJECTS\319 - VINEYARD\13.100 - LIFT STATION 2 UPGRADES\CAD\G-2 INDEX LEGEND & SYMBOLS .DWG
FILE DATE: 10.8.2025 08:24:15 (CAH)

08/23

HANSEN ALLEN & LUCE, Inc. ENGINEERS

REGISTERED PROFESSIONAL ENGINEER No. 182750 MICHAEL M. CHAMBERS

PROJECT ENGINEER

DESIGNED	MMC	2				
DRAFTED	CAH	1				
CHECKED	MEA	0	10/2025	ISSUED FOR BID		
DATE	OCTOBER 2025	NO.	DATE	REVISIONS	BY	APVD

SCALE: NONE

VINEYARD CITY

LIFT STATION #2 UPGRADE
GENERAL
ABBREVIATIONS, LEGENDS & INDEX OF DRAWINGS

SHEET G-2

319.13.100

GENERAL NOTES

GENERAL NOTES

1. CONTRACTOR SHALL COMPLY WITH ALL UTAH STATE DEPARTMENT OF ENVIRONMENTAL QUALITY AND U.S. EPA REQUIREMENTS WITH RESPECT TO THEIR MINIMUM RULES AND REGULATIONS. ALL MATERIALS THAT MAY CONTACT DRINKING WATER, INCLUDING BUT NOT LIMITED TO PIPES, FITTINGS, GASKETS, LUBRICANTS, O-RINGS, PROTECTIVE MATERIALS (E.G. PAINTS, COATINGS, CONCRETE ADMIXTURES, CONCRETE RELEASE AGENTS, CONCRETE SEALERS, ETC.), JOINING AND SEALING MATERIALS (E.G. ADHESIVES, CAULKS, GASKETS, PRIMERS, SEALANTS, ETC) SHALL BE CERTIFIED BY LABORATORIES APPROVED BY ANSI, SHALL BE COMPLIANT WITH ANSI/NSF 60 – DRINKING WATER TREATMENT CHEMICALS – HEALTH EFFECTS AND ANSI/NSF 61, DRINKING WATER SYSTEM COMPONENTS – HEALTH EFFECTS, AND SHALL BE APPROPRIATELY STAMPED WITH THE NSF LOGO.
2. UTILITIES ARE SHOWN IN APPROXIMATE LOCATIONS. CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING ALL UNDERGROUND UTILITIES, INCLUDING WATER LINES, IRRIGATION DRAIN LINES, TELEPHONE CABLES, AND ANY OTHER OBSTRUCTION DURING THE COURSE OF CONSTRUCTION AND INSTALLATION OF THE PIPELINES. CALL BLUE STAKES AT 811 (1-800-662-4111).
3. CONTRACTOR SHALL POTHOLE UTILITIES BEFORE ANY PIPELINE CONSTRUCTION TO VERIFY THAT THE DESIGN ALIGNMENT AND GRADE ARE FEASIBLE AND TO PLAN ANY UTILITY RELOCATION'S THAT MAY BE NECESSARY. FAILURE TO POTHOLE IN ADVANCE WILL NOT RELIEVE CONTRACTOR FROM LOCATING THE PIPELINE IN AN ACCEPTABLE MANNER TO OWNER. ANY RELAYING OF THE PIPELINE THAT MAY BECOME NECESSARY IN THIS REGARD SHALL BE DONE AT CONTRACTORS EXPENSE.
4. UNLESS DETAILED, SPECIFIED OR INDICATED OTHERWISE, CONSTRUCTION SHALL BE AS INDICATED IN THE APPLICABLE TYPICAL DETAILS AND GENERAL NOTES. TYPICAL DETAILS ARE MEANT TO APPLY EVEN THOUGH NOT REFERENCED AT SPECIFIC LOCATIONS OR IN SPECIFIC DRAWINGS.
5. CONTRACTOR SHALL BE RESPONSIBLE TO PROTECT ALL EXISTING IMPROVEMENTS DURING CONSTRUCTION AND SHALL REPLACE OR RESTORE ANY IMPROVEMENTS DAMAGED AS A RESULT OF THE CONSTRUCTION ACTIVITY AS DIRECTED BY ENGINEER.
6. THIS PROJECT IS LOCATED IN VINEYARD CITY LIMITS: CONTRACTOR SHALL OBTAIN ALL APPLICABLE PERMITS AND APPROVALS FROM VINEYARD CITY AND SHALL COMPLY WITH VINEYARD CITY REGULATIONS FOR TRAFFIC CONTROL, SAFETY, EXCAVATION IN CITY AND OWNER RIGHTS OF WAY, ETC.
7. THESE DRAWINGS REFERENCE THE APWA STANDARD 2017 SPECIFICATIONS AND PLANS AS PUBLISHED BY UTAH T2 CENTER (435) 797-2931. WHEN REFERENCE IS MADE TO STANDARD SPECIFICATIONS, THEY REFER TO THE "VINEYARD TOWN DESIGN STANDARDS AND SPECIFICATIONS, ADOPTED 2007, VINEYARD STANDARD DRAWINGS, ADOPTED 2016", AND "APWA MANUAL OF STANDARD SPECIFICATIONS 2017 EDITION", THE MOST STRINGENT STANDARDS IN THESE REFERENCES SHALL CONTROL INCLUDING THE MODIFICATIONS AND SUPPLEMENTS CONTAINED IN THE PROJECT MANUAL. CONTRACTOR SHALL BE REQUIRED TO OBTAIN SUFFICIENT COPIES OF THE STANDARD SPECIFICATIONS LISTED ABOVE TO BE UTILIZED AS A REFERENCE TO THE ATTACHED CONSTRUCTION DRAWINGS. SAID STANDARD SPECIFICATIONS SHALL BE CONSIDERED PART OF THE OVERALL PROJECT DESIGN AND CONSTRUCTION DOCUMENTS BY MENTION HEREIN.
8. CONTRACTOR SHALL VERIFY ALL DIMENSIONS BEFORE STARTING WORK AND SHALL IMMEDIATELY NOTIFY ENGINEER OF ANY DISCREPANCIES.

STRUCTURAL NOTES

GENERAL NOTES:

1. CONTRACTOR AND SUB-CONTRACTORS SHALL PROVIDE SUFFICIENT SKILLED WORKMEN AND SUPERVISORS WHO SHALL BE PRESENT AT ALL TIMES DURING EXECUTION OF THE WORK. A PROJECT MANAGER, SHALL BE ASSIGNED BY CONTRACTOR, AND SHALL BE RESPONSIBLE FOR THE DAILY COORDINATION OF THE PROJECT AND SHALL MAINTAIN ALL REQUIRED DRAWINGS, SPECIFICATIONS, REPORTS, AND OTHER ITEMS FOR REVIEW AT THE SITE.
2. ALL CONSTRUCTION SHALL BE ACCORDING TO THE 2021 EDITION OF THE INTERNATIONAL BUILDING CODE (IBC) AS AMENDED BY THE STATE OF UTAH.
3. CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF AND SAFETY IN AND AROUND THE JOB SITE AND/OR ADJACENT PROPERTIES.

REINFORCED CONCRETE:

1. ALL CONCRETE CONSTRUCTION, INCLUDING BENDING OF BARS, SHALL COMPLY WITH ACI "BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE" (ACI 318).
2. UNLESS CALLED OUT OTHERWISE ON THE PLANS, MINIMUM REINFORCEMENT OF CONCRETE FOR PUMP STATION WORK SHALL BE:
   WALLS:
   8" THICK OR LESS – USE #5 @ 16" EW
   9" OR THICKER – USE #5 @ 12" EW, EF
   SLABS:
   8" THICK OR LESS – USE #4 @ 16" EW
3. UNLESS SHOWN OTHERWISE ALL BARS SHALL BE DOWELED. DOWELS SHALL BE THE SAME SIZE AND SPACING AS THE REINFORCEMENT WHICH IS TO BE SPLICED TO THE DOWELS.
4. ALL REINFORCING BARS SHALL BE GRADE 60 AND SHALL CONFORM TO ASTM A-615, CURRENT REVISION. REINFORCING STEEL SHALL BE NEW AND FREE FROM RUST, OIL OR OTHER BOND INHIBITOR.
5. ALL CONTINUOUS REINFORCING BARS SHALL LAP AT LEAST 40 BAR DIAMETERS. SPLICES SHALL BE MADE AWAY FROM POINTS OF MAXIMUM STRESS. MINIMUM LAP SHALL BE 18 IN.
6. CONCRETE FOR PUMP PEDESTALS TO HAVE A MIN 28 DAY STRENGTH OF 4,000 PSI PORTLAND CEMENT SHALL BE TYPE II OR TYPE V.

PIPING NOTES

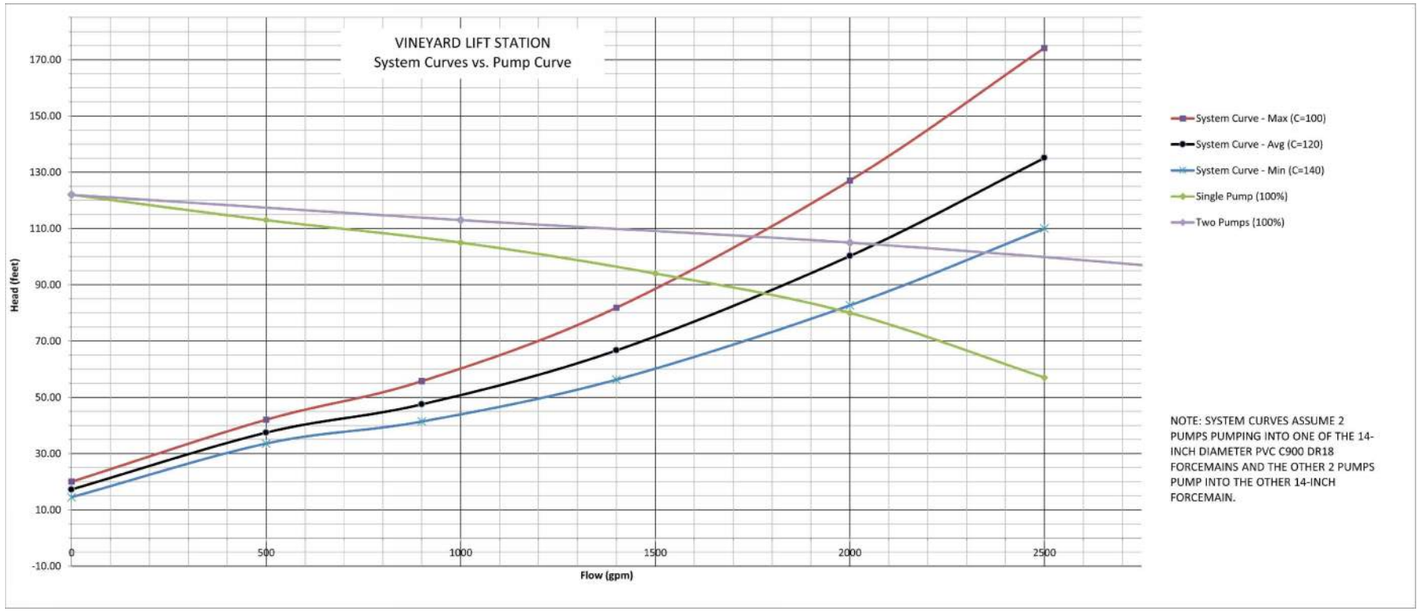
1. CONTRACTOR TO SUBMIT SHOP DRAWINGS OF PIPE LAYOUT. SHOP DRAWINGS SHALL INCLUDE PLANS, SECTIONS AND ELEVATIONS OF PIPING LAYOUT WITH SUPPLIED EQUIPMENT.
2. CONTRACTOR IS RESPONSIBLE FOR ALL PIPE FABRICATION AND SIZING.
3. ALL BOLTS ON PIPING (FLANGE BOLTS, ALL THREADS, TIE RODS, ETC.) TO BE STAINLESS STEEL.
4. ALL DUCTILE IRON PIPE AND SPOOLS SHALL BE 350 PSI WORKING PRESSURE.
5. DUCTILE IRON PIPE, SPOOLS AND FITTINGS SHALL HAVE THE FOLLOWING COATINGS AS SPECIFIED IN SECTION 09 90 00 PAINTING AND FINISHES:
   A. INTERIOR COATINGS SHALL BE CERAMIC EPOXY.
   B. EXTERIOR COATINGS IN WET WELL SHALL BE FIELD COATED WITH 20 MIL EPOXY.
   C. EXTERIOR COATING IN DRY WELL PAINTED WITH TWO COATS OF POLYURETHANE ENAMEL IN ACCORDANCE WITH SECTION 09900.

CONSTRUCTION SEQUENCING

1. CONTRACTOR SHALL INSTALL NEW PUMPS P-3 AND P-4, MOTORS, PIPING, AND APPURTENANCES PRIOR TO REPLACING EXISTING PUMPS P-1 AND P-2 AND MOTORS.
2. CONTRACTOR SHALL REMOVE AND REPLACE EXISTING PUMPS P-1 AND P-2, MOTORS AND FLOW METER ONLY AFTER SUCCESSFUL STARTUP, TESTING, AND COMMISSIONING OF PUMPS P-3 AND P-4.

PEAK HOURLY FLOW		
ERU	18,354	PROJECTED GROWTH (2035)
PEAKING FACTOR	1.8	VINEYARD WW MASTER PLAN
ESTIMATED I/I	0.2 MGD	VINEYARD WW MASTER PLAN
PEAK USE	160 GPD/ERU	
PEAK DAILY FLOW	5,485,952 GPD	
PEAK DAILY FLOW	3,810 GPM	

PUMP DESIGN PARAMETERS			
PUMP	DESIGN FLOW (GPM)	TDH (FEET)	HP
P-1	1,500	90	60
P-2	1,500	90	60
P-3	1,500	90	60
P-4	1,500	90	60



NOTE: SYSTEM CURVES ASSUME 2 PUMPS PUMPING INTO ONE OF THE 14-INCH DIAMETER PVC C900 DR18 FORCEMAINS AND THE OTHER 2 PUMPS PUMP INTO THE OTHER 14-INCH FORCEMAIN.

REGISTERED PROFESSIONAL ENGINEER No. 182750 MICHAEL M. CHAMBERS STATE OF UTAH
PROJECT ENGINEER

DESIGNED	MMC	2				
DRAFTED	CAH	1				
CHECKED	MEA	0	10/2025	ISSUED FOR BID		
DATE	OCTOBER 2025	NO.	DATE	REVISIONS	BY	APVD

SCALE: NONE

VINEYARD CITY

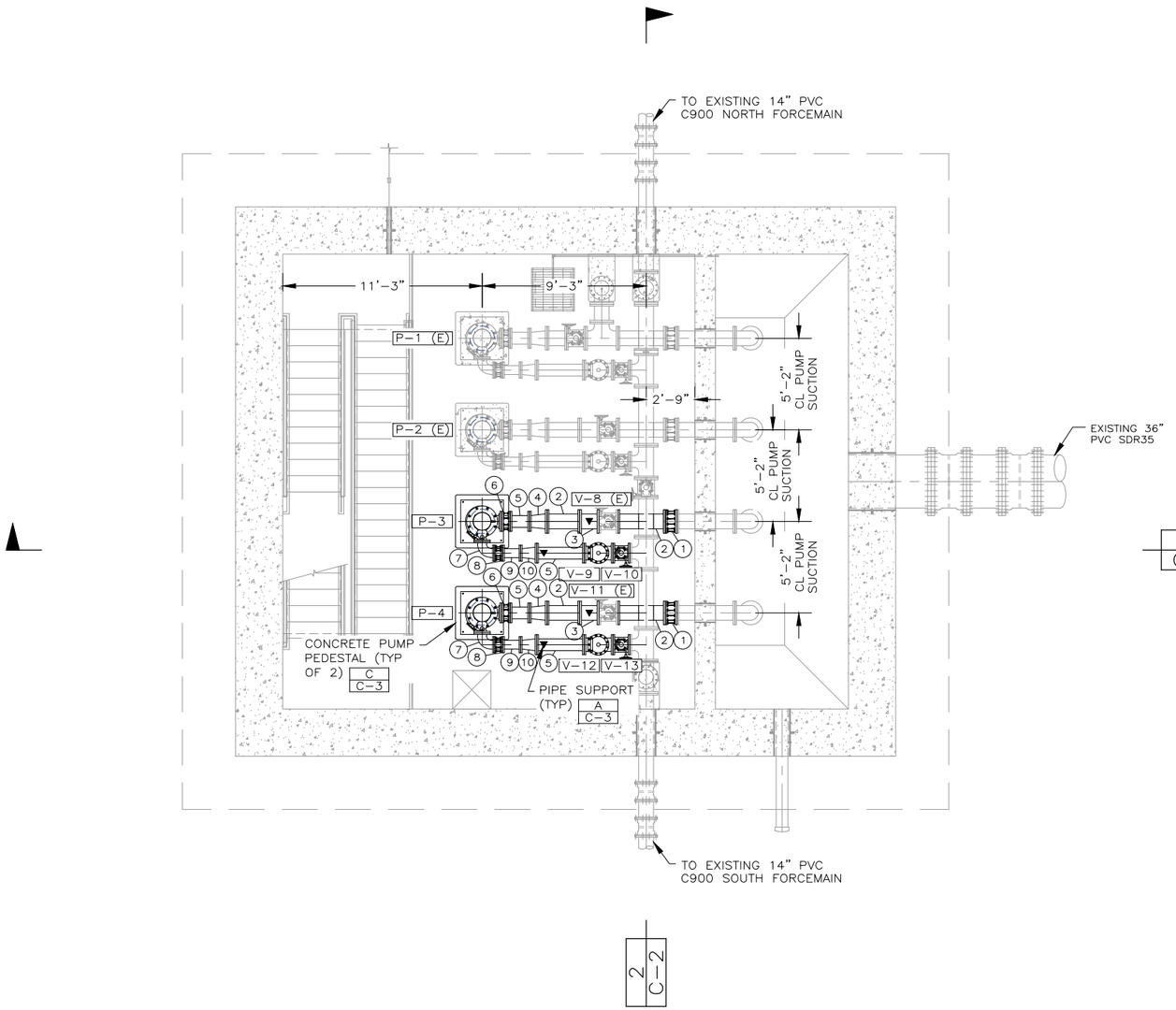
LIFT STATION #2 UPGRADE
GENERAL
GENERAL NOTES & SYSTEM CURVES

SHEET G-3

319.13.100

FILE NAME: PROJECTS\319 - VINEYARD\13.100 - LIFT STATION 2 UPGRADES\CAD\G-3 GENERAL NOTES.DWG
FILE DATE: 10.8.2025 10:21:25 (CAH)

08/23



1
C-2

2
C-2

0 4 8
SCALE IN FEET

FITTING SCHEDULE

NO.	DESCRIPTION	SIZE	JOINT
1.	DISMANTLING JOINT W/ SS TIE RODS	10"	FLG
2.	DIP SPOOL (CL 53)	10"	FLG X FLG
3.	DIP SPOOL (CL 53)	10"	FLG
4.	DI ECCENTRIC REDUVER	8" X 10"	FLG
5.	DIP SPOOL (CL 53)	8"	FLG X FLG
6.	DISMATLING JOINT W/ SS TIE RODS	8"	FLG
7.	DI 90 DEG BEND	6"	FLG
8.	DISMATLING JOINT W/ SS TIE RODS	6"	FLG
9.	DIP SPOOL (CL 53)	6"	FLG X FLG
10.	DI CONCENTRIC REDUCER	6" X 8"	FLG

METER SCHEDULE

NO.	DESCRIPTION	SIZE	JOINT
M-1 (E)***	MAG METER	10"	FLG
M-2	MAG METER	10"	FLG

VALVE SCHEDULE

NO.	DESCRIPTION	SIZE	JOINT
V-8 (E)**	PLUG VALVE W/ GEAR OPERATOR (FL)	10"	FLG
V-9	CHECK VALVE W/ LEVER POSITION INDICATOR (FL)	–	–
V-10	PLUG VALVE W/ GEAR OPERATOR (FL)	8"	FLG
V-11 (E)	PLUG VALVE W/ GEAR OPERATOR (FL)	10"	FLG
V-12	CHECK VALVE W/ LEVER POSITION INDICATOR (FL)	–	–
V-13	PLUG VALVE W/ GEAR OPERATOR (FL)	8"	FLG

PUMP SCHEDULE

NO.	DESCRIPTION	OUTLET SIZE	INLET SIZE	MOTOR SIZE
P-1 (E)	DRY PIT CHOPPER PUMP	6"	8"	30 HP*
P-2 (E)	DRY PIT CHOPPER PUMP	6"	8"	30 HP*
P-3	DRY PIT CHOPPER PUMP	6"	8"	60 HP
P-4	DRY PIT CHOPPER PUMP	6"	8"	60 HP

* REPLACE EXISTING 30 HP, 1180 RPM MOTOR WITH NEW 60 HP, 1800 RPM MOTOR.

** REMOVE AND REPLACE WITH NEW VALVE.

*** REMOVE AND REPLACE WITH NEW FLOW METER.

GENERAL SHEET NOTE:

COAT ALL PIPE PER SPECIFICATION SECTION 09 90 00. MATCH EXISTING COLOR.

FILE NAME: PROJECTS\319 – VINEYARD\13.100 – LIFT STATION 2 UPGRADES\CAD\C-1 LIFT STATION PLAN.DWG
FILE DATE: 10.7.2025 15:55:45 (CAH)

08/23

HANSEN ALLEN & LUCE inc ENGINEERS

REGISTERED PROFESSIONAL ENGINEER No. 182750 MICHAEL M. CHAMBERS STATE OF UTAH 10/7/25

PROJECT ENGINEER

DESIGNED	MMC	2				
DRAFTED	CAH	1				
CHECKED	MEA	0	10/2025	ISSUED FOR BID		
DATE	OCTOBER 2025	NO.	DATE	REVISIONS	BY	APVD

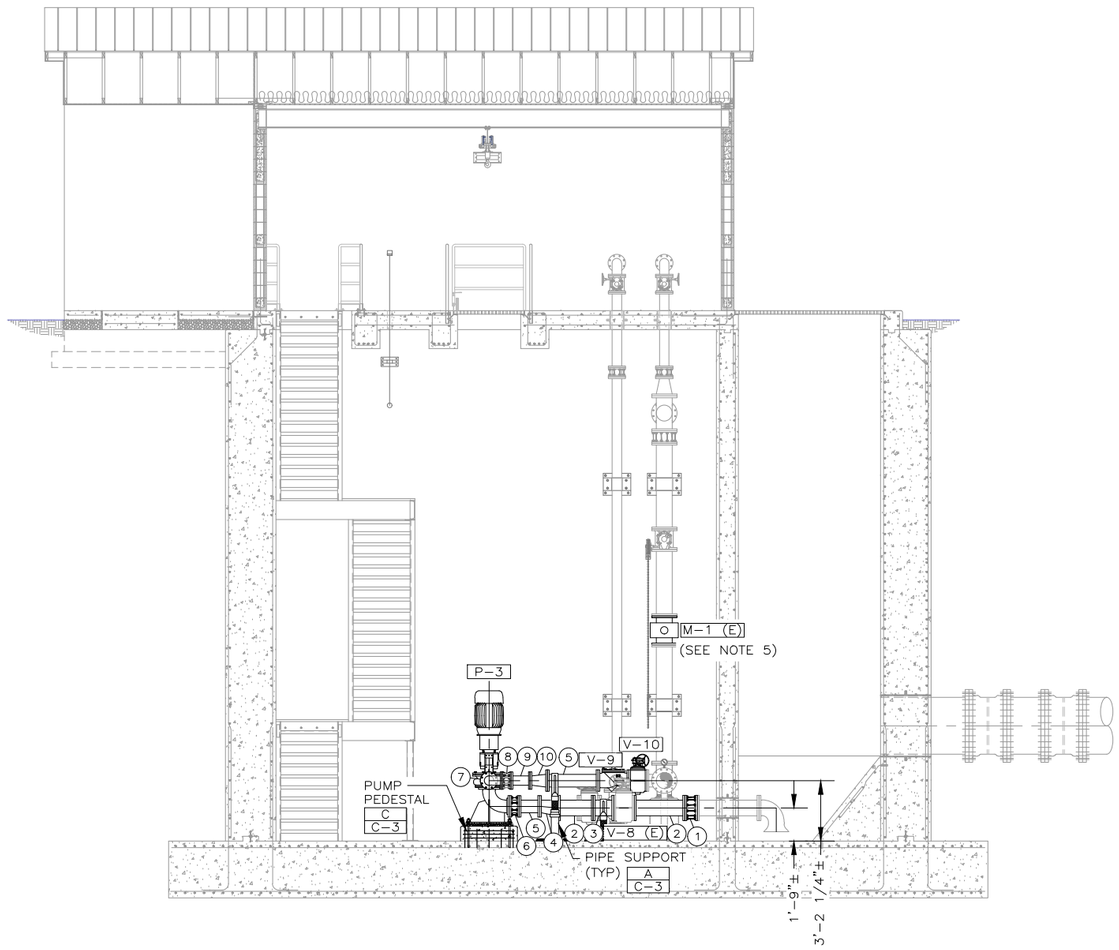
SCALE: AS SHOWN

VINEYARD STAY CONNECTED VINEYARD CITY

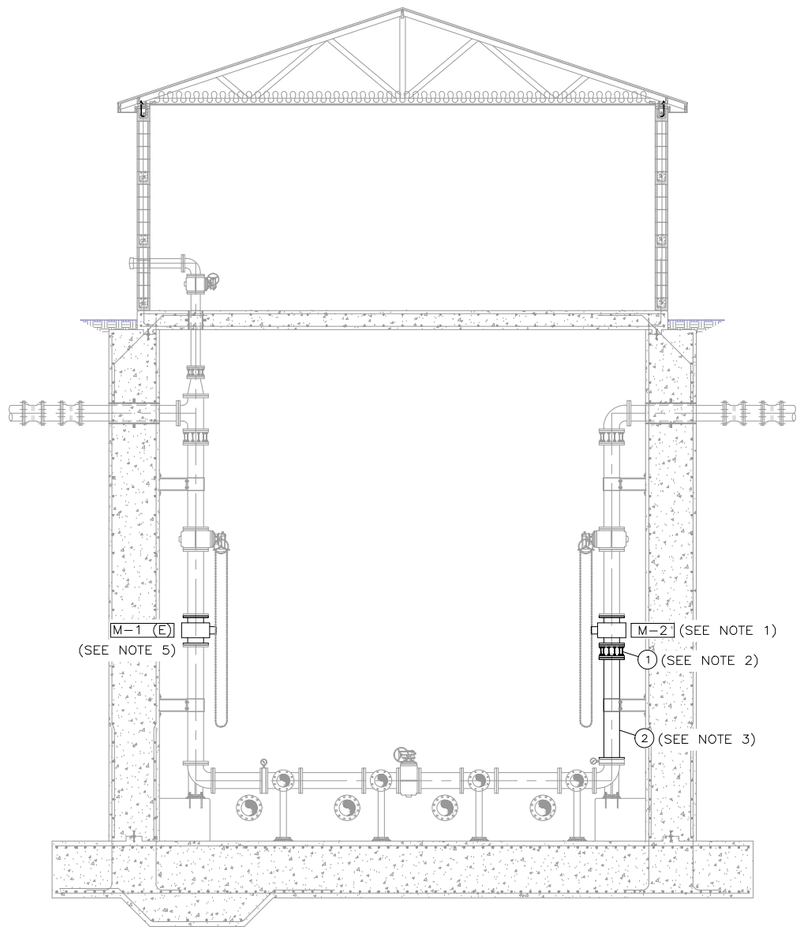
LIFT STATION #2 UPGRADE
CIVIL
PUMP LEVEL PIPING PLAN

SHEET C-1

319.13.100



SECTION 1
SCALE IN FEET
C-1



SECTION 2
SCALE IN FEET
C-1

SECTION NOTES:

1. CONNECT NEW FLOW METER TO FLANGE OF EXISTING UPPER PIPE SPOOL.
2. REMOVE EXISTING FLANGE COUPLING ADAPTER AND REPLACE WITH NEW DISMANTLING JOINT.
3. REMOVE EXISTING DIP SPOOL (FLG X PE) AND REPLACE WITH NEW DIP SPOOL (FLG X FLG).
4. COAT ALL PIPES PER SPECIFICATION SECTION 09 90 00. MATCH EXISTING COLOR.
5. REPLACE EXISTING FLOW METER WITH NEW FLOW METER.

FILE NAME: PROJECTS\319 - VINEYARD\13.100 - LIFT STATION 2 UPGRADES\CAD\C-2 LIFT STATION SECTIONS.DWG
FILE DATE: 10.7.2025 15:56:48 (CAH)

08/23

HANSEN ALLEN & LUCE inc ENGINEERS

REGISTERED PROFESSIONAL ENGINEER No. 182750 MICHAEL M. CHAMBERS STATE OF UTAH 10/7/25

PROJECT ENGINEER

DESIGNED	MMC	2				
DRAFTED	CAH	1				
CHECKED	MEA	0	10/2025	ISSUED FOR BID		
DATE	OCTOBER 2025	NO.	DATE	REVISIONS	BY	APVD

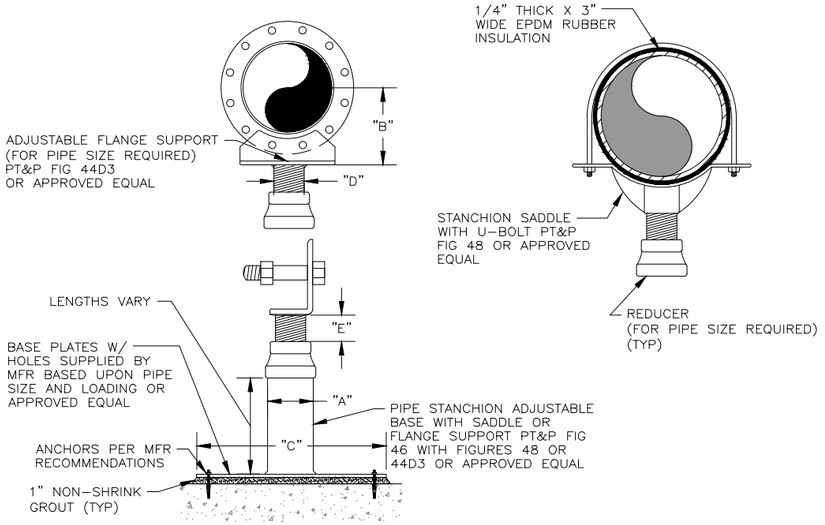
SCALE: AS SHOWN

VINEYARD STAY CONNECTED — VINEYARD CITY

LIFT STATION #2 UPGRADE
CIVIL
LIFT STATION SECTIONS

SHEET C-2

319.13.100



(PT&P = PIPING TECHNOLOGY & PRODUCTS, INC.)

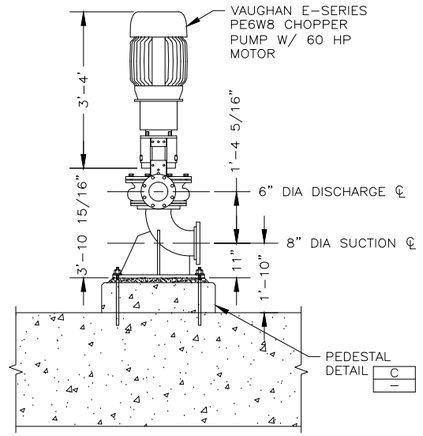
DIMENSIONS IN INCHES					
PIPE SIZE	A	B	C	D	E
4	3	4.25	9	2.50	3.75
6	3	5.50	9	2.50	4.75
8	3	6.87	9	2.50	4.75
10	3	8.50	9	2.50	4.75
12	3	9.93	9	2.50	4.75
14	4	10.93	11	3	4.50
16	4	12.37	11	3	4.50
18	6	13.87	13.50	3.50	4.50
24	6	17.31	13.50	4	4.50
36	6	24.50	13.50	4	4.50

"A" = PIPE SUPPORT DIAMETER
"B" = BASE OF SADDLE TO CENTER OF PIPE
"C" = SQUARE BASE PLATE
"D" = THREADED PIPE DIAMETER
"E" = TOTAL ALLOWABLE ADJUSTMENT

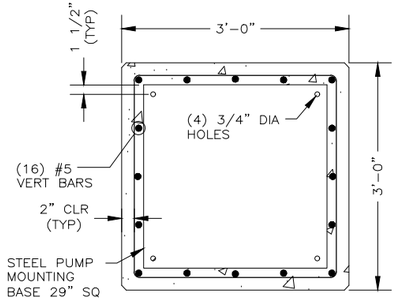
DETAIL NOTES:

1. APPROVED EQUAL FOR PIPE SUPPORT MFG: ASC-ANVIL, COOPER B-LINE, OR ITT GRINNELL.
2. PIPE SUPPORT MATERIALS SHALL BE STEEL OR CAST IRON PER MANUFACTURER STANDARD DESIGN. SUPPORT SHALL BE HOT DIP GALVANIZED OR ZINC PLATED.

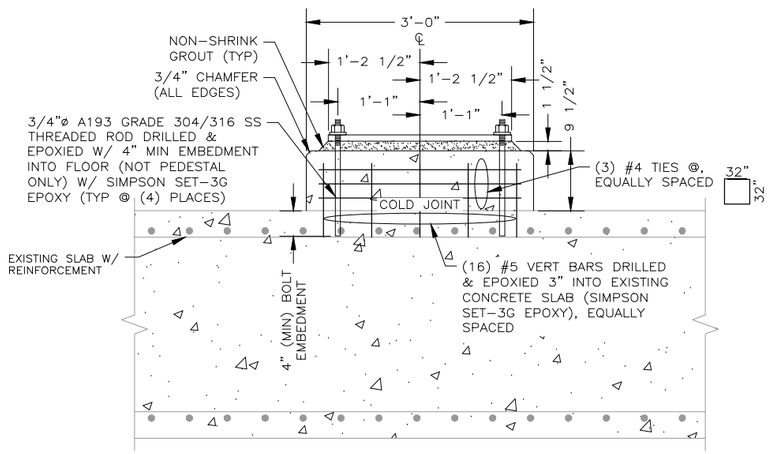
PIPE SUPPORTS — NTS — A C-1 | A C-2



PUMP DETAIL — NTS — B C-1



PLAN VIEW

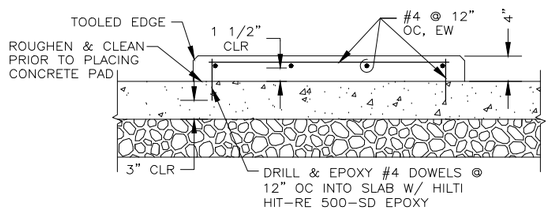


SECTION VIEW

DETAIL NOTE:

CONTRACTOR TO VERIFY BOLT PATTERN AND LOCATIONS PRIOR TO BOLT INSTALLATION.

PUMP PEDESTAL DETAIL — SCALE IN FEET (0, 1, 2) — C — | C C-1 | C C-2



DETAIL NOTE:

PER NATIONAL ELECTRIC CODE, CONCRETE PADS SHALL BE COORDINATED WITH ELECTRICAL GEAR TO LIMIT PROTRUSION BEYOND FRONT OF GEAR TO 6 INCHES.

TYPICAL EQUIPMENT PAD — D —

GENERAL SHEET NOTES:

1. PUMP AND MOTOR DIMENSIONS ARE FOR REFERENCE ONLY. CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND ADJUST INSTALLATION AS NEEDED.
2. PUMP DISCHARGE LOCATION SHALL BE AS SHOWN ON THE PLAN.

FILE NAME: PROJECTS\319 - VINEYARD\13.100 - LIFT STATION 2 UPGRADES\CAD\C-3 MISCELLANEOUS DETAILS.DWG
FILE DATE: 10.7.2025 15:57:48 (CAH)

08/23

HANSEN ALLEN & LUCE, INC. ENGINEERS

REGISTERED PROFESSIONAL ENGINEER — No. 182750 — MICHAEL A. CHAMBERS — STATE OF UTAH — 10/7/25

PROJECT ENGINEER

DESIGNED	MMC	2			
DRAFTED	CAH	1			
CHECKED	MEA	0	10/2025	ISSUED FOR BID	
DATE	OCTOBER 2025	NO.	DATE	REVISIONS	BY / APVD

SCALE: AS SHOWN

VINEYARD STAY CONNECTED — VINEYARD CITY

LIFT STATION #2 UPGRADE
CIVIL
MISCELLANEOUS DETAILS

SHEET C-3
319.13.100

POWER ONE-LINE SYMBOLS

THIS IS A STANDARD LEGEND NOT ALL SYMBOLS MAY BE USED ON THIS PROJECT

- ANTENNA
- EQUIPMENT GROUND CONNECTION
- TRANSFER SWITCH
  - ATS: AUTOMATIC TRANSFER SWITCH
  - MTS: MANUAL TRANSFER SWITCH
- VFD — VARIABLE FREQUENCY DRIVE MOTOR CONTROLLER
- F — FUSED DISCONNECT SWITCH
- NON-FUSED DISCONNECT SWITCH
- COMBINATION STARTER
- MAGNETIC CONTROLLER
- HP — MOTOR (HP SHOWN)
- GENERATOR
- WIRE — CONDUCTOR WITH CALLOUT REFERENCE (SEE CONDUIT/CONDUCTOR SCHEDULE)
- POWER FACTOR CAPACITOR
- CIRCUIT BREAKER
- POWER FEED
- CONNECTION POINT
- LUG
- DELTA WYE
- M — UTILITY METERING SOCKET WITH CIRCUIT BREAKER
- M — EXISTING UTILITY METERING SOCKET
- M — UTILITY METERING SOCKET
- M — FUTURE UTILITY METERING SOCKET
- UTILITY METERING CURRENT TRANSFORMER
- MOTOR STARTER
- SURGE PROTECTOR
- TRANSFORMER
- FUSED SWITCH
- FUSE IN HOLDER
- PNL — EXISTING POWER DISTRIBUTION PANEL
- PNL — POWER DISTRIBUTION PANEL
- PNL — FUTURE POWER DISTRIBUTION PANEL

CONTROL ONE-LINE SYMBOLS

THIS IS A STANDARD LEGEND NOT ALL SYMBOLS MAY BE USED ON THIS PROJECT

- ENCLOSURE OR CONTROL PANEL
- A-XX — HOME RUN TO POWER PANEL "A" CIRCUIT "XX"
- R — LIGHT
  - A: AMBER LENS
  - G: GREEN LENS
  - R: RED LENS
  - W: WHITE LENS
- COMBINATION MOTOR STARTER
  - F: FUSED
  - BLANK: CIRCUIT BREAKER
- NUMBER — EQUIPMENT IDENTIFICATION TAG
- ELECTRICAL CONNECTION POINT
- SINGLE RECEPTACLE

PLAN SYMBOLS

THIS IS A STANDARD LEGEND NOT ALL SYMBOLS MAY BE USED ON THIS PROJECT

EQUIPMENT

- CIRCUIT DISTRIBUTION PANELBOARD SURFACE MOUNTED
- CIRCUIT DISTRIBUTION PANELBOARD RECESSED
- POWER DISTRIBUTION PANELBOARD SURFACE OR FLOOR MOUNTED
  - DOORS DESIGNATE FRONT OF PANEL
  - MDP DESIGNATES MAIN DISTRIBUTION PANEL
- CONTROL PANEL ENCLOSURE
- LIGHTING CONTROL PANEL
- DISCONNECT
- COMBO STARTER/DISCONNECT

HVAC EQUIPMENT

- UNIT HEATER, WALL MOUNTED
- UNIT HEATER, CEILING MOUNTED
- CONDENSING UNIT, PAD MOUNTED, SIDE DISCHARGE
- CONDENSING UNIT, PAD MOUNTED, UP FLOW
- ROOFTOP MOUNTED EQUIPMENT

GENERAL DRAWING SYMBOLS

THIS IS A STANDARD LEGEND NOT ALL SYMBOLS MAY BE USED ON THIS PROJECT

- ① — REFERENCE NOTE
- 1 — DEMOLITION NOTE
- 1 — REVISION NOTE
- 1 — IDENTIFICATION NOTE
- NO — PHOTO REFERENCE
- XX/XX — EQUIPMENT REFERENCE
- XXX — WIRE SIZE REFERENCE
- PHOTO XXX/XXXX — PHOTO REFERENCE
- A/— — SECTION/ELEVATION REFERENCE
- XXX-XXX — EQUIPMENT ID TAG

LIGHT SWITCHES

THIS IS A STANDARD LEGEND NOT ALL SYMBOLS MAY BE USED ON THIS PROJECT

- $ — SINGLE POLE SWITCH
- $$ — GANGED SWITCHES IN COMMON BOX WITH COMMON COVER PLATE
- $a — SWITCH SUPERSCRIPT MODIFIER, LOWER CASE LETTER INDICATES CIRCUIT CONTROLLER -- a,b,c ETC. MAY BE COMBINED WITH CIRCUIT NUMBER. EXAMPLE: 1a, 3b
- $3 — SWITCH SUBSCRIPT MODIFIER, UPPER CASE LETTER OR NUMBER:
  - 2 = DOUBLE POLE
  - 3 = THREE WAY
  - 4 = FOUR WAY
  - K = KEY OPERATED
  - M = HORSEPOWER RATED MANUAL STARTER
  - MC = MOMENTARY CONTACT, THREE POSITION
  - MS = MANUAL (STARTER) OR SWITCH
  - D = DIMMER
  - S = SURFACE
  - F = FLUSH
  - WP = WEATHER PROOF

CONDUIT AND RACEWAYS

THIS IS A STANDARD LEGEND NOT ALL SYMBOLS MAY BE USED ON THIS PROJECT

- RACEWAY OR WIRING SYSTEM IN OR UNDER FLOOR OR CONCEALED IN WALL OR BEHIND STRUCTURE OR EQUIPMENT OR CONDUIT ROUTED BELOW GRADE IN CONCRETE ENCASEMENT
- FLEX CONDUIT
- RACEWAY OR WIRING SYSTEM ABOVE FLOOR LEVEL BELOW CEILING, EXPOSED
- HOMERUN: DESIGNATIONS INDICATE A ONE-LINE DIAGRAM OR PANELBOARD SCHEDULE REFERENCE
- J — JUNCTION BOX
- RACEWAY OR WIRING SYSTEM TURNED TOWARD THE VIEWER (UP ON PLAN DRAWINGS)
- RACEWAY OR WIRING SYSTEM TURNED AWAY FROM THE VIEWER (DOWN ON PLAN DRAWINGS)
- RACEWAY OR WIRING SYSTEM CHANGE IN ELEVATION OR DISTANCE FROM VIEWER
- CONDUIT STUB AND CAP

GROUNDING SYMBOLS

THIS IS A STANDARD LEGEND NOT ALL SYMBOLS MAY BE USED ON THIS PROJECT

- GROUND ROD (3/4" x 10' COPPER COATED STEEL)
- GROUND ROD (3/4" x 10' COPPER COATED STEEL) IN WELL
- BOLTED GROUND CONNECTION (ABOVE GROUND)
- WELDED GROUND CONNECTION (BELOW GRADE)
- GROUND CONDUCTOR

WIRING DEVICES

THIS IS A STANDARD LEGEND NOT ALL SYMBOLS MAY BE USED ON THIS PROJECT

- 20 AMP RATED RECEPTACLE
  - SINGLE STROKE = SINGLE
  - DOUBLE STROKE = DUPLEX
- RECEPTACLE MODIFIERS:
  - X-X = CIRCUIT NUMBER
  - AF = ARC FAULT CIRCUIT INTERRUPTER
  - S = SURFACE MOUNTED
  - IG = ISOLATED GROUND
  - WP = WEATHER PROOF
- EXISTING RECEPTACLE
- 220V RECEPTACLE
- GFCI RECEPTACLE
- ELECTRICAL CONNECTION
- J — JUNCTION BOX
- P — PHOTOELECTRIC CONTROL UNIT
- T — THERMOSTAT LOCATION
- CARD READER (ENTRY KEY PAD)

LIGHTING SYMBOLS

THIS IS A STANDARD LEGEND NOT ALL SYMBOLS MAY BE USED ON THIS PROJECT

- F1 — DESIGNATES FIXTURE NUMBER – REFER TO FIXTURE SCHEDULE
- PC — PHOTOCELL

LED FIXTURES

- SURFACE OR RECESSED 1X4 FIXTURE

EXTERIOR LIGHTS

- WALL PAK FIXTURE

MOTOR AND EQUIPMENT

THIS IS A STANDARD LEGEND NOT ALL SYMBOLS MAY BE USED ON THIS PROJECT

- HP — MOTOR (HP SHOWN)
- F — FRACTIONAL HORSEPOWER MOTOR
- $T WP — WEATHERPROOF THERMAL DISCONNECT SWITCH
- MOTOR STARTER, INDIVIDUAL, NOT LOCATED IN A MOTOR CONTROL CENTER (MCC) OR SIMILAR GROUP ASSEMBLY
- COMBINATION MOTOR STARTER ASSEMBLY, NOT LOCATED IN AN MCC OR SIMILAR ASSEMBLY
- MAGNETIC CONTACTOR ASSEMBLY, NOT LOCATED IN AN MCC OR SIMILAR ASSEMBLY
- XXXA — DISCONNECT, NON-FUSED, 3 POLE, 100A RATED
- F — FUSED DISCONNECT SWITCH
- FIELD CONNECTION OR ELECTRICAL TERMINATION AT A FIELD DEVICE
- XXXXX — EQUIPMENT DESIGNATION

H.P.E. INC. ELECTRICAL ENGINEERS
POWER SYSTEMS, CONTROL & INSTRUMENTATION SYSTEMS
HEGERHORST POWER ENGINEERING INCORPORATED (801) 642-2051
717 NORTH MAIN, STE 206
AMERICAN FORK, UT 84663

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HPE PROJECT:25.030
FOR INFORMATION ABOUT THIS JOB, PLEASE CONTACT: KEITH HEGERHORST

GENERAL NOTES:

1. VERIFY ALL EQUIPMENT DIMENSIONS AND LOCATIONS BEFORE BEGINNING ROUGH-IN. CONSULT ALL APPLICABLE CONTRACT DRAWINGS AND SHOP DRAWINGS TO ENSURE NEC CODE CLEARANCE REQUIRED AROUND ALL ELECTRICAL EQUIPMENT.
2. CONTRACTOR SHALL VERIFY ALL ELECTRICAL LOADS (VOLTAGE, PHASE, CONNECTION REQUIREMENTS, ETC.) OF EQUIPMENT FURNISHED BEFORE BEGINNING ROUGH-IN.
3. SEE APPLICABLE SHOP DRAWINGS FOR ROUGH-IN LOCATION OF ALL EQUIPMENT, WIRING DEVICES, ETC.
4. ALL PENETRATIONS OF FLOORS, WALLS AND CEILINGS SHALL BE SEALED WITH APPROVED MATERIAL.
5. FOR PACKAGE EQUIPMENT PROVIDED ON THE PROJECT, SOME CONDUITS AND WIRES ARE SHOWN ON THE DRAWINGS, BUT IT IS EXPECTED THAT SOME ADDITIONAL CONDUITS AND WIRES MAY BE REQUIRED BY EQUIPMENT MANUFACTURERS TO COMPLETE INSTALLATION. IT IS INCUMBENT UPON THE GENERAL CONTRACTOR TO COORDINATE THIS REQUIREMENT WITH HIS SUBCONTRACTORS TO MAKE SURE THAT EQUIPMENT SUPPLIER PROVIDED ALL NECESSARY ELECTRICAL INFORMATION TO ELECTRICAL SUBCONTRACTOR FOR INCLUSION WHETHER SHOWN OR NOT SHOWN ON THE DRAWINGS.
6. IF OTHER THAN FIRST NAMED EQUIPMENT IS USED, IT SHALL BE CAREFULLY CHECKED FOR ELECTRICAL REQUIREMENTS AND CONTROL REQUIREMENTS OF ALTERNATE EQUIPMENT. SHOULD CHANGES OR ADDITIONS OCCUR IN ELECTRICAL WORK, OR THE WORK OF OTHER CONTRACTORS BE REVISED BY THE ALTERNATE EQUIPMENT, THE COST OF ALL CHANGES SHALL BE BORNE BY THE ELECTRICAL CONTRACTOR.

Sheet List Table

Sheet Number	Sheet Title
E-1.0	LEGEND
E-1.1	TABLES
E-2.0	EXISTING SCHEDULES
E-2.1	NEW SCHEDULES
E-3.0	POWER ONE-LINE DIAGRAMS
E-3.1	I & C ONE-LINE DIAGRAM
E-3.2	TYPICAL VFD CONTROL DIAGRAM
E-3.3	EXISTING 30 HP VFD DIAGRAM
E-4.0	MAIN LEVEL ELECTRICAL PLAN
E-4.1	DRY WELL ELECTRICAL PLAN
E-5.0	ELECTRICAL DETAILS

FILE NAME:
FILE DATE:

REGISTERED PROFESSIONAL ENGINEER — No. 86-171214-2202 — KEITH B. HEGERHORST — 09/09/25 — STATE OF UTAH

HANSEN ALLEN & LUCE, INC. ENGINEERS

PROJECT ENGINEER

DESIGNED	KBH	SCALE	NONE
DRAFTED	KBH		
CHECKED	KBH		
DATE	JULY 2025		

NO.	DATE	REVISIONS	BY	APVD.
3				
2				
1				

VINEYARD — STAY CONNECTED

VINEYARD CITY

LIFT STATION #2 UPGRADE
ELECTRICAL
LEGEND

SHEET E-1.0

319.13.100

7/04

CONDUIT/CONDUCTOR SCHEDULE
THHN, THWN, THWN-2

AMP RATING	DRAWING ID TAG.	CONDUCTOR QTY.*	CONDUCTOR SIZE	MIN. CONDUIT SIZE	EXCEPTIONS
20** 20+	212	2	#12	3/4"	
	312	3		3/4"	
	412	4		3/4"	
30** 30+	20	2	#10	3/4"	
	30	3		3/4"	
	40	4		3/4"	
40** 50+	28	2	#8	3/4"	
	38	3		3/4"	
	48	4		3/4"	
55** 65+	26	2	#6	3/4"	
	36	3		3/4"	
	46	4		3/4"	1"(C9)
70** 85+	24	2	#4	3/4"	1"(C2,C9)
	34	3		1"	3/4"(C4),1-1/4"(C9)
	44	4		1"	1-1/4"(C9)
95** 115+	22	2	#2	1"	
	32	3		1"	1-1/4"(C9)
	42	4		1-1/4"	
110** 130+	21	2	#1	1-1/4"	1"(C3,C4)
	31	3		1-1/4"	1"(C3)
	41	4		1-1/4"	1-1/2"(C2,C9,C10)
150	210	2	1/0	1-1/4"	
	310	3		1-1/4"	1-1/2"(C3,C9)
	410	4		1-1/2"	2"(C9)
175	220	2	2/0	1-1/4"	1-1/2"(C3,C4,C9)
	320	3		1-1/2"	
	420	4		2"	
200	230	2	3/0	1-1/2"	1-1/4(C4)
	330	3		1-1/2"	2"(C3,C9)
	430	4		2"	
230	240	2	4/0	1-1/2"	2"(C3)
	340	3		2"	
	440	4		2"	2-1/2"(C9)
255	225	2	250 KCMIL	2"	1-1/2"(C4)
	325	3		2"	2-1/2"(C1,C8)
	425	4		2-1/2"	2"(C4)
310	235	2	350 KCMIL	2"	2-1/2"(C9)
	335	3		2-1/2"	2"(C4)
	435	4		3"	2-1/2"(C1,C4)
380	250	2	500 KCMIL	2-1/2"	2"(C4)
	350	3		3"	2-1/2"(C1,C4)
	450	4		3"	3-1/2"(C9)
475	275	2	750 KCMIL	3"	
	375	3		3-1/2"	3"(C1,C7,C8)
	475	4		4"	3-1/2"(C1,C4,C8)

* CONDUCTOR QUANTITY DOES NOT INCLUDE GROUNDING CONDUCTORS. SEE EQUIPMENT GROUNDING CONDUCTORS FOR WIRE SIZES.

WHERE: C1 = ELECTRICAL METALLIC TUBING "**" = 60°C RATING
C2 = ELECTRICAL NON-METALLIC TUBING "+" = 75°C RATING
C3 = FLEXIBLE STEEL CONDUIT
C4 = INTERMEDIATE METALLIC CONDUIT
C7 = LIQUIDTIGHT FLEXIBLE METAL CONDUIT
C8 = RIGID METALLIC CONDUIT
C9 = PVC SCHEDULE 80 CONDUIT
C10 = PVC SCHEDULE 40 CONDUIT
"**" = RATED AMPACITY AT 60°C
"+" = RATED AMPACITY AT 75°C
USE 60°C CONDUCTOR RATING WHEN TERMINATION RATINGS ARE NOT PUBLISHED

GROUNDING ELECTRODE CONDUCTOR SERVICE ENTRANCE OR SEPARATELY DERIVED SYSTEM

COPPER CONDUCTOR	WIRE SIZE
#2 OR SMALLER	#8
1 OR 1/0	#6
2/0 OR 3/0	#4
>3/0 THRU 350 KCMIL	#2
>350 KCMIL THRU 600 KCMIL	1/0

EQUIPMENT GROUNDING CONDUCTORS

FUSE OR CB SIZE	SIZE (COPPER)
15	14
20	12
30	10
40	10
60	10
100	8
200	6
300	4
400	3
500	2
600	1
800	1/0
1000	2/0
1200	3/0
1600	4/0
2000	250
2500	350

PROJECT TAG LIST

HVAC EQUIPMENT

DRAWING ID	TAG	DESCRIPTION	LOCATION	POWER SOURCE	SUPPLIED BY	INSTALLED BY
34	UH-1	UNIT HEATER	BLD. INTERIOR	HP-14,16,18	EXISTING	-

PUMP AND EQUIPMENT

DRAWING ID	TAG	DESCRIPTION	LOCATION	POWER SOURCE	SUPPLIED BY	INSTALLED BY
10	MS-1	METER SOCKET	OUTSIDE	-	CONTRACTOR	CONTRACTOR
12	CTE	CURRENT TRANSFORMER ENCLOSURE	OUTSIDE	U. XFMR	EXISTING	-
13	MSD	MAIN SERVICE DISCONNECT	OUTSIDE	U. XFMR	EXISTING	-
14	ATS	AUTOMATIC TRANSFER SWITCH	OUTSIDE	GEN/U. XFMR	EXISTING	-
15	GEN	BACKUP POWER GENERATOR	OUTSIDE	N/A	EXISTING	-
16	PNL MCC-1	PANELBOARD MCC	BLD. INTERIOR	ATS-1	EXISTING	-
17	XFMR L	TRANSFOMER L	BLD. INTERIOR	HP-19,21	EXISTING	-
1B	PNL L	PANELBOARD L	BLD. INTERIOR	XFMR-L	EXISTING	-
19	P-1	PUMP NO. 1	DRY WELL	VFD-1	CONTRACTOR	CONTRACTOR
20	P-2	PUMP NO. 2	DRY WELL	VFD-2	CONTRACTOR	CONTRACTOR
21	P-3	PUMP NO. 3	DRY WELL	VFD-3	CONTRACTOR	CONTRACTOR
22	P-4	PUMP NO. 4	DRY WELL	VFD-4	CONTRACTOR	CONTRACTOR
23	VFD-1	VFD NO. 1	BLD. INTERIOR	HP-31,33,35	CONTRACTOR	CONTRACTOR
24	VFD-2	VFD NO. 2	BLD. INTERIOR	HP-37,39,41	CONTRACTOR	CONTRACTOR
25	VFD-3	VFD NO. 3	BLD. INTERIOR	HP-32,34,36	CONTRACTOR	CONTRACTOR
26	VFD-4	VFD NO. 4	BLD. INTERIOR	HP-3B,40,42	CONTRACTOR	CONTRACTOR
2B	RTU/CP-1	MAIN CONTROL PANEL/RTU	BLD. INTERIOR	L-15	OWNER	-
29	RTU-TSSD	TSSD SCADA RTU	BLD. INTERIOR	L-19	EXISTING	-
30	H-1	HOIST	BLD. INTERIOR	HP-7,9,11	EXISTING	-
39	CP-X	EXHAUST FAN CONTROL PANEL	BLD. INTERIOR	HP-13,15,17	EXISTING	-
41	VFD-E1	EXISTING 30 HP VFD	BLD. EXTERIOR	HP-31,33,15	EXISTING	-
42	VFD-E2	EXISTING 30 HP VFD	BLD. EXTERIOR	HP-32,34,36	EXISTING	-

SWITCHES

DRAWING ID	TAG	DESCRIPTION	LOCATION	POWER SOURCE	SUPPLIED BY	INSTALLED BY
45	LSLL-1	LEVEL SWITCH	WET WELL	CP-1	EXISTING	-
46	LSL-1	LEVEL SWITCH	WET WELL	CP-1	EXISTING	-
47	LSH-1	LEVEL SWITCH	WET WELL	CP-1	EXISTING	-
48	LSHH-1	LEVEL SWITCH	WET WELL	CP-1	EXISTING	-
50	HTS-1A	MOTOR HIGH TEMP T-STAT	DRY WELL	VFD-1	CONTRACTOR	CONTRACTOR
51	HTS-1B	MOTOR HIGH TEMP T-STAT	DRY WELL	VFD-1	CONTRACTOR	CONTRACTOR
52	HTS-2A	MOTOR HIGH TEMP T-STAT	DRY WELL	VFD-2	CONTRACTOR	CONTRACTOR
53	HTS-2B	MOTOR HIGH TEMP T-STAT	DRY WELL	VFD-2	CONTRACTOR	CONTRACTOR
54	HTS-3A	MOTOR HIGH TEMP T-STAT	DRY WELL	VFD-3	CONTRACTOR	CONTRACTOR
55	HTS-3B	MOTOR HIGH TEMP T-STAT	DRY WELL	VFD-3	CONTRACTOR	CONTRACTOR
56	HTS-4A	MOTOR HIGH TEMP T-STAT	DRY WELL	VFD-4	CONTRACTOR	CONTRACTOR
57	HTS-4B	MOTOR HIGH TEMP T-STAT	DRY WELL	VFD-4	CONTRACTOR	CONTRACTOR

INSTRUMENTS

DRAWING ID	TAG	DESCRIPTION	LOCATION	POWER SOURCE	SUPPLIED BY	INSTALLED BY
35	FE-2	FLOW ELEMENT	DRY WELL	FIT-2	CONTRACTOR	CONTRACTOR
36	FIT-2	FLOW INDICATOR/TRANSMITTER	BLD. INTERIOR	L-6	CONTRACTOR	CONTRACTOR
37	FE-1	FLOW ELEMENT	DRY WELL	FIT-1	CONTRACTOR	CONTRACTOR
38	FIT-1	FLOW INDICATOR/TRANSMITTER	BLD. INTERIOR	L-6	CONTRACTOR	CONTRACTOR
43	LIT-1	LEVEL INDICATOR/TRANSMITTER	BLD. INTERIOR	L-6	CONTRACTOR	CONTRACTOR
44	LE-1	LEVEL ELEMENT	WET WELL	LIT-1	CONTRACTOR	CONTRACTOR

H.P.E. INC. ELECTRICAL ENGINEERS
POWER SYSTEMS, CONTROL & INSTRUMENTATION SYSTEMS
HEGERHORST POWER ENGINEERING INCORPORATED (801) 642-2051
717 NORTH MAIN, STE 206
AMERICAN FORK, UT 84663
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HPE PROJECT:25.030
FOR INFORMATION ABOUT THIS JOB, PLEASE CONTACT: KEITH HEGERHORST

GENERAL NOTES:

1. NOT USED.

SHEET KEYNOTES:

1. NOT USED.

FILE NAME:
FILE DATE:

REGISTERED PROFESSIONAL ENGINEER
No. 86-171214-2202
KEITH B. HEGERHORST
09/19/25
STATE OF UTAH

HANSEN ALLEN & LUCE, Inc. ENGINEERS

PROJECT ENGINEER

DESIGNED	KBH	3				
DRAFTED	KBH	2				
CHECKED	KBH	1				
DATE	JULY 2025	NO.	DATE	REVISIONS	BY	APVD.

SCALE: NONE

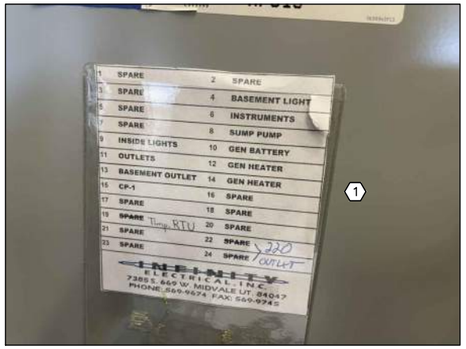
VINEYARD STAY CONNECTED

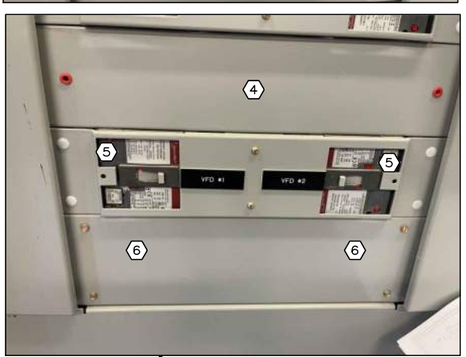
VINEYARD CITY

LIFT STATION #2 UPGRADE
ELECTRICAL
TABLES

SHEET E-1.1
319.13.100

7/04





EXISTING PANELBOARD HP

LOCATION: MAIN LEVEL | MFGR: GE | 600 AMPS | VOLTS: 480Y/277
DIMENSIONS: 27"W x 11.5"D x 64.63"H | TYPE: S80 | X M.L.O | PHASE: 3
MOUNTING: SURFACE | NEMA: 1 | 65,000 A.I.C. | WIRES: 4
FEED: TOP | X SURGE PROTECTION | FED FROM: ATS-1

8RKR A	8RKR P	DESCRIPTION	WIRE SIZE	CONT. WATTS	N-CONT. WATTS	NO	A CONT.	A N-CONT.	B CONT.	B N-CONT.	C CONT.	C N-CONT.	NO	N-CONT. WATTS	CONT. WATTS	CIRCUIT ID	DESCRIPTION	8RKR A	8RKR P
						1	0	0					2			-	AVAILABLE SPACE	-	1
						3			0	0			4			-	AVAILABLE SPACE	-	1
						5					0	0	6			-	AVAILABLE SPACE	-	1
15	3	H-1 HOIST	312		2,104	7	0	2,104					8			-	AVAILABLE 3-POLE SPACE	-	3
-	-	-	-		2,104	9			0	2,104			10			-	-	-	-
-	-	-	-		2,104	11					0	2,104	12			-	-	-	-
20	3	EF-1 DRY WELL EXHAUST FAN	312		941	13	0	4,274					14	3,333		312	EUH-1 ELECTRIC UNIT HEATER	20	3
-	-	-	-		941	15			0	4,274			16	3,333		-	-	-	-
-	-	-	-		941	17					0	4,274	18	3,333		-	-	-	-
30	2	TRANSFORMER H	30	540	4,810	19	1,924	4,810					20		1,384	312	M-1 MIXER	20	3
-	-	-	-	1,173	4,740	21			2,557	4,740			22		1,384	-	-	-	-
						23					1,384	0	24		1,384	-	-	-	-
-	3	AVAILABLE 3-POLE SPACE				25	0	0					26			-	AVAILABLE 3-POLE SPACE	-	3
-	-	-				27			0	0			28			-	-	-	-
-	-	-				29					0	0	30			-	-	-	-
80	3	EP-1 EXISTING PUMP NO. 1 VFD	38	11,072		31	11,072	11,072					32	11,072		38	EP-2 EXISTING PUMP NO. 2 VFD	80	3
-	-	-	-	11,072		33			11,072	11,072			34	11,072		-	-	-	-
-	-	-	-	11,072		35					11,072	11,072	36	11,072		-	-	-	-
	1	AVAILABLE SPACE				37	0	0					38			-	AVAILABLE 3-POLE SPACE	-	3
-	1	AVAILABLE SPACE				39			0	0			40			-	-	-	-
-	1	AVAILABLE SPACE				41					0	0	42			-	-	-	-
		TOTAL WATTS:		34,929	18,684		12,996	22,260	13,629	22,190	12,456	17,450		43,216	4,152				
		CONTINUOUS LOAD:		34,929															
		CONTINUOUS LOAD * 125%:		43,661															
		NON-CONTINUOUS LOAD:		18,684															
		DESIGN WATTS:		62,346															
		MIN. RATING (AMPS):		75															

EXISTING XFMR-L TRANSFORMER

LOCATION: MAIN LEVEL | 24.4 PRIMARY AMPS | PRIMARY VOLTS: 480x240
DIMENSIONS: 23.8"W x 18.4"D x 32.1"H | 48.7 SECONDARY AMPS | SECONDARY VOLTS: 240x120
MOUNTING: FLOOR | KVA: 15
FEED: SIDE | FED FROM: PNL MDP

	CONT. WATTS	N-CONT. WATTS	A CONT.	A N-CONT.	B CONT.	B N-CONT.
POWER PANEL L	1,713	9,550	540	4,810	1,173	4,740
TOTAL WATTS:	1,713	9,550	540	4,810	1,173	4,740
CONTINUOUS LOAD:	1,713					
CONTINUOUS LOAD * 125%:	2,141					
NON-CONTINUOUS LOAD:	9,550					
DESIGN WATTS:	11,691					

EXISTING PNL-L PANELBOARD

LOCATION: MAIN LEVEL | MFGR: GE | 125 AMPS | VOLTS: 240/120
DIMENSIONS: 20"W x 5.75"D x 31.5"H | TYPE: AQ | 60 M.C.B. | PHASE: 1
MOUNTING: SURFACE | NEMA: 1 | 10,000 A.I.C. | WIRES: 3
FEED: BOTTOM | FED FROM: XFMR-L

BRKR A	BRKR P	DESCRIPTION	CIRCUIT ID	CONT. WATTS	N-CONT. WATTS	NO	A CONT.	A N-CONT.	B CONT.	B N-CONT.	NO	N-CONT. WATTS	CONT. WATTS	CIRCUIT ID	DESCRIPTION	BRKR A	BRKR P
20	1	AVAILABLE SPACE				1	0	360			2	360		212	RECP-1 RECEPTACLES, GEN RM	20	1
20	1	AVAILABLE SPACE				3			0	990	4	990		212	LTS-2 LTS, DRY WELL	20	1
20	1	AVAILABLE SPACE				5	0	200			6	200		212	FIT-1 INSTRUMENTATION	20	1
20	1	AVAILABLE SPACE				7			0	1,200	8	1,200		212	SP-1 SUMP PUMP	20	1
20	1	LTS-1 LTS, MAIN LEVEL	212		900	9	0	1,700			10	800		212	BC-1 BATTERY CHARGER	20	1
20	1	RECP-1 RECEPTACLES, GEN RM	212	360		11			360	750	12	750		212	JWH-1 JACKET WATER HEATER	20	2
20	1	RECP-3 RECEPT, DRY WELL	212	540		13	540	750			14	750		-	-	-	-
20	1	RTU-1 SCADA RTU/MCP	212	313		15			313	0	16			-	SPARE		1
20	1	SPARE				17	0	0			18			-	SPARE		1
20	1	RTU-2 TSSD SCADA RTU	212	500		19			500	0	20			-	SPARE		1
20	1	SPARE				21	0	1,800			22	1,800		212	RECP-4 240V OUTLET	20	2
	1	UNUSED				23			0	1,800	24	1,800		-	-	-	-
	1	UNUSED				25	0	0			26				UNUSED		1
	1	UNUSED				27			0	0	28				UNUSED		1
						29	0	0			30				UNUSED		1
		TOTAL WATTS:		1,713	900		540	4,810	1,173	4,740		8,650	0				
		CONTINUOUS LOAD:		1,713													
		CONTINUOUS LOAD * 125%:		2,141													
		NON-CONTINUOUS LOAD:		9,550													
		DESIGN WATTS:		11,691													
		MIN. RATING (AMPS):		49													

H.P.E. INC. ELECTRICAL ENGINEERS
POWER SYSTEMS, CONTROL & INSTRUMENTATION SYSTEMS
HEGERHORST POWER ENGINEERING INCORPORATED (801) 642-2051
717 NORTH MAIN, STE 206
AMERICAN FORK, UT 84663
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HPE PROJECT:25.030
FOR INFORMATION ABOUT THIS JOB, PLEASE CONTACT: KEITH HEGERHORST

GENERAL NOTES:

1. NOT USED.

SHEET KEYNOTES:

1. PANELBOARD L PANEL DIRECTORY.
2. PANELBOARD L.
3. PANELBOARD HP UPPER PORTION.
4. PANELBOARD HP, LOWER PORTION.
5. REMOVE 80A CB AND REPLACE WITH 110A CB FOR NEW VFD'S.
6. INSTALL TWO NEW 110A/3P CB'S IN THIS LOCATION FOR THE NEW VFD'S.

No. 86-171214-2202 KEITH B. HEGERHORST 09/19/25 REGISTERED PROFESSIONAL ENGINEER STATE OF UTAH
PROJECT ENGINEER

FILE NAME:
FILE DATE:

DESIGNED KBH	3					
DRAFTED KBH	2					
CHECKED KBH	1					
DATE JULY 2025	NO.	DATE	REVISIONS	BY	APVD.	

SCALE: NONE

VINEYARD CITY

LIFT STATION #2 UPGRADE
ELECTRICAL
EXISTING SCHEDULES

SHEET E-2.0
319.13.100

H.P.E. INC. ELECTRICAL ENGINEERS
POWER SYSTEMS, CONTROL & INSTRUMENTATION SYSTEMS
HEGERHORST POWER ENGINEERING INCORPORATED (801) 642-2051
717 NORTH MAIN, STE 206
AMERICAN FORK, UT 84663
©2025
HPE PROJECT:25.030
FOR INFORMATION ABOUT THIS JOB, PLEASE CONTACT: KEITH HEGERHORST

GENERAL NOTES:

1. NEW CIRCUIT BREAKERS SHOWN IN BOLD TEXT.
2. UPDATE THE PANEL DIRECTORY WITH A NEW PRINTED DIRECTORY.

SHEET KEYNOTES:

1. MIXER TO BE REMOVED. DESIGNATE EXISTING CB AS A SPARE.

UPDATED PANELBOARD HP

LOCATION: MAIN LEVEL | MFGR: GE | 600 AMPS | VOLTS: 480Y/277
DIMENSIONS: 27"W x 11.5"D x 64.63"H | TYPE: SBO | X M.L.O | PHASE: 3
MOUNTING: SURFACE | NEMA: 1 | 65,000 A.I.C. | WIRES: 4
FEED: TOP | X SURGE PROTECTION | FED FROM: ATS-1

BRKR A	BRKR P	DESCRIPTION	WIRE SIZE	CONT. WATTS	N-CONT. WATTS	NO	PHASE LOADS A CONT.	A N-CONT.	B CONT.	B N-CONT.	C CONT.	C N-CONT.	NO	N-CONT. WATTS	CONT. WATTS	CIRCUIT ID	DESCRIPTION	BRKR A	BRKR P
						1	0	0					2			-	AVAILABLE SPACE	-	1
						3			0	0			4			-	AVAILABLE SPACE	-	1
						5					0	0	6			-	AVAILABLE SPACE	-	1
15	3	H-1 HOIST	312		2,104	7	0	2,104					8			-	AVAILABLE SPACE	-	1
-	-	-	-		2,104	9			0	2,104			10			-	AVAILABLE SPACE	-	1
-	-	-	-		2,104	11					0	2,104	12			-	AVAILABLE SPACE	-	1
20	3	EF-1 DRY WELL EXHAUST FAN	312		941	13	0	4,274					14	3,333		312	EUH-1 ELECTRIC UNIT HEATER	20	3
-	-	-	-		941	15			0	4,274			16	3,333		-	-	-	-
-	-	-	-		941	17					0	4,274	18	3,333		-	-	-	-
30	2	TRANSFORMER H	30	540	4,810	19	540	4,810					20				AVAILABLE SPARE	20	3
-	-	-	-	1,173	4,740	21			1,173	4,740			22			-	-	-	-
						23					0	0	24			-	-	-	-
	1	AVAILABLE SPACE				25	0	0					26			-	AVAILABLE SPACE		1
-	1	AVAILABLE SPACE				27			0	0			28			-	AVAILABLE SPACE	-	1
-	1	AVAILABLE SPACE				29					0	0	30			-	AVAILABLE SPACE	-	1
110	**3**	**VFD-1 PUMP NO. 1 VFD**	**32**	**21,314**		31	21,314	21,314					32	**21,314**		**32**	**VFD-3 PUMP NO. 3 VFD**	**110**	**3**
-	**-**	**-**	**-**	**21,314**		33			21,314	21,314			34	**21,314**		**-**	**-**	**-**	**-**
-	**-**	**-**	**-**	**21,314**		35					21,314	21,314	36	**21,314**		**-**	**-**	**-**	**-**
110	**3**	**VFD-2 PUMP NO. 2 VFD**	**32**		**21,314**	37	0	42,627					38	**21,314**		**32**	**VFD-4 PUMP NO. 4 VFD**	**110**	**3**
-	**-**	**-**	**-**		**21,314**	39			0	42,627			40	**21,314**		**-**	**-**	**-**	**-**
-	**-**	**-**	**-**		**21,314**	41					0	42,627	42	**21,314**		**-**	**-**	**-**	**-**
		TOTAL WATTS:		65,654	B2,625		21,854	75,129	22,487	75,059	21,314	70,319		137,882	0				
		CONTINUOUS LOAD:		65,654															
		CONTINUOUS LOAD * 125%:		B2,067															
		NON-CONTINUOUS LOAD:		B2,625															
		DESIGN WATTS:		164,692															
		MIN. RATING (AMPS):		19B															

(1)

UPDATED XFMR-L TRANSFORMER

LOCATION: MAIN LEVEL | 24.4 PRIMARY AMPS | PRIMARY VOLTS: 480x240
DIMENSIONS: 23.8"W x 18.4"D x 32.1"H | 48.7 SECONDARY AMPS | SECONDARY VOLTS: 240x120
MOUNTING: FLOOR | KVA: 15
FEED: SIDE | FED FROM: PNL MDP

	CONT. WATTS	N-CONT. WATTS	PHASE LOADS A CONT.	A N-CONT.	B CONT.	B N-CONT.
POWER PANEL L	1,713	9,550	540	4,810	1,173	4,740
TOTAL WATTS:	1,713	9,550	540	4,810	1,173	4,740
CONTINUOUS LOAD:	1,713					
CONTINUOUS LOAD * 125%:	2,141					
NON-CONTINUOUS LOAD:	9,550					
DESIGN WATTS:	11,691					

UPDATED PNL-L PANELBOARD

LOCATION: MAIN LEVEL | MFGR: GE | 125 AMPS | VOLTS: 240/120
DIMENSIONS: 20"W x 5.75"D x 31.5"H | TYPE: AQ | 60 M.C.B. | PHASE: 1
MOUNTING: SURFACE | NEMA: 1 | 10,000 A.I.C. | WIRES: 3
FEED: BOTTOM | FED FROM: XFMR-L

BRKR A	BRKR P	DESCRIPTION	CIRCUIT ID	CONT. WATTS	N-CONT. WATTS	NO	PHASE LOADS A CONT.	A N-CONT.	B CONT.	B N-CONT.	NO	N-CONT. WATTS	CONT. WATTS	CIRCUIT ID	DESCRIPTION	BRKR A	BRKR P
20	1	AVAILABLE SPACE				1	0	360			2	360		212	RECP-1 RECEPTACLES, GEN RM	20	1
20	1	AVAILABLE SPACE				3			0	990	4	990		212	LTS-2 LTS, DRY WELL	20	1
20	1	AVAILABLE SPACE				5	0	200			6	200		212	FIT-1/2 NEW INSTRUMENTATION	20	1
20	1	AVAILABLE SPACE				7			0	1,200	8	1,200		212	SP-1 SUMP PUMP	20	1
20	1	LTS-1 LTS, MAIN LEVEL	212		900	9	0	1,700			10	800		212	BC-1 BATTERY CHARGER	20	1
20	1	RECP-1 RECEPTACLES, GEN RM	212	360		11			360	750	12	750		212	JWH-1 JACKET WATER HEATER	20	2
20	1	RECP-3 RECEPT, DRY WELL	212	540		13	540	750			14	750		-	-	-	-
20	1	RTU-1 SCADA RTU/MCP	212	313		15			313	0	16			-	SPARE		1
20	1	SPARE				17	0	0			18			-	SPARE		1
20	1	RTU-2 TSSD SCADA RTU	212	500		19			500	0	20			-	SPARE		1
20	1	SPARE				21	0	1,800			22	1,800		212	RECP-4 240V OUTLET	20	2
	1	UNUSED				23			0	1,800	24	1,800		-	-	-	-
	1	UNUSED				25	0	0			26				UNUSED		1
	1	UNUSED				27			0	0	28				UNUSED		1
						29	0	0			30				UNUSED		1
		TOTAL WATTS:		1,713	900		540	4,810	1,173	4,740		8,650	0				
		CONTINUOUS LOAD:		1,713													
		CONTINUOUS LOAD * 125%:		2,141													
		NON-CONTINUOUS LOAD:		9,550													
		DESIGN WATTS:		11,691													
		MIN. RATING (AMPS):		49													

REGISTERED PROFESSIONAL ENGINEER No. 86-171214-2202 KEITH B. HEGERHORST 09/19/25 STATE OF UTAH

FILE NAME:
FILE DATE:

HANSEN ALLEN & LUCE, Inc. ENGINEERS

PROJECT ENGINEER

DESIGNED	KBH	3			
DRAFTED	KBH	2			
CHECKED	KBH	1			
DATE	JULY 2025	NO.	DATE	REVISIONS	BY APVD.

SCALE: NONE

VINEYARD CITY

LIFT STATION #2 UPGRADE
ELECTRICAL
NEW SCHEDULES

SHEET E-2.1
319.13.100

7/04

H.P.E. INC. ELECTRICAL ENGINEERS
POWER SYSTEMS, CONTROL & INSTRUMENTATION SYSTEMS
HEGERHORST POWER ENGINEERING INCORPORATED (801) 642-2051
717 NORTH MAIN, STE 206
AMERICAN FORK, UT 84663
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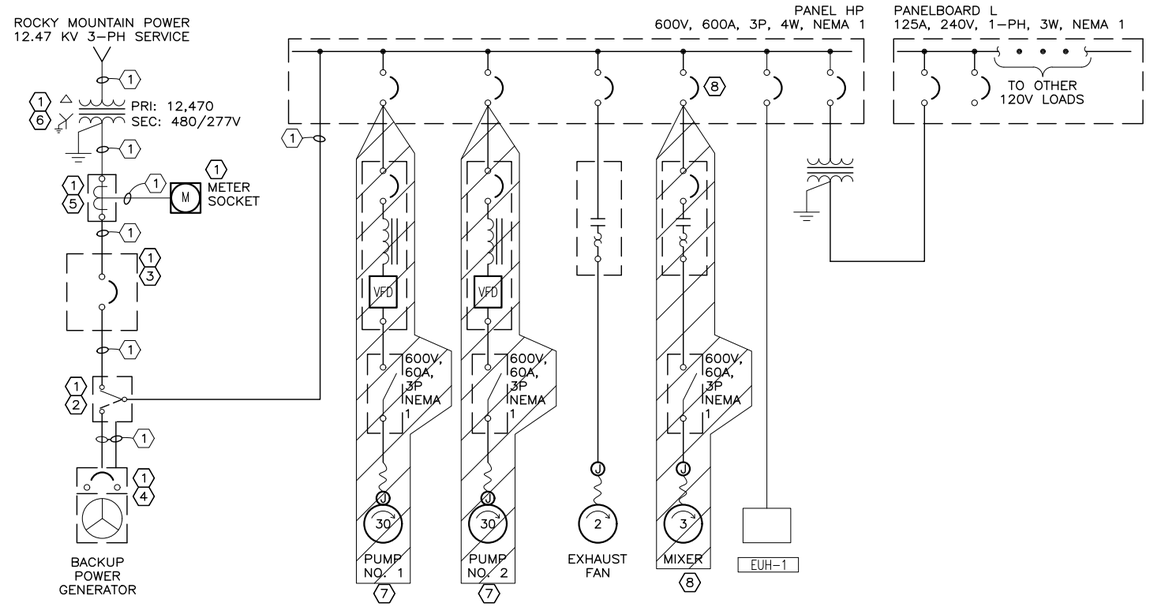
HPE PROJECT:25.030
FOR INFORMATION ABOUT THIS JOB, PLEASE CONTACT: KEITH HEGERHORST



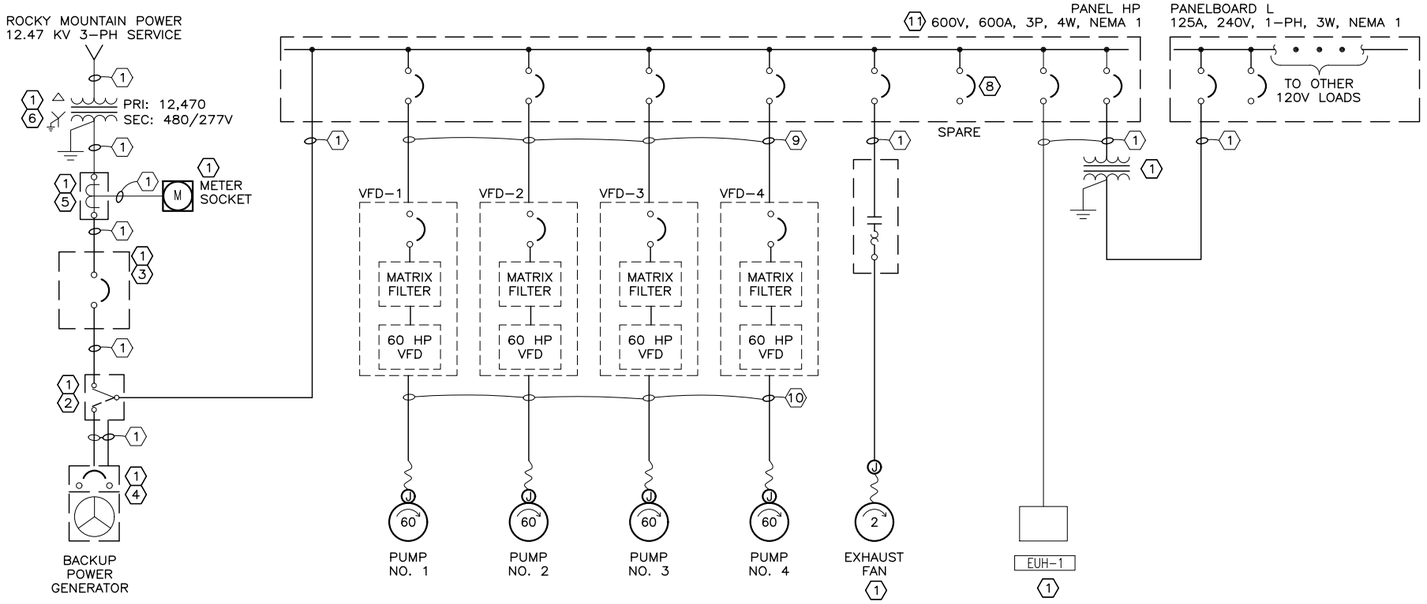
EXISTING POWER ONE-LINE DIAGRAM

GENERAL NOTES:

1. WITH THE CIRCUIT ID, REFER TO THE CONDUIT/CONDUCTOR TABLE ON E-1.1 FOR THE WIRE AND CONDUIT REQUIREMENTS.
2. EQUIPMENT LOCATIONS SHOWN ON THE ELECTRICAL PLANS.

SHEET KEYNOTES:

1. EXISTING TO REMAIN. MAINTAIN CIRCUIT INTEGRITY.
2. AUTOMATIC TRANSFER SWITCH: 600A, 600V, 3-P, 4W, NEMA 3R ENCLOSURE.
3. MAIN SERVICE DISCONNECT: 600A, 480V, 3-P, NEMA 3R. LABEL AS "MAIN SERVICE DISCONNECT" AND WITH THE AVAILABLE FAULT CURRENT AS REQUIRED BY NEC 110.24.
4. BACKUP POWER GENERATOR: 275 kW, 480 V, 3-P, 4W.
5. CURRENT TRANSFORMER ENCLOSURE: 600A (MIN), 480V, 3-PH.
6. ROCKY MOUNTAIN POWER PAD-MOUNTED TRANSFORMER.
7. REMOVE 30 HP VFD ENCLOSURE. REMOVE WIRE/CONDUIT FROM VFD TO DISCONNECT AND PUMP. 30 HP PUMPS TO BE REPLACED WITH 60 HP PUMPS AND NEW MOTOR CONTROLLERS.
8. REMOVE MIXER CONTROL PANEL, MIXER DISCONNECT AND MIXER MOTOR. REMOVE ALL CONDUIT/CONDUCTOR FOR THE MIXER. LABEL CIRCUIT BREAKER AS SPARE.
9. REFER TO PANELBOARD SCHEDULE FOR CIRCUIT ID, THEN, THE WIRE/CONDUIT REQUIREMENTS ARE IN THE CONDUIT/CONDUCTOR TABLE ON E-1.1.
10. 2"C, 1-3C#2, W/GROUND SHIELDED VFD CABLE (BELDEN 29507) OR APPROVED EQUAL.
11. FOR CIRCUIT BREAKER CHANGES TO THE EXISTING PANELBOARD HP, REFER TO NEW PANELBOARD SCHEDULE ON E-2.1.



NEW POWER ONE-LINE DIAGRAM

FILE NAME:
FILE DATE:

REGISTERED PROFESSIONAL ENGINEER
No. 86-171214-2202
KEITH B. HEGERHORST
09/19/25
STATE OF UTAH
PROJECT ENGINEER

HANSEN ALLEN & LUCE, Inc. ENGINEERS

DESIGNED KBH	3						
DRAFTED KBH	2						
CHECKED KBH	1						
DATE JULY 2025	NO.	DATE	REVISIONS		BY	APVD.	

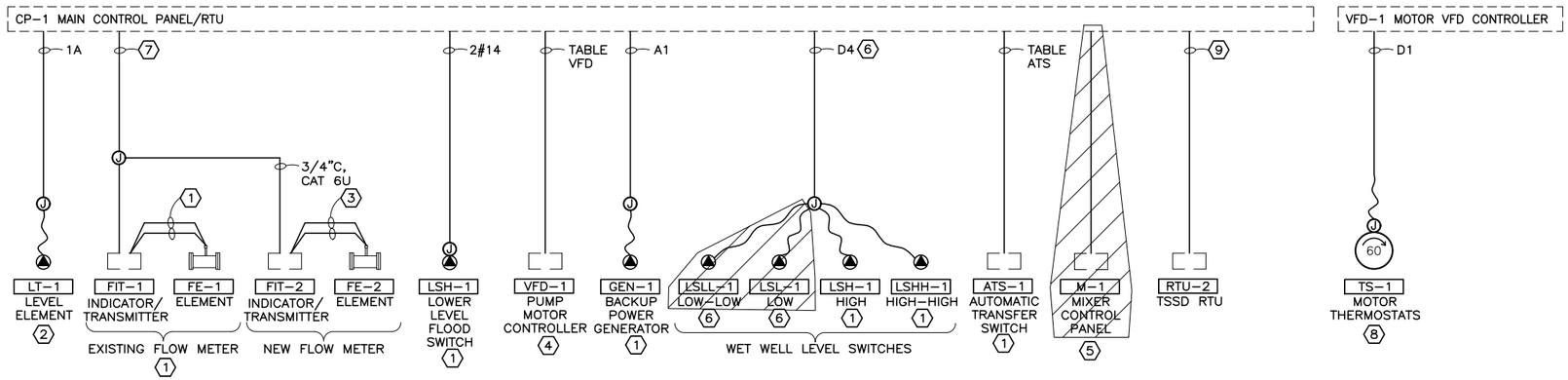
SCALE: NONE

VINEYARD CITY

LIFT STATION #2 UPGRADE
ELECTRICAL
POWER ONE-LINE DIAGRAMS

SHEET E-3.0
319.13.100

7/04



INSTRUMENTATION AND CONTROL ONE-LINE DIAGRAM

I&C WIRE/CONDUIT TABLE

IDENT.	CONDUIT SIZE	CONDUCTOR QTY	CONDUCTOR SIZE	SIGNAL DESCRIPTION
A1	3/4"	1	#18TSP	1 ANALOG SIGNAL
A2	3/4"	2	#18TSP	2 ANALOG SIGNALS
A3	3/4"	3	#18TSP	3 ANALOG SIGNALS
IDENT.	CONDUIT SIZE	CONDUCTOR QTY	CONDUCTOR SIZE	SIGNAL DESCRIPTION
D1	3/4"	2	#14	1 COMMON, 1 DISCRETE SIG.
D2	3/4"	3	#14	1 COMMON, 2 DISCRETE SIG.
D3	3/4"	4	#14	VARIES
D4	3/4"	5	#14	VARIES

TABLE VFD (CP-1 TO VFD)

CONDUIT SIZE	CONDUCTOR QTY	CONDUCTOR SIZE	SIGNAL DESCRIPTION
3/4"	2	#14	VFD ENABLE (COMMAND RUN)
	2	#14	VFD HOA IN AUTO
	2	#14	VFD HOA IN HAND
	2	#14	VFD STATUS FAULT
	2	#14	VFD STATUS RUNNING
	4	#14	SPARE
1"	1	#18TSP	VFD RUNNING SPEED
	1	#18TSP	VFD COMMAND SPEED
1"	1	CAT 5	VFD PARAMETERS
1"	1	PULL TAPE	SPARE

NOT ALL SIGNALS MAY BE TERMINATED IN THE RTU

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HPE PROJECT:25.030
FOR INFORMATION ABOUT THIS JOB, PLEASE CONTACT: KEITH HEGERHORST

GENERAL NOTES:

1. REFER TO THE ELECTRICAL PLANS FOR THE EQUIPMENT LOCATIONS.

SHEET KEYNOTES:

1. EXISTING. MAINTAIN CIRCUIT INTEGRITY.
2. IN THE WET WELL REPLACE EXISTING ULTRASONIC LEVEL TRANSDUCER WITH A RADAR LEVEL TRANSDUCER.
3. CABLE BY METER SUPPLIER, PROVIDE CONDUIT AS REQUIRED TO INSTALL MANUFACTURERS CABLES. ANTICIPATED CONDUIT DIAMETER: 1". DO NOT COMBINE SIGNAL AND DATA CABLES IN THE SAME CONDUIT.
4. SHOWN FOR VFD-1. DUPLICATE FOR VFD-2, VFD-3 AND VFD-4.
5. REMOVE EQUIPMENT, CONDUCTORS AND CONDUIT. WHERE CONDUIT IS REMOVED FROM RTU, INSTALL A BLANK COVER.
6. REMOVE LSLL-1 AND LSL-1 FLOAT SWITCHES FROM THE WET WELL. LABEL UNUSED CONDUCTORS AS SPARE.
7. REMOVE TSP CONDUCTOR FROM CP-1 TO FIT-1. INSTALL A CAT 6U CONDUCTOR FROM CP-1 TO RTU-1. AND INSTALL CAT6U ETHERNET CABLE FROM CP-1 TO FIT-2.
8. MOTOR T-STAT WIRING SHOWN FOR PUMP P-1/VFD-1. DUPLICATE FOR PUMP P-2/VFD-2, P-3/VFD-3 AND P-4/VFD-4.
9. SO TSSD CAN MONITOR THE NEW FLOW METER INSTALL A 2ND #18TSP CONDUCTOR IN THE EXISTING 3/4" CONDUIT.

FILE NAME:
FILE DATE:

REGISTERED PROFESSIONAL ENGINEER
No. 86-171214-2202
KEITH B. HEGERHORST
09/19/25
STATE OF UTAH

HANSEN ALLEN & LUCE, INC. ENGINEERS

PROJECT ENGINEER

DESIGNED	KBH	3				
DRAFTED	KBH	2				
CHECKED	KBH	1				
DATE	JULY 2025	NO.	DATE	REVISIONS	BY	APVD.

SCALE: NONE

VINEYARD STAY CONNECTED

VINEYARD CITY

LIFT STATION #2 UPGRADE
ELECTRICAL
I & C ONE-LINE DIAGRAM

SHEET E-3.1
319.13.100

7/04

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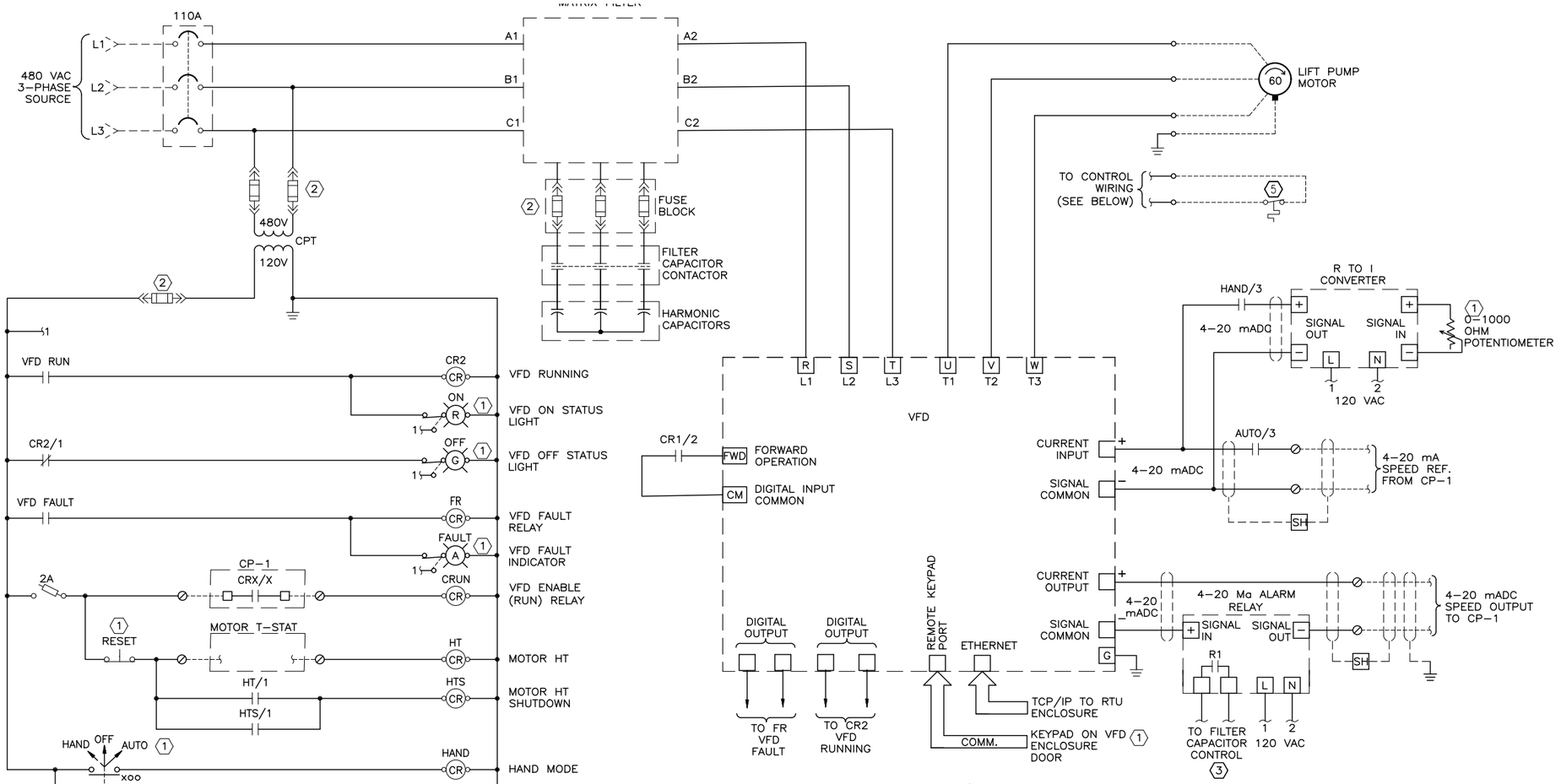
GENERAL NOTES:

1. CONTROL WIRING DIAGRAM SHOWN IS CONCEPTUAL AND SHALL BE MODIFIED AS REQUIRED FOR THE SPECIFIC VFD SUPPLIED.

SHEET KEYNOTES:

1. INSTALL DEVICE ON ENCLOSURE DOOR AND ACCESSIBLE TO OPERATOR.
2. FUSES SIZED BY VFD SUPPLIER.
3. FILTER CAPACITORS SHALL BE DE-ENERGIZED WHEN VFD IS OPERATING LESS THAN 30HZ.
4. VFD CIRCULATION FAN SHALL BE THERMOSTATICALLY CONTROLLED AND RUN WHEN VFD IS RUNNING.
5. MOTOR T-STAT SWITCH. TYP OF TWO WIRED IN SERIES.



FILE NAME:
FILE DATE:

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No. 86-171214-2202
KEITH B. HEGERHORST
09/19/25
STATE OF UTAH

HANSEN ALLEN & LUCE, Inc. ENGINEERS

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DATE	JULY 2025	NO.	DATE	REVISIONS		BY	APVD.

SCALE: NONE

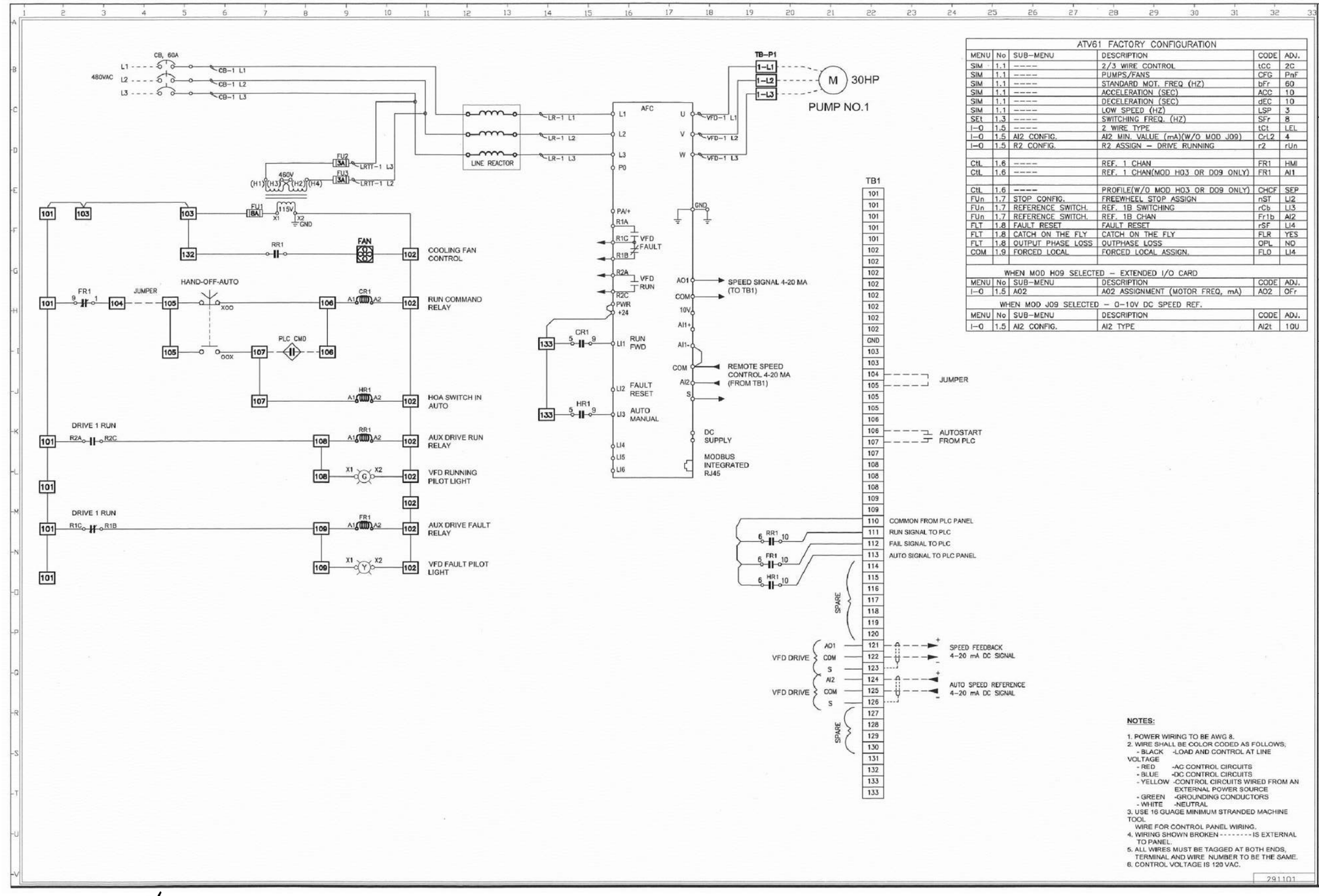
VINEYARD STAY CONNECTED

VINEYARD CITY

LIFT STATION #2 UPGRADE
ELECTRICAL
TYPICAL VFD CONTROL DIAGRAM

SHEET E-3.2
319.13.100

7/04



ATV61 FACTORY CONFIGURATION

MENU	No	SUB-MENU	DESCRIPTION	CODE	ADJ.
SIM	1.1	-----	2/3 WIRE CONTROL	tCC	2C
SIM	1.1	-----	PUMPS/FANS	CFG	PnF
SIM	1.1	-----	STANDARD MOT. FREQ (HZ)	bFr	60
SIM	1.1	-----	ACCELERATION (SEC)	ACC	10
SIM	1.1	-----	DECELERATION (SEC)	dEC	10
SIM	1.1	-----	LOW SPEED (HZ)	LSP	3
SEt	1.3	-----	SWITCHING FREQ. (HZ)	SFr	8
I-O	1.5	-----	2 WIRE TYPE	tCt	LEL
I-O	1.5	AI2 CONFIG.	AI2 MIN. VALUE (mA)(W/O MOD J09)	CrL2	4
I-O	1.5	R2 CONFIG.	R2 ASSIGN - DRIVE RUNNING	r2	rUn
CtL	1.6	-----	REF. 1 CHAN	FR1	HMI
CtL	1.6	-----	REF. 1 CHAN(MOD H03 OR D09 ONLY)	FR1	AI1
CtL	1.6	-----	PROFILE(W/O MOD H03 OR D09 ONLY)	CHCF	SEP
FUn	1.7	STOP CONFIG.	FREEWHEEL STOP ASSIGN	nST	LI2
FUn	1.7	REFERENCE SWITCH.	REF. 1B SWITCHING	rCb	LI3
FUn	1.7	REFERENCE SWITCH.	REF. 1B CHAN	Fr1b	AI2
FLT	1.8	FAULT RESET	FAULT RESET	rSF	LI4
FLT	1.8	CATCH ON THE FLY	CATCH ON THE FLY	FLR	YES
FLT	1.8	OUTPUT PHASE LOSS	OUTPHASE LOSS	OPL	NO
COM	1.9	FORCED LOCAL	FORCED LOCAL ASSIGN.	FLO	LI4

WHEN MOD H09 SELECTED - EXTENDED I/O CARD

MENU	No	SUB-MENU	DESCRIPTION	CODE	ADJ.
I-O	1.5	AO2	AO2 ASSIGNMENT (MOTOR FREQ, mA)	AO2	OFr

WHEN MOD J09 SELECTED - 0-10V DC SPEED REF.

MENU	No	SUB-MENU	DESCRIPTION	CODE	ADJ.
I-O	1.5	AI2 CONFIG.	AI2 TYPE	AI2t	10U

NOTES:

1. POWER WIRING TO BE AWG 8.
2. WIRE SHALL BE COLOR CODED AS FOLLOWS,
   - BLACK -LOAD AND CONTROL AT LINE VOLTAGE
   - RED -AC CONTROL CIRCUITS
   - BLUE -DC CONTROL CIRCUITS
   - YELLOW -CONTROL CIRCUITS WIRED FROM AN EXTERNAL POWER SOURCE
   - GREEN -GROUNDING CONDUCTORS
   - WHITE -NEUTRAL
3. USE 16 GUAGE MINIMUM STRANDED MACHINE TOOL WIRE FOR CONTROL PANEL WIRING.
4. WIRING SHOWN BROKEN --------- IS EXTERNAL TO PANEL.
5. ALL WIRES MUST BE TAGGED AT BOTH ENDS, TERMINAL AND WIRE NUMBER TO BE THE SAME.
6. CONTROL VOLTAGE IS 120 VAC.

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ICTech, Inc.
Innovative Control Technologies
ictechusa@gmail.com

REVISIONS

MARK	DATE	DESCRIPTION
-	-	-

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JOB SITE:
PROJECT #: 2025.01
DRAWN BY: MS
DESIGN BY: KH
CHECKED BY: KH

CUSTOMER: CED

PROJECT NAME: 30HP P1 VFD CONTROL PANEL

DRAWING NAME: PUMP NO.1 VFD CONTROL PANEL WIRING DIAGRAM.

DRAWING No.: EV-02

FILE NAME:
FILE DATE:

REGISTERED PROFESSIONAL ENGINEER
No. 86-171214-2202
KEITH B. HEGERHORST
09/19/25
STATE OF UTAH

DESIGNED	KBH	3					
DRAFTED	KBH	2					
CHECKED	KBH	1					
DATE	JULY 2025	NO.	DATE	REVISIONS		BY	APVD.

PROJECT ENGINEER

SCALE: NONE

VINEYARD CITY

LIFT STATION #2 UPGRADE
ELECTRICAL
EXISTING 30 HP VFD DIAGRAM

SHEET: E-3.3
319.13.100

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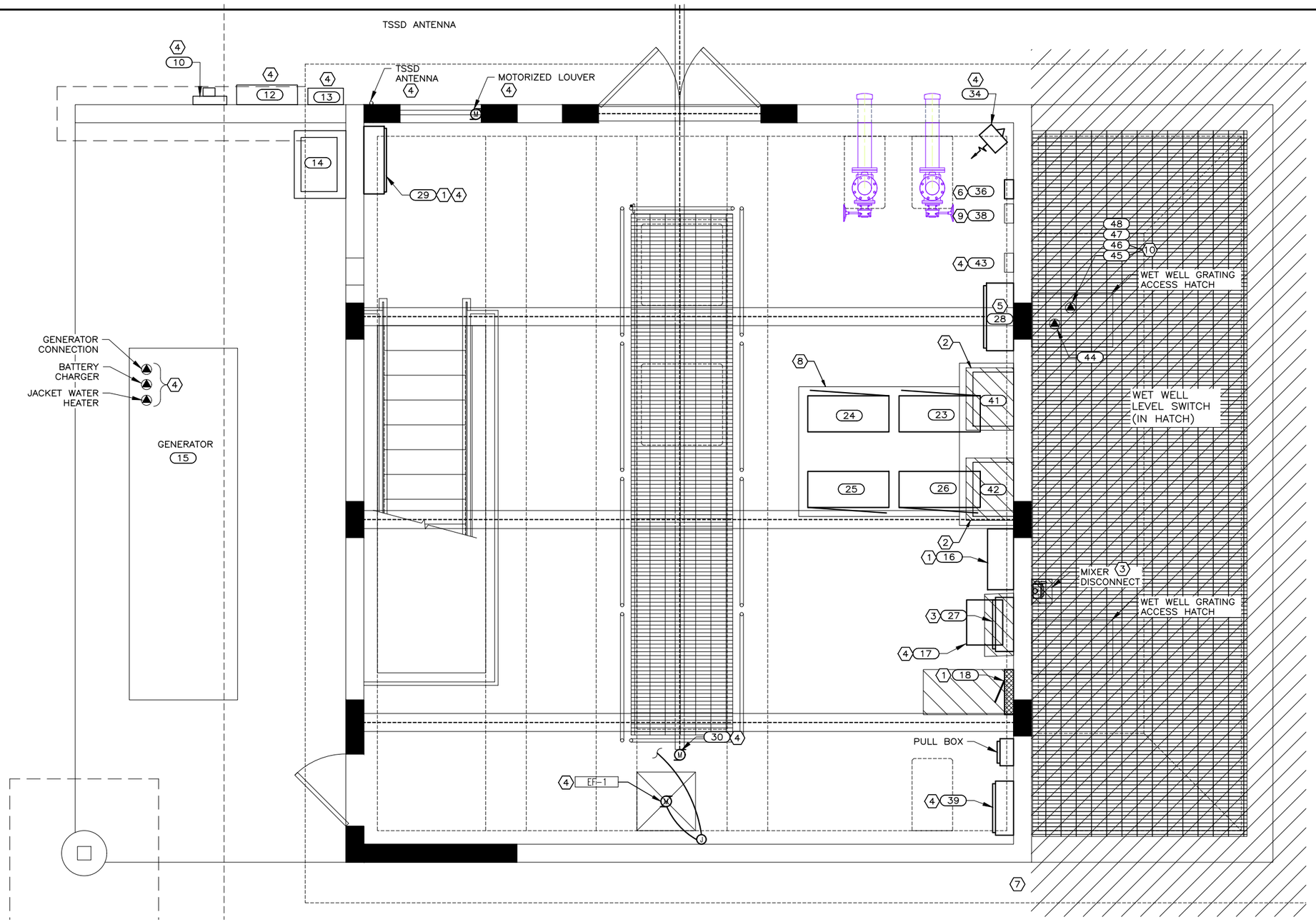

E

DRAWING ID	TAG	DESCRIPTION	POWER SOURCE	LOCATION
10	MS-1	METER SOCKET	-	OUTSIDE
12	CTE	CURRENT TRANSFORMER ENCLOSURE	U. XFMR	OUTSIDE
13	MSD	MAIN SERVICE DISCONNECT	U. XFMR	OUTSIDE
14	ATS	AUTOMATIC TRANSFER SWITCH	GEN/U. XFMR	OUTSIDE
15	GEN	BACKUP POWER GENERATOR	N/A	OUTSIDE
16	PNL MCC-1	PANELBOARD MCC	ATS-1	BLD. INTERIOR
17	XFMR L	TRANSFOMER L	HP-19,21	BLD. INTERIOR
18	PNL L	PANELBOARD L	XFMR-L	BLD. INTERIOR
23	VFD-1	VFD NO. 1	HP-31,33,35	BLD. INTERIOR
24	VFD-2	VFD NO. 2	HP-37,39,41	BLD. INTERIOR
25	VFD-3	VFD NO. 3	HP-32,34,36	BLD. INTERIOR
26	VFD-4	VFD NO. 4	HP-38,40,42	BLD. INTERIOR
27	MX-1	WET WELL MIXER	HP-20,22,24	BLD. INTERIOR
28	RTU/CP-1	MAIN CONTROL PANEL/RTU	L-15	BLD. INTERIOR
29	RTU-TSSD	TSSD SCADA RTU	L-19	BLD. INTERIOR
30	H-1	HOIST	HP-7,9,11	BLD. INTERIOR
34	UH-1	UNIT HEATER	HP-14,16,18	BLD. INTERIOR
36	FIT-2	FLOW INDICATOR/TRANSMITTER	L-6	BLD. INTERIOR
38	FIT-1	FLOW INDICATOR/TRANSMITTER	L-6	BLD. INTERIOR
39	CP-X	EXHAUST FAN CONTROL PANEL	HP-13,15,17	BLD. INTERIOR
41	VFD-E1	EXISTING 30 HP VFD	HP-31,33,15	BLD. EXTERIOR
42	VFD-E2	EXISTING 30 HP VFD	HP-32,34,36	BLD. EXTERIOR
43	LIT-1	LEVEL INDICATOR/TRANSMITTER	L-6	BLD. INTERIOR
44	LE-1	LEVEL ELEMENT	LIT-1	WET WELL
45	LSLL-1	LEVEL SWITCH	CP-1	WET WELL
46	LSL-1	LEVEL SWITCH	CP-1	WET WELL
47	LSH-1	LEVEL SWITCH	CP-1	WET WELL
48	LSHH-1	LEVEL SWITCH	CP-1	WET WELL

GENERAL NOTES:

1. REFER TO THE PANEL SCHEDULE FOR THE CIRCUIT ID, THEN REFER TO THE CONDUIT/CONDUCTOR TABLE ON E-1.1 FOR THE WIRE AND CONDUIT REQUIREMENTS.
2. RECEPTACLES IN THE LIFT STATION ARE EXISTING AND NOT SHOWN.

SHEET KEYNOTES:

1. EQUIPMENT TO REMAIN. MODIFY AS REQUIRED.
2. AFTER 60HP PUMPS ARE INSTALLED AND OPERATING, REMOVE 30 HP VFD MOTOR CONTROLLER ENCLOSURES.
3. MIXER IS NO LONGER USED. REMOVE CONTROL PANEL, WET WELL DISCONNECT, POWER AND CONTROL/MONITORING CONDUIT AND WIRING.
4. EQUIPMENT TO REMAIN. MAINTAIN CIRCUIT INTEGRITY.
5. SCADA CONTRACTOR SHALL REPLACE RTU INTERIOR AND COMPONENTS. TERMINATION OF CONDUCTORS BY SCADA CONTRACTOR. MAINTAIN 120 V POWER AS REQUIRED.
6. WIRE NEW FIT-2 TO SAME POWER CIRCUIT AS ADJACENT FIT-1.
7. A CLASS 1 DIVISION 1 HAZARDOUS AREA EXISTS IN THE ENTIRE WET WELL AND +18-IN OUT 36-IN FROM THE INSIDE EDGE OF THE WET WELL.
8. CONCRETE EQUIPMENT PAD. MATCH HEIGHT OF EXISTING PAD. EXTEND 4-IN IN FRONT AND TO THE SIDE OF THE NEW ENCLOSURES.
9. EXISTING FLOW INDICATOR/TRANSMITTER TO BE REPLACED WITH AN ETHERNET FLOW INDICATOR/TRANSMITTER. MAINTAIN CIRCUIT INTEGRITY FOR 120 VAC POWER.
10. REMOVE LOW AND LOW-LOW LEVEL FLOAT SWITCHES. CONDUCTORS TO CP-1 MAY REMAIN, BUT LABEL AS SPARE CONDUCTORS.

FILE NAME:
FILE DATE:

HANSEN ALLEN & LUCE ENGINEERS

REGISTERED PROFESSIONAL ENGINEER No. 86-171214-2202 KEITH B. HEGERHORST 09/19/25 STATE OF UTAH

PROJECT ENGINEER

DESIGNED	KBH	3				
DRAFTED	KBH	2				
CHECKED	KBH	1				
DATE	JULY 2025	NO.	DATE	REVISIONS	BY	APVD.

SCALE: AS SHOWN

VINEYARD STAY CONNECTED — VINEYARD CITY

LIFT STATION #2 UPGRADE
ELECTRICAL
MAIN LEVEL ELECTRICAL PLAN

SHEET E-4.0
319.13.100

7/04

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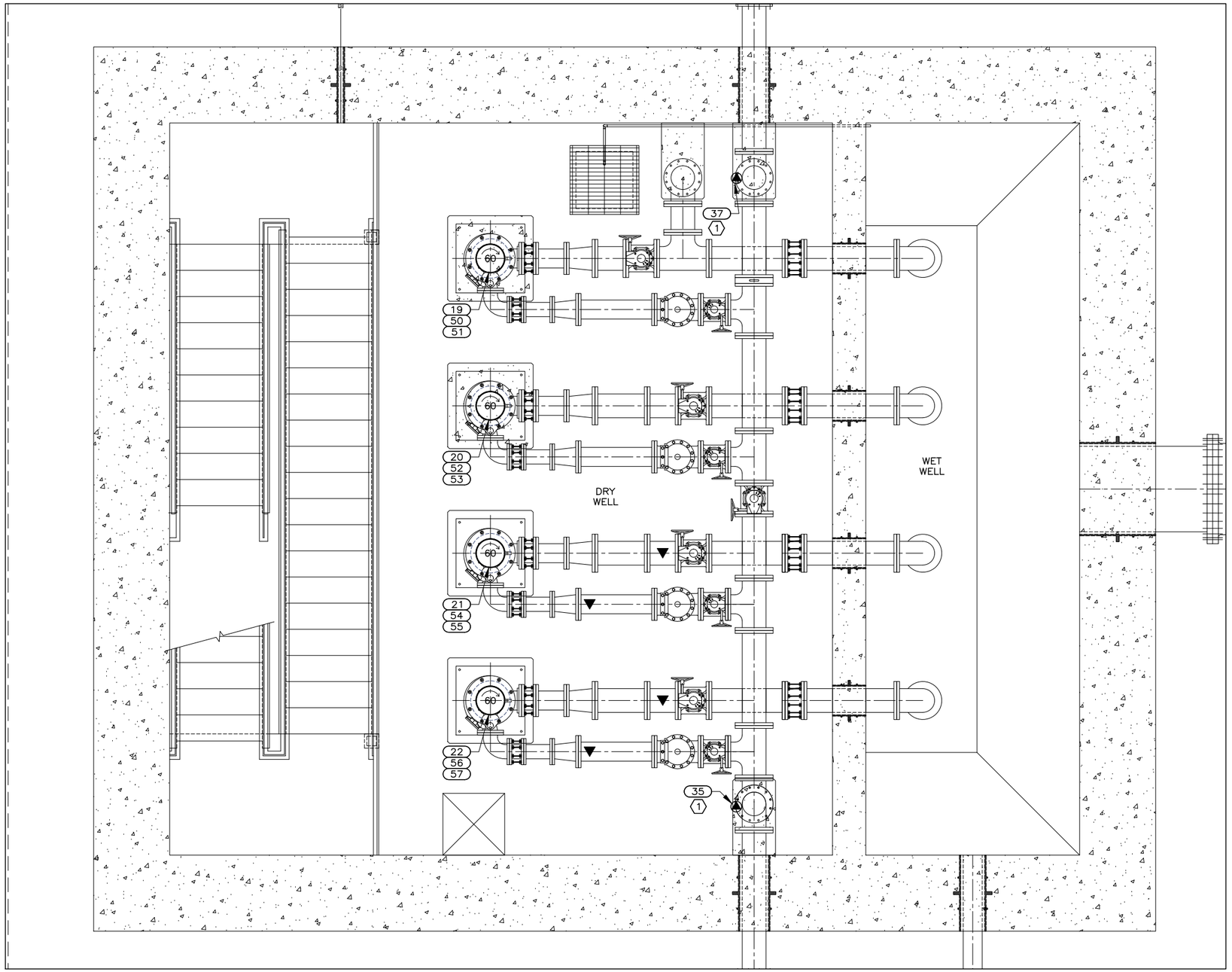

DRY WELL ELECTRICAL PLAN 1
1/2" = 1'-0" —

LOWER LEVEL ELECTRICAL ITEMS (E-4.1)

DRAWING ID	TAG	DESCRIPTION	POWER SOURCE	LOCATION
19	P-1	PUMP NO. 1	VFD-1	DRY WELL
20	P-2	PUMP NO. 2	VFD-2	DRY WELL
21	P-3	PUMP NO. 3	VFD-3	DRY WELL
22	P-4	PUMP NO. 4	VFD-4	DRY WELL
35	FE-2	FLOW ELEMENT	FIT-2	DRY WELL
37	FE-1	FLOW ELEMENT	FIT-1	DRY WELL
50	HTS-1A	MOTOR HIGH TEMP T-STAT	VFD-1	DRY WELL
51	HTS-1B	MOTOR HIGH TEMP T-STAT	VFD-1	DRY WELL
52	HTS-2A	MOTOR HIGH TEMP T-STAT	VFD-2	DRY WELL
53	HTS-2B	MOTOR HIGH TEMP T-STAT	VFD-2	DRY WELL
54	HTS-3A	MOTOR HIGH TEMP T-STAT	VFD-3	DRY WELL
55	HTS-3B	MOTOR HIGH TEMP T-STAT	VFD-3	DRY WELL
56	HTS-4A	MOTOR HIGH TEMP T-STAT	VFD-4	DRY WELL
57	HTS-4B	MOTOR HIGH TEMP T-STAT	VFD-4	DRY WELL

GENERAL NOTES:

1. REFER TO THE ONE-LINE DIAGRAMS FOR THE WIRE AND CONDUIT REQUIREMENTS.
2. EXISTING RECEPTACLES, LIGHT FIXTURES, SUMP PUMP AND FLOOR HIGH WATER SWITCH NOT SHOWN. NO CONTRACTOR WORK ANTICIPATED. MAINTAIN CIRCUIT INTEGRITY OF ALL EXISTING ELECTRICAL.
3. EXISTING DRY WELL. ALL NEW CONDUIT SHALL BE SURFACE MOUNTED. USE EXISTING CEILING CONDUIT PENETRATIONS AS FAR AS PRACTICAL.
4. INSTALL MOTOR CONDUITS BELOW WATER PIPING.

SHEET KEYNOTES:

1. FLOW ELEMENT INSTALLED IN RISER PIPE. GROUND NEW FLOW METER TO EXISTING FLOW METER GROUND.

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SCALE: AS SHOWN

VINEYARD CITY

LIFT STATION #2 UPGRADE
ELECTRICAL
DRY WELL ELECTRICAL PLAN

SHEET E-4.1
319.13.100

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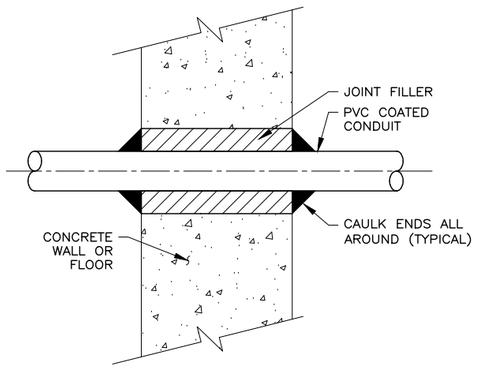
GENERAL NOTES:

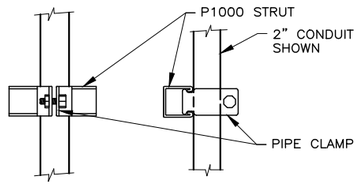
1. NOT USED.

SHEET KEYNOTES:

1. NOT USED.



CONDUIT PENETRATION THRU EXISTING CONCRETE OR WALL



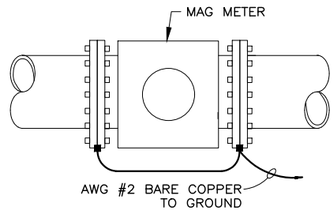
FRONT VIEW SIDE VIEW

CONDUIT PIPE CLAMPS*			
SIZE	EMT	RGS	EMT/GRS
1/2"	P1426	P1111	–
3/4"	P1427	P1112	P1212
1"	P1428	P1113	P1213
1-1/4"	P1429	P1114	P1214
1-1/2"	P1430	P1115	P1215
2"	P1431	P1117	P1217
2-1/2"	P1118	P1118	–
3"	P1119	P1119	–
3-1/2"	P1120	P1120	–
4"	P1121	P1121	–

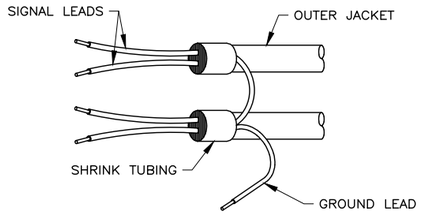
* = SUPPLIED WITH SLOTTED HEAD SCREW AND NUT

TYPICAL CONDUIT CLAMP

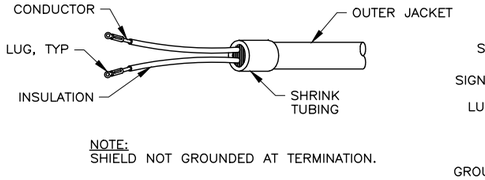
GRIND CONNECTIONS AND MAKE-UP PER MANUFACTURERS DIRECTIONS



MAG METER GROUNDING

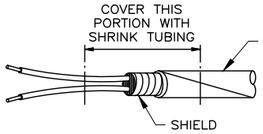


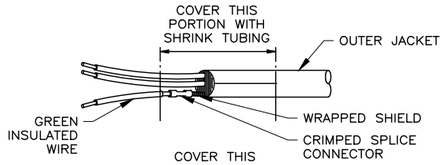
UNACCEPTABLE METHOD OF GROUNDING CONTROL CABLE SHIELD NTS

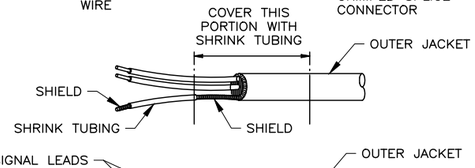


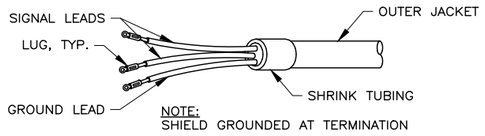
NOTE:
SHIELD NOT GROUNDED AT TERMINATION.

TERMINATION OF SHIELDED CONTROL CABLE NTS









NOTE:
SHIELD GROUNDED AT TERMINATION

TERMINATION OF SHIELDED CONTROL CABLE

SIGNAL WIRE TERMINATIONS

REGISTERED PROFESSIONAL ENGINEER No. 86-171214-2202 KEITH B. HEGERHORST 09/19/25 STATE OF UTAH

FILE NAME:
FILE DATE:

HANSEN ALLEN & LUCE ENGINEERS	PROJECT ENGINEER	DESIGNED KBH	3				
		DRAFTED KBH	2				
		CHECKED KBH	1				
		DATE JULY 2025	NO.	DATE	REVISIONS	BY	APVD.

SCALE: NONE

VINEYARD STAY CONNECTED

VINEYARD CITY

LIFT STATION #2 UPGRADE
ELECTRICAL
ELECTRICAL DETAILS

SHEET E-5.0
319.13.100

7/04

BILL OF MATERIALS

ITEM	MANUFACTURER	PART NUMBER	DESCRIPTION	QTY	NOTES
			PLC EQUIPMENT		
1	ALLEN BRADLEY	1769-L18ER-BB1B	COMPACTLOGIX CPU WITH EMBEDDED DISCRETE IO	1	NO EOUAL
2	ALLEN BRADLEY	1734-IB8	8 CHANNEL 24VDC DISCRETE INPUT MODULE	4	NO EOUAL
4	ALLEN BRADLEY	1734-IE8C	8 CHANNEL 0-20mA ANALOG INPUT MODULE	1	NO EOUAL
5	ALLEN BRADLEY	1734-OE4C	4 CHANNEL 0-20mA ANALOG OUTPUT MODULE	2	NO EOUAL
6	ALLEN BRADLEY		POINT IO TERMINAL BASE	7	NO EOUAL
			POWER DISTRIBUTION EQUIPMENT		
20	PHOENIX CONTACT	2904600	5A 24VDC QUINT POWER SUPPLY	1	OR APPROVED EQUAL
21	PHOENIX CONTACT	2320212	5A 24VDC UPS	1	OR APPROVED EQUAL
22	PHOENIX CONTACT	1274118	7AH 24VDC POWER STORAGE BATTERY	1	OR APPROVED EQUAL
23	PHOENIX CONTACT	2907918	26A SURGE PROTECTION DEVICE	1	OR APPROVED EQUAL
24	PHOENIX CONTACT	2907566	C CURVE 10A DIN RAIL MOUNT BREAKER	1	OR APPROVED EQUAL
			TERMINAL EQUIPMENT		
30	PHOENIX CONTACT	0800886	DIN RAIL END CLAMP	LOT	OR APPROVED EQUAL
31	PHOENIX CONTACT	3046430	UT6 120V FUSE TERMINAL BLOCK WITH LED	LOT	OR APPROVED EQUAL
32	PHOENIX CONTACT	3046414	UT6 24V FUSE TERMINAL BLOCK WITH LED	LOT	OR APPROVED EQUAL
33	PHOENIX CONTACT	3044131	UT6 24-8GA FEED THROUGH TERMINAL	LOT	OR APPROVED EQUAL
34	PHOENIX CONTACT	3044157	UT6 24-8GA FEED THROUGH GROUND TERMINAL	LOT	OR APPROVED EQUAL
35	PHOENIX CONTACT	3047028	UT4/UT6 TERMINAL END COVER	LOT	OR APPROVED EQUAL
36	PHOENIX CONTACT	3047303	UTTB4 TERMINAL SPACER PLATE	LOT	OR APPROVED EQUAL
37	PHOENIX CONTACT	3044814	UTTB4 16-10GA TWO POLE FEED THROUGH TERMINAL	LOT	OR APPROVED EQUAL
38	PHOENIX CONTACT	3044759	UTTB4 16-10GA DOUBLE LEVEL GROUND TERMINAL	LOT	OR APPROVED EQUAL
39	PHOENIX CONTACT	3047293	UTTB4 DOUBLE LEVEL TERMINAL END COVER	LOT	OR APPROVED EQUAL
40	PHOENIX CONTACT	3074172	UT4 FUSED TERMINAL WITH LED	LOT	OR APPROVED EQUAL
41	PHOENIX CONTACT	3214366	UT4 DOUBLE LEVEL FEED THROUGH TERMINAL TOP FUSED	LOT	OR APPROVED EQUAL
42	PHOENIX CONTACT	3214301	UT2.5 TRIPLE LEVEL TERMINAL BOTTOM GROUNDED	LOT	OR APPROVED EQUAL
43	PHOENIX CONTACT	3214314	UT2.5 TRIPLE LEVEL TERMINAL END COVER	LOT	OR APPROVED EQUAL
45	PHOENIX CONTACT	3030323	UT6 10 TERMINAL PLUG IN BRIDGE - RED	LOT	OR APPROVED EQUAL
46	PHOENIX CONTACT	3032606	UT6 10 TERMINAL PLUG IN BRIDGE - BLUE	LOT	OR APPROVED EQUAL
47	PHOENIX CONTACT	3032224	UT4 50 TERMINAL PLUG IN BRIDGE - RED	LOT	OR APPROVED EQUAL
48	PHOENIX CONTACT	3032211	UT4 50 TERMINAL PLUG IN BRIDGE - BLUE	LOT	OR APPROVED EQUAL
49	PHOENIX CONTACT	3036916	UT2.5 10 TERMINAL PLUG IN BRIDGE - BLUE	LOT	OR APPROVED EQUAL
55	IDEC	RJ1S-CD-D24	RELAY 24VDC COIL SP FORM C W/SURGE SUPPRESSION	4	OR APPROVED EQUAL
56	IDEC	SJ1S-07LW	DIN MOUNT RELAY BASE FOR RJ1S RELAYS	4	OR APPROVED EQUAL
			PANEL EQUIPMENT		
61	SAGINAW	SCE-30P36	BACKPANEL FOR SAGINAW 30"x36" PANELS	1	OR APPROVED EQUAL
67	LEVITON	SL8	SINGLE GANG DUPLEX RECEPTACLE COVER PLATE	1	OR APPROVED EQUAL
68	LEVITON	CR15	NEMA 5-15R DUPLEX RECEPTACLE	1	OR APPROVED EQUAL
69	BELL	5320-0	SINGLE GANG ELECTRICAL BOX	1	OR APPROVED EQUAL
70	PANDUIT	F1X4LG6	1" x 4" WIRE DUCT, LT GRAY	LOT	OR APPROVED EQUAL
71	PANDUIT	C1LG6	1" WIRE COVER, LT GRAY	LOT	OR APPROVED EQUAL
72	PANDUIT	F2X4WH6	2" x 4" WIRE DUCT, WHITE	LOT	OR APPROVED EQUAL
73	PANDUIT	C2WH6	2" WIRE COVER, WHITE	LOT	OR APPROVED EQUAL
74	PANDUIT	F1X4WH6	1" x 4" WIRE DUCT, WHITE	LOT	OR APPROVED EQUAL
75	PANDUIT	C1WH6	1" WIRE COVER, WHITE	LOT	OR APPROVED EQUAL
80	SOUTHWIRE		MTW TINNED CONTROL WIRE (SIZE, COLOR VARIES)	LOT	OR APPROVED EQUAL
81	BELDEN	8760	#18 TWISTED SHIELDED PAIR, TINNED COPPER	LOT	OR APPROVED EQUAL
82	CAROL CABLE	C0785A	10 CONDUCTOR W/SHIELD CABLE	LOT	OR APPROVED EQUAL
83	CAROL CABLE	C0787A	20 CONDUCTOR W/SHIELD CABLE	LOT	OR APPROVED EQUAL
84	PHOENIX CONTACT	VARIES	TERMINAL BLOCK LABELS	LOT	OR APPROVED EQUAL
85	PHOENIX CONTACT	VARIES	WIRE LABELS	LOT	OR APPROVED EQUAL
86	PHOENIX CONTACT	VARIES	BACKPANEL ADHESIVE LABELS	LOT	OR APPROVED EQUAL
87	CUSTOM	VARIES	ENGRAVED LABELS	LOT	OR APPROVED EQUAL
			NETWORK EQUIPMENT		
90	PHOENIX CONTACT	1085255	16 PORT UNMANAGED DIN MOUNT NETWORK SWITCH	1	OR APPROVED EQUAL
91	SECOMEA	1529	INDUSTRIAL GATEWAY	1	OR APPROVED EQUAL

BOM AND LEGEND

SCHEMATIC LINETYPES

MANUFACTURER/SHOP WIRE
TYPICALLY INSTALLED OFF–SITE

FIELD/CONTRACTOR
INSTALLED WIRE

EXISTING OR FUTURE
FIELD/CONTRACTOR
INSTALLED WIRE

EXISTING OR FUTURE
MANUFACTURER/SHOP WIRE

TB'S & PLC SYMBOLS

LOCAL PANEL OR DEVICE TERMINAL BLOCK
X ← TERMINAL LABEL
□

PLC PANEL TERMINAL BLOCK
X ← TERMINAL LABEL
⊠

MCC TERMINAL BLOCK
X ← TERMINAL LABEL
⊠

DEVICE TERMINAL BLOCK
X ← TERMINAL LABEL
○

SCHEMATIC SYMBOLS

DEVICE CONNECTION
LUG OR TERMINAL

SCHEMATIC POINT OF
CONNECTION

CIRCUIT BREAKER
100AF ← FRAME SIZE
50AT ← TRIP RATING
MCP ← BREAKER TYPE

FUSE
30A ← AMPERE RATING
R ← FUSE TYPE

GROUND CONNECTION

M — MOTOR STARTER, CONTACTOR, RELAY OR TIMER COIL

NORMALLY OPEN CONTACT

NORMALLY CLOSED CONTACT

SOLENOID VALVE

EQUIPMENT
PROGRAMMING
CONSOLE

OFF ON — 2 POSITION SELECTOR SWITCH
POSITION LEGEND: X=CLOSED
O=OPEN
XO

H O A — 3 POSITION SELECTOR
SWITCH HAND - OFF - AUTO
POSITION LEGEND:
X=CLOSED O=OPEN
XOO

O C A — 3 POSITION SELECTOR SWITCH
OPEN - CLOSE - AUTO POSITION
LEGEND: X=CLOSED O=OPEN
XOO

F O R — 3 POSITION SELECTOR SWITCH
FORWARD - OFF - REVERSE
POSITION LEGEND: X=CLOSED
O=OPEN
XOO

STOP — NORMALLY CLOSED PUSH BUTTON

START — NORMALLY OPEN PUSH
BUTTON

TYPICAL SWITCH CONFIGURATION

FLOAT SWITCH - MAKE ON FALL

FLOAT SWITCH - MAKE ON RISE

FLOAT SWITCH - BREAK ON FALL

FLOAT SWITCH - BREAK ON RISE

SWITCH TYPE SYMBOL (SEE BELOW)
- LEVEL SWITCH
- PRESSURE SWITCH
- FLOW OR TORQUE SWITCH
- TEMPERATURE SWITCH
- LIMIT SWITCH

NOTC — TIMER RELAY CONTACT
NORMALLY OPEN TIME DELAY
CLOSE

ABBREVIATIONS

A	AMPERE
AFF	ABOVE FINISHED FLOOR
AI	ANALOG INPUT
AIC	AMPS INTERRUPTING CAPACITY
AO	ANALOG OUTPUT
AS	AIR SUPPLY
ATS	AUTOMATIC TRANSFER SWITCH
C	CONDUIT
CB	CIRCUIT BREAKER
CL2	CHLORINE
CPT	CONTROL POWER TRANSFORMER
CTC	COMMUNICATIONS TERMINATION CABINET
CU	COPPER, BARE
CV	CONTROL VALVE
DCS	DISTRIBUTED CONTROL SYSTEM
DI	DISCRETE INPUT
DO	DISCRETE OUTPUT
DP	DISTRIBUTION PANEL
DS	DISCONNECT SWITCH
DV/DT	DIFFERENTIAL VOLTAGE/TIME
DWG	DRAWING
ETM	ELAPSED TIME METER
EOL	ELECTRONIC OVERLOAD
FE	FLOW ELEMENT
FLA	FULL LOAD AMPS
FOC	FIBER OPTIC CABLE
FOR	FORWARD-OFF-REVERSE
FS	FLOW SWITCH
FVNR	FULL VOLTAGE NON-REVERSING
GFCI	GROUND FAULT CIRCUIT INTERRUPTER
GFP	GROUND FAULT PROTECTION
GND	GROUND
GPM	GALLONS PER MINUTE
GRS	GALVANIZED RIGID STEEL
H2S	HYDROGEN SULFIDE
HMI	HUMAN MACHINE INTERFACE
HOA	HAND-OFF-AUTO
HOR	HAND-OFF-REMOTE
I	CURRENT
IC	INSTRUMENTATION CABLE
IO	INPUT/OUTPUT
ISC	SHORT CIRCUIT CURRENT
J	JUNCTION BOX
LAN	LOCAL AREA NETWORK
LCP	LOCAL CONTROL PANEL
LOS	LOCK-OUT-STOP
LP	LIGHTING PANEL
LR	LOCAL/REMOTE
LS	LEVEL SWITCH
LTC	LIQUIDTIGHT FLEXIBLE METAL CONDUIT
M	MOTOR
MA	MANUAL/AUTO, MILLIAMP
MC	MANUFACTURER'S CABLE
MCB	MAIN CIRCUIT BREAKER
MCC	MOTOR CONTROL CENTER
MCP	MOTOR CIRCUIT PROTECTOR
MFR(S)	MANUFACTURER(S)
MGD	MILLION GALLONS PER DAY
MH	MANHOLE
MOV	MOTOR OPERATED VALVE
MTU	MASTER TELEMETRY UNIT
NEC	NATIONAL ELECTRICAL CODE
NOTC	NORMALLY OPEN TIMED CLOSED
NPW	NON-POTABLE WATER
NTS	NOT TO SCALE
NTU	TURBIDITY
OIT	OPERATOR INTERFACE TERMINAL
OL	OVERLOAD
OO	ON/OFF (MAINTAINED)
OR	OFF-REMOTE
PB	PULL BOX
PC	PERSONAL COMPUTER
PFR	PHASE/POWER FAILURE RELAY
PLC	PROGRAMMABLE LOGIC CONTROLLER
PNL	PANEL
PPM	PARTS PER MILLION
PR	PAIR
P	PRESSURE
PS	PRESSURE SWITCH
PSI	POUNDS PER SQUARE INCH
PV	PROCESS VARIABLE
RCP	REMOTE CONTROL PANEL
RF	RADIO FREQUENCY
RIO	REMOTE INPUT OUTPUT
RST	RESET
RTD	RESISTANCE TEMPERATURE DETECTOR
RTU	REMOTE TELEMETRY UNIT
RVSS	REDUCED VOLTAGE SOFT STARTER
SEQ	SERVICE ENTRANCE EQUIPMENT
SES	SERVICE ENTRANCE SECTION
SLOS	START-LOCK-OFF-STOP
SMC	SUBMERSIBLE MANUFACTURER CABLE
SO2	SULFUR DIOXIDE
SP	SET POINT/SPARE
SPD	SURGE PROTECTION DEVICE
SS	START/STOP
ST	SHUNT TRIP
TC	TELEPHONE CABLE
TS	TEMPERATURE SWITCH
TYP	TYPICAL
UG	UNDERGROUND
V	VOLT
VA	VOLTAMP
VFD	VARIABLE FREQUENCY DRIVE
W	WATT, WIRE
WP	WEATHERPROOF
XFMR	TRANSFORMER
ZS	POSITION SWITCH

NOTES

1. THE COMPLETED INSTALLATION SHALL COMPLY WITH APPLICABLE FEDERAL, STATE, AND LOCAL CODES, ORDINANCES, AND REGULATIONS. ALL WORK SHALL BE COMPLETED IN A NEAT, WORKMANLIKE MANNER IN ACCORDANCE WITH THE LATEST NEC STANDARDS OF INSTALLATION UNDER COMPETENT SUPERVISION. INSTALL GROUNDING PER NEC.

2. ALL MATERIALS SHALL BE NEW AND OF THE BEST QUALITY, MANUFACTURED IN ACCORDANCE WITH NEMA, ANSI, UL, OR OTHER APPLICABLE STANDARDS. THE USE OF MANUFACTURERS' NAMES, MODELS, AND NUMBERS IS INTENDED TO ESTABLISH STYLE, QUALITY, APPEARANCE, USEFULNESS, AND BID PRICE.

3. PROTECT ALL ELECTRICAL MATERIAL AND EQUIPMENT INSTALLED AGAINST DAMAGE BY OTHER TRADES, WEATHER CONDITIONS, OR ANY OTHER PREVENTABLE CAUSES. EQUIPMENT DAMAGED DURING SHIPPING OR CONSTRUCTION, PRIOR TO ACCEPTANCE BY THE ENGINEER OR OWNER, WILL BE REJECTED AS DEFECTIVE.

4. ALL COMPONENTS SHALL BE FREE OF DUST, GRIT, AND FOREIGN MATERIALS, AND LEFT AS NEW BEFORE FINAL ACCEPTANCE OF WORK. DAMAGED PAINT AND FINISHES SHALL BE TOUCHED UP OR PAINTED WITH MATCHING COLOR PAINT AND FINISH.

5. CIRCUIT CONDUCTORS #6 AWG OR SMALLER SHALL BE THWN STRANDED COPPER. #4 TO #2 AWG SHALL BE XHHW STRANDED COPPER. #1 AWG OR LARGER SHALL BE XHHW-2 STRANDED COPPER. MINIMUM POWER CONDUCTOR SIZE SHALL BE #12 AWG WITH #12 GROUND. ALL WIRE TO BE SIZED PER NEC TABLE 316-10, 75ºC BASED ON 30ºC AMBIENT.

6. SAFETY SWITCHES, ELECTRICAL DISTRIBUTION EQUIPMENT, CONTROL PANELS AND OTHER ELECTRICAL DEVICES SHALL BE UL LISTED, AND RATED FOR HEAVY DUTY SERVICE.

7. DEVICE WIRING SHALL BE SPECIFICATION GRADE.

8. TYPICAL DETAILS SHALL APPLY IN ALL CASES, WHETHER SPECIFICALLY REFERRED TO OR NOT.

HANSEN ALLEN & LUCE ENGINEERS

PROJECT ENGINEER

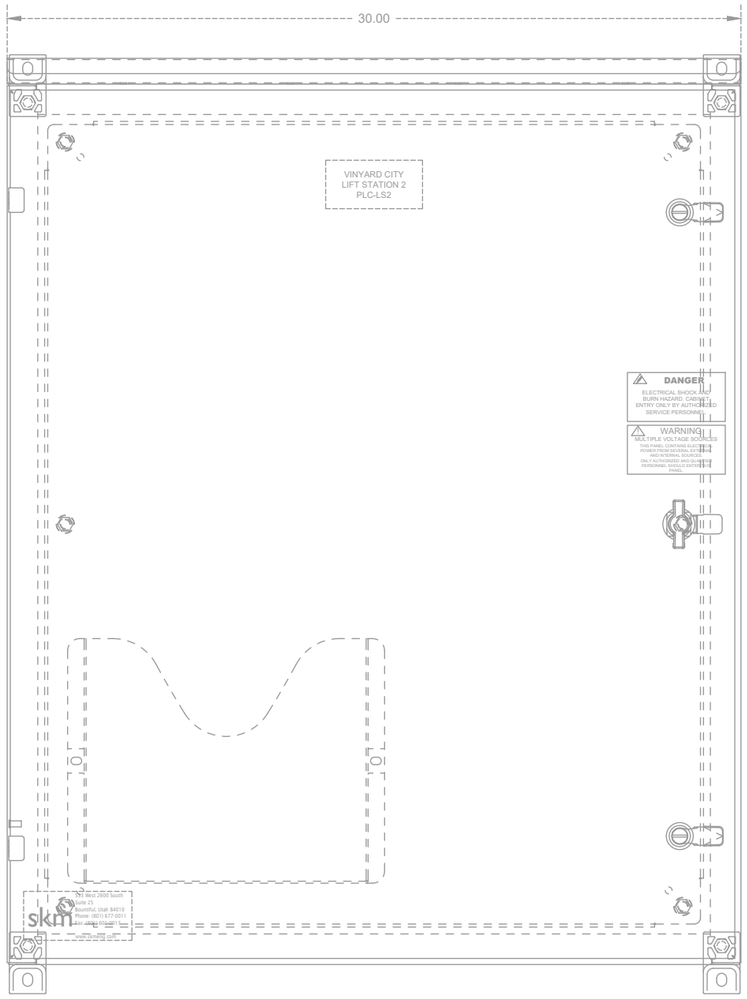
DESIGNED	LAR	2					
DRAFTED	MGJ	1					
CHECKED	LAR	0					
DATE	OCTOBER 2025	NO.	DATE	REVISIONS		BY	APVD

SCALE

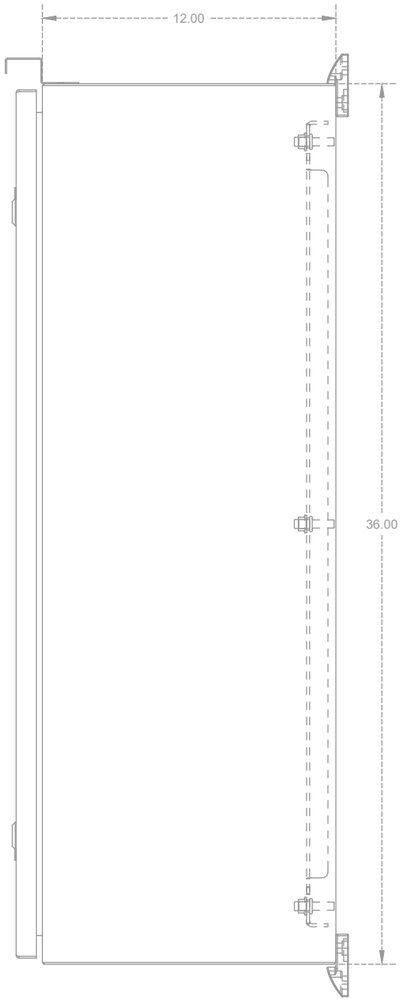
VINEYARD — VINEYARD CITY

LIFT STATION #2 UPGRADE
INSTRUMENTATION – PLC DRAWINGS
BOM AND LEGEND

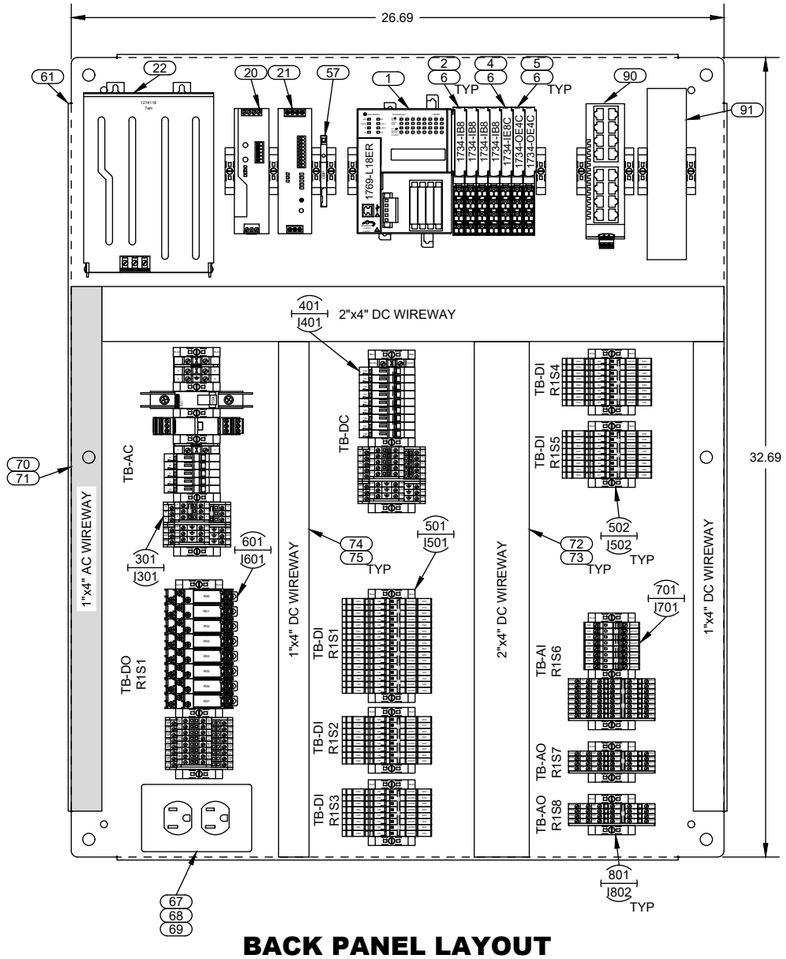
SHEET 1
I001
319.13.100



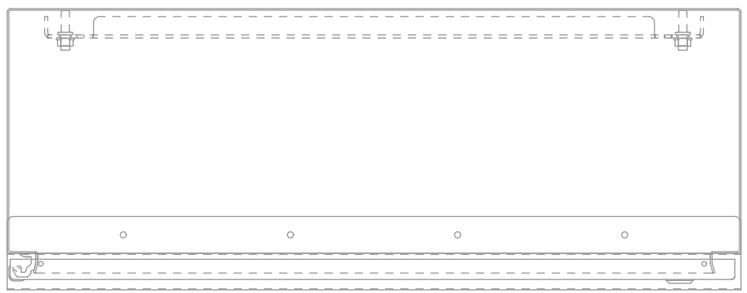
FRONT PANEL VIEW



SIDE PANEL VIEW



BACK PANEL LAYOUT



TOP PANEL VIEW

VINYARD CITY
LIFT STATION 2
PLC-LS2

DANGER
ELECTRICAL SHOCK AND
BURN HAZARD. CABINET
ENTRY ONLY BY AUTHORIZED
SERVICE PERSONNEL.

WARNING
MULTIPLE VOLTAGE SOURCES
THIS PANEL CONTAINS ELECTRICAL
POWER FROM SEVERAL EXTERNAL
AND INTERNAL SOURCES.
ONLY AUTHORIZED AND QUALIFIED
PERSONNEL SHOULD ENTER THIS
PANEL.

skm
533 West 2600 South
Suite 25
Bountiful, Utah 84010
Phone: (801) 677-0011
Fax: (801) 601-0013
www.skmeng.com

PANEL LABELS

PANEL LAYOUT

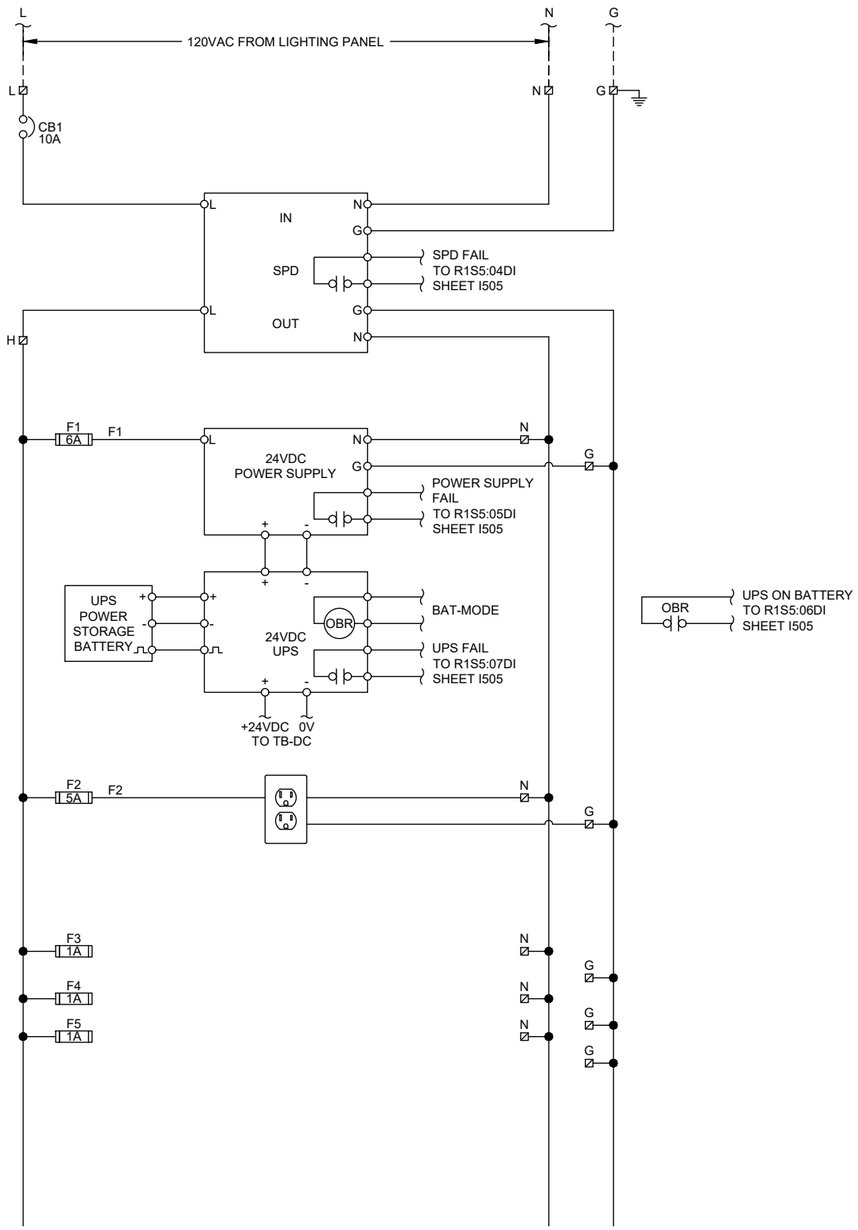
HANSEN ALLEN & LUCE ENGINEERS	PROJECT ENGINEER	DESIGNED LAR	2					SCALE
		DRAFTED MGJ	1					
		CHECKED LAR	0					
		DATE OCTOBER 2025	NO.	DATE	REVISIONS	BY	APVD	

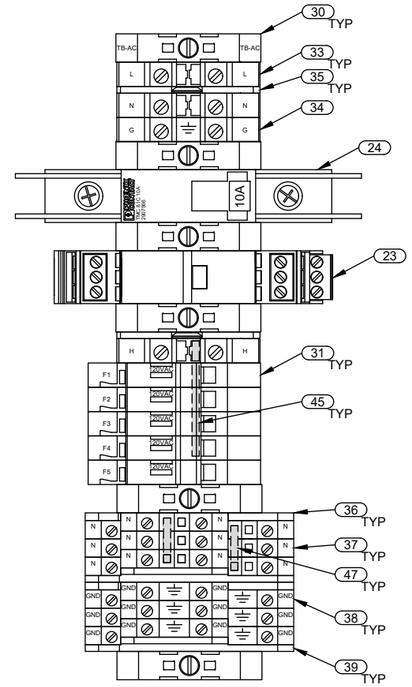
VINEYARD CITY

LIFT STATION #2 UPGRADE
INSTRUMENTATION – PLC DRAWINGS
PANEL LAYOUT

SHEET 2
I101
319.13.100

TB-AC WIRING DIAGRAM





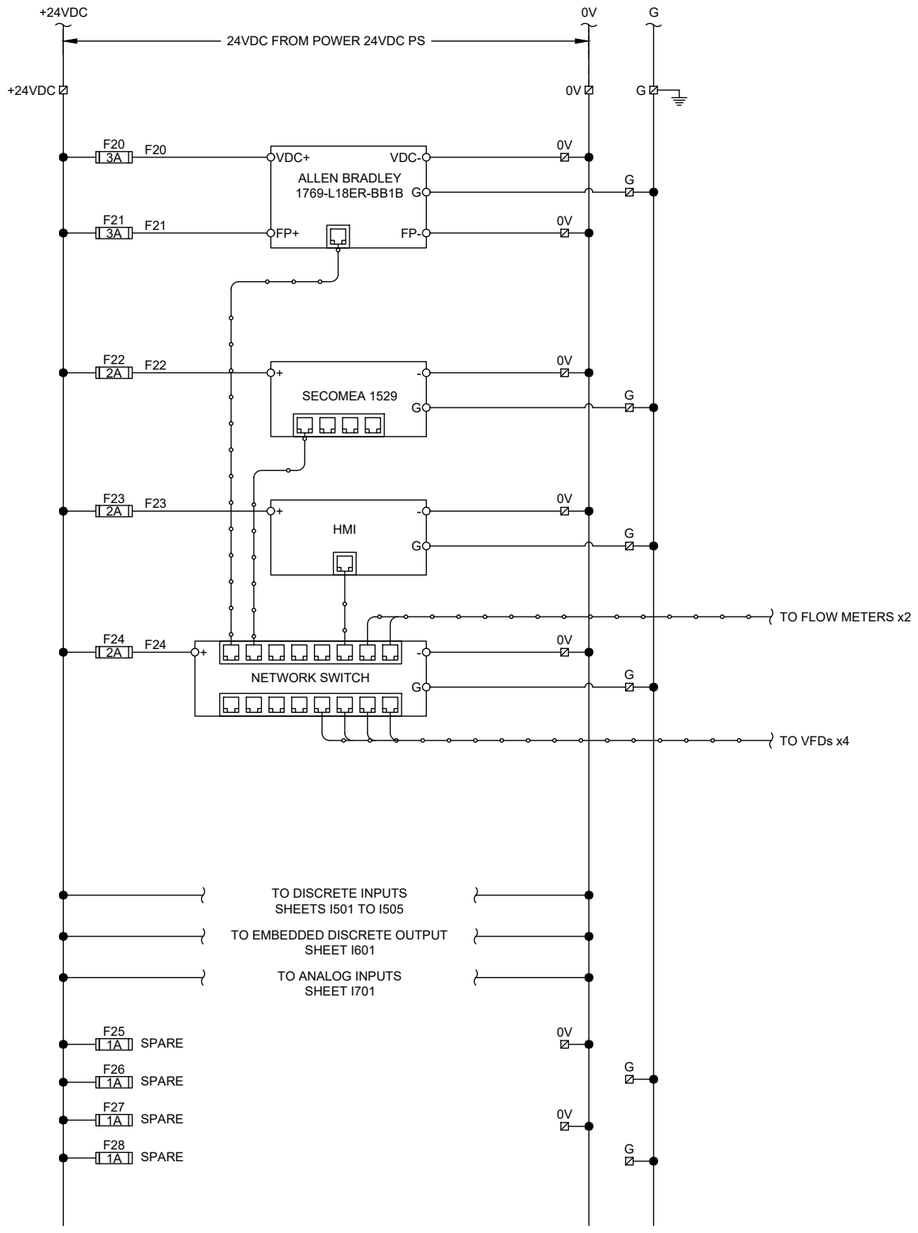
TYPICAL TB-AC TERMINAL BLOCK LAYOUT

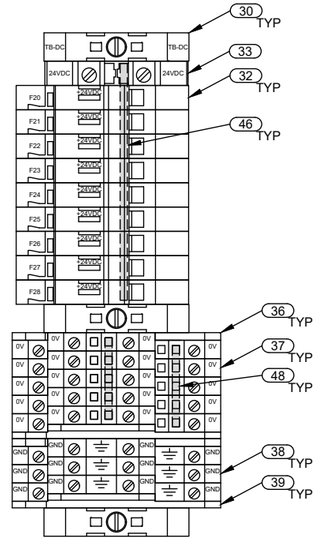
301 TYP

PANEL AC POWER WIRING DIAGRAM

HANSEN ALLEN & LUCE ENGINEERS	PROJECT ENGINEER	DESIGNED LAR	2				SCALE	VINEYARD CITY
		DRAFTED MGJ	1					LIFT STATION #2 UPGRADE INSTRUMENTATION – PLC DRAWINGS PANEL AC POWER WIRING DIAGRAM
		CHECKED LAR	0					SHEET 3 I301 319.13.100
		DATE OCTOBER 2025	NO.	DATE	REVISIONS	BY APVD		

TB-DC WIRING DIAGRAM





TYPICAL TB-DC TERMINAL BLOCK LAYOUT

102 TYP

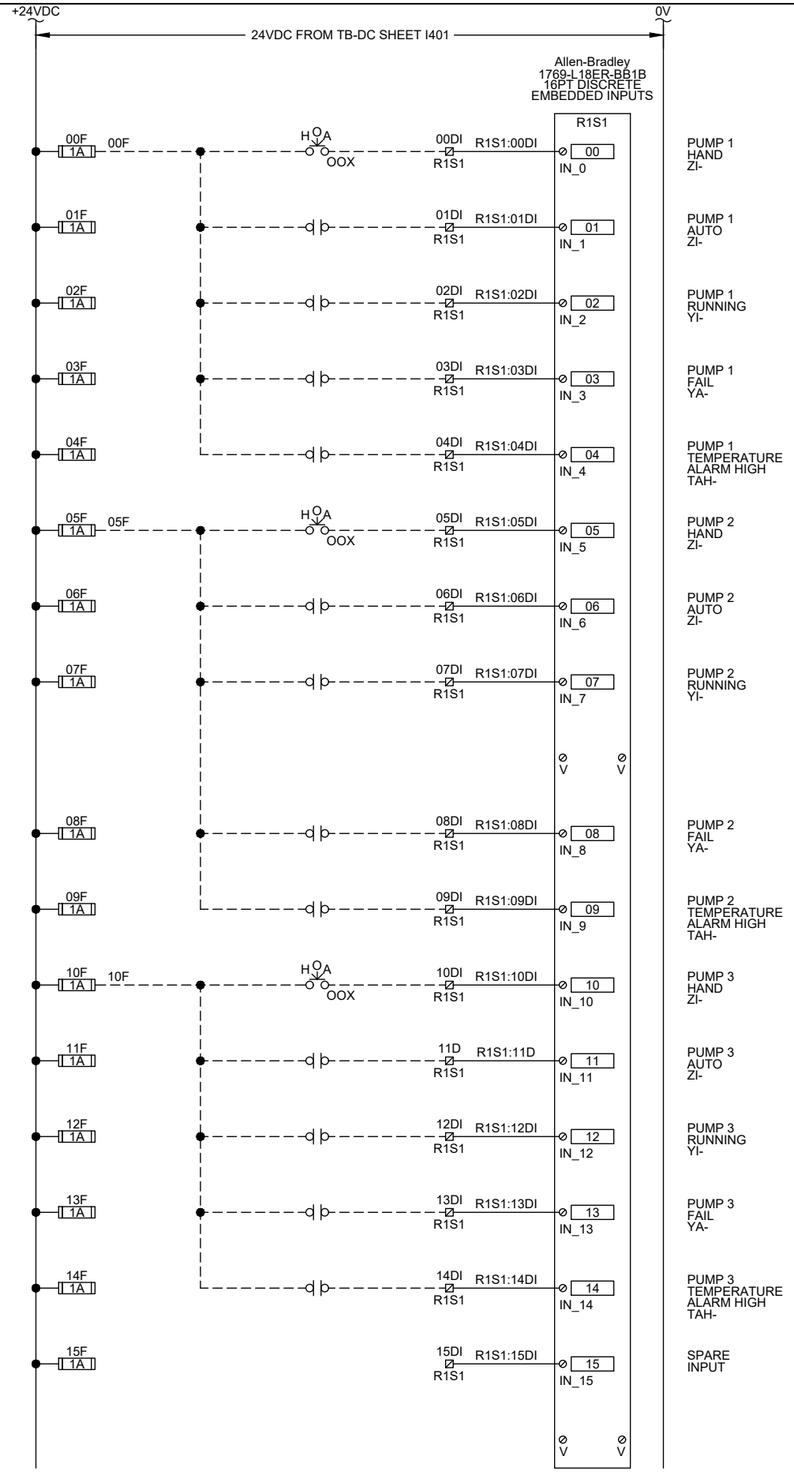
PANEL DC POWER WIRING DIAGRAM

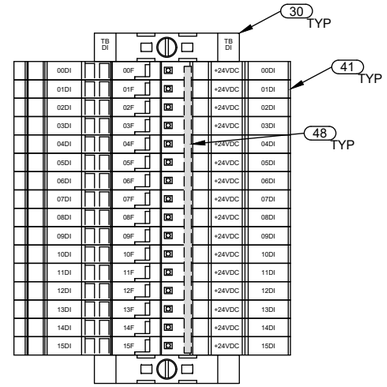
HANSEN ALLEN & LUCE ENGINEERS	PROJECT ENGINEER	DESIGNED LAR	2					SCALE
		DRAFTED MGJ	1					
		CHECKED LAR	0					
		DATE OCTOBER 2025	NO.	DATE	REVISIONS	BY	APVD	

VINEYARD CITY

LIFT STATION #2 UPGRADE
INSTRUMENTATION – PLC DRAWINGS
PANEL DC POWER WIRING DIAGRAM

SHEET 4
I401
319.13.100



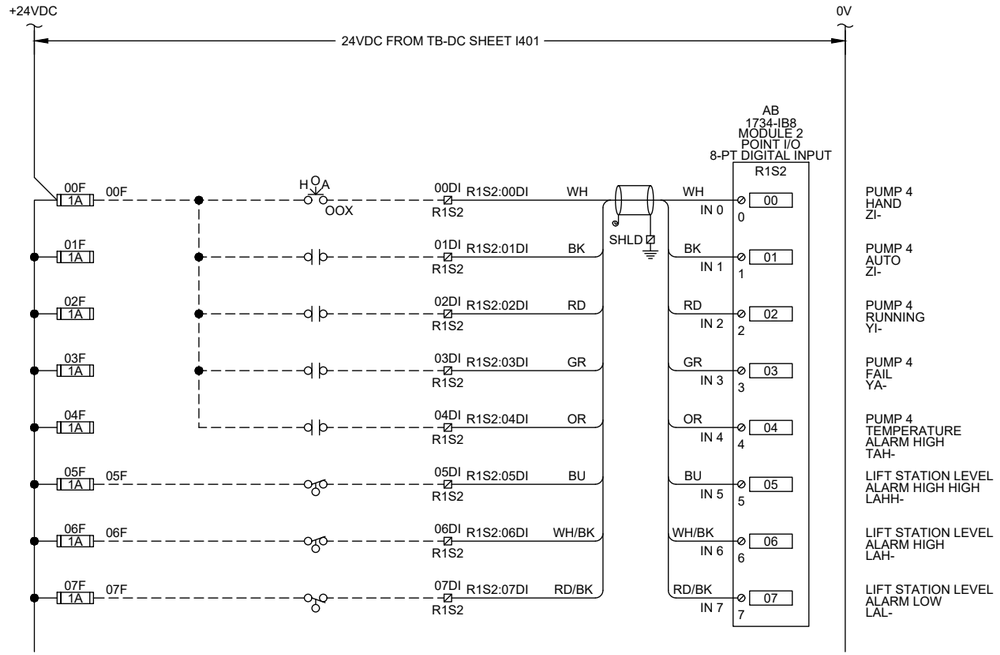


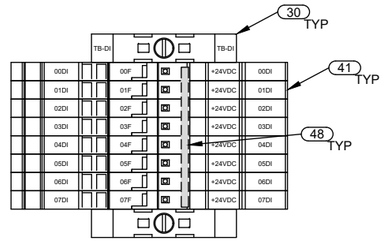
TYPICAL TB-DI TERMINAL BLOCK LAYOUT

501 TYP

DISCRETE INPUTS WIRING DIAGRAM 1

HANSEN ALLEN & LUCE, Inc. ENGINEERS	PROJECT ENGINEER	DESIGNED LAR	2				SCALE	VINEYARD CITY
		DRAFTED MGJ	1					LIFT STATION #2 UPGRADE INSTRUMENTATION – PLC DRAWINGS DISCRETE INPUTS WIRING DIAGRAM 1
		CHECKED LAR	0					SHEET 5 I501 319.13.100
		DATE OCTOBER 2025	NO.	DATE	REVISIONS	BY APVD		



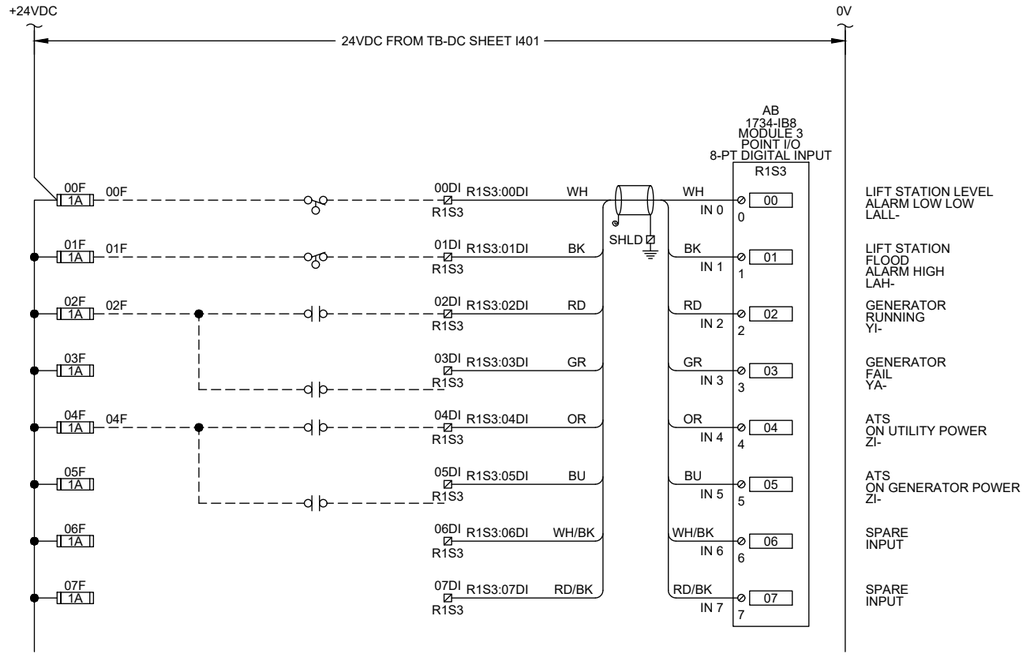


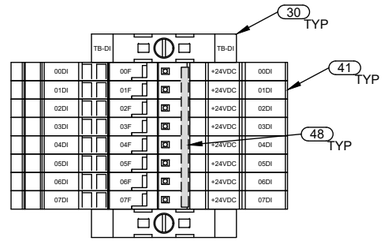
TYPICAL TB-DI TERMINAL BLOCK LAYOUT

502 TYP

DISCRETE INPUTS WIRING DIAGRAM 2

HANSEN ALLEN & LUCE ENGINEERS	PROJECT ENGINEER	DESIGNED LAR	2					SCALE	VINEYARD CITY	LIFT STATION #2 UPGRADE INSTRUMENTATION – PLC DRAWINGS DISCRETE INPUTS WIRING DIAGRAM 2	SHEET 6 I502 319.13.100
		DRAFTED MGJ	1								
		CHECKED LAR	0								
		DATE OCTOBER 2025	NO.	DATE	REVISIONS	BY	APVD				



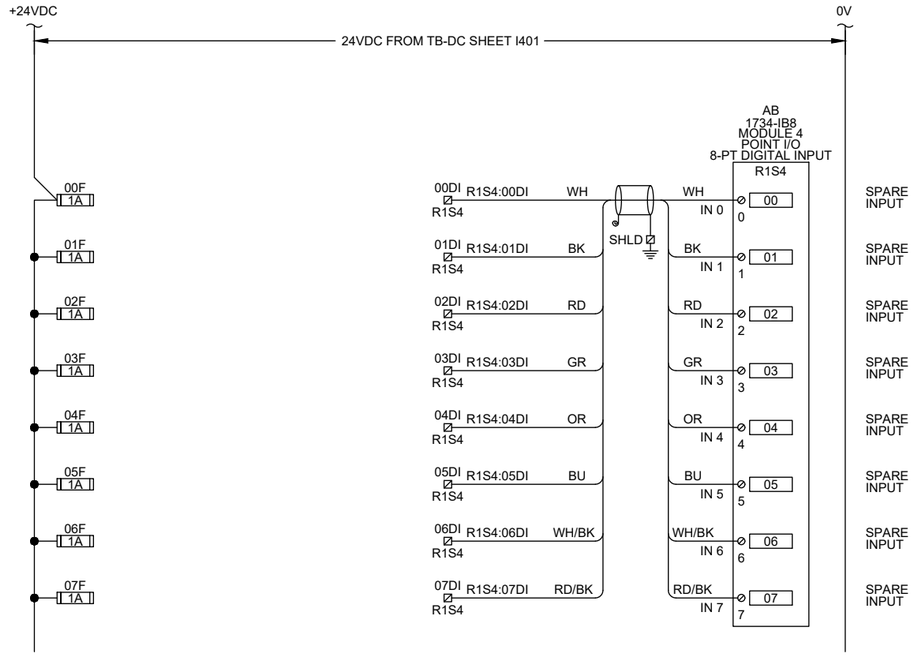


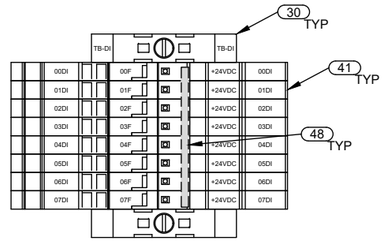
TYPICAL TB-DI TERMINAL BLOCK LAYOUT

502 TYP

DISCRETE INPUTS WIRING DIAGRAM 3

HANSEN ALLEN & LUCE ENGINEERS	PROJECT ENGINEER	DESIGNED LAR	2					SCALE	VINEYARD CITY
		DRAFTED MGJ	1						LIFT STATION #2 UPGRADE INSTRUMENTATION – PLC DRAWINGS DISCRETE INPUTS WIRING DIAGRAM 3
		CHECKED LAR	0						SHEET 7 I503 319.13.100
		DATE OCTOBER 2025	NO.	DATE	REVISIONS	BY	APVD		



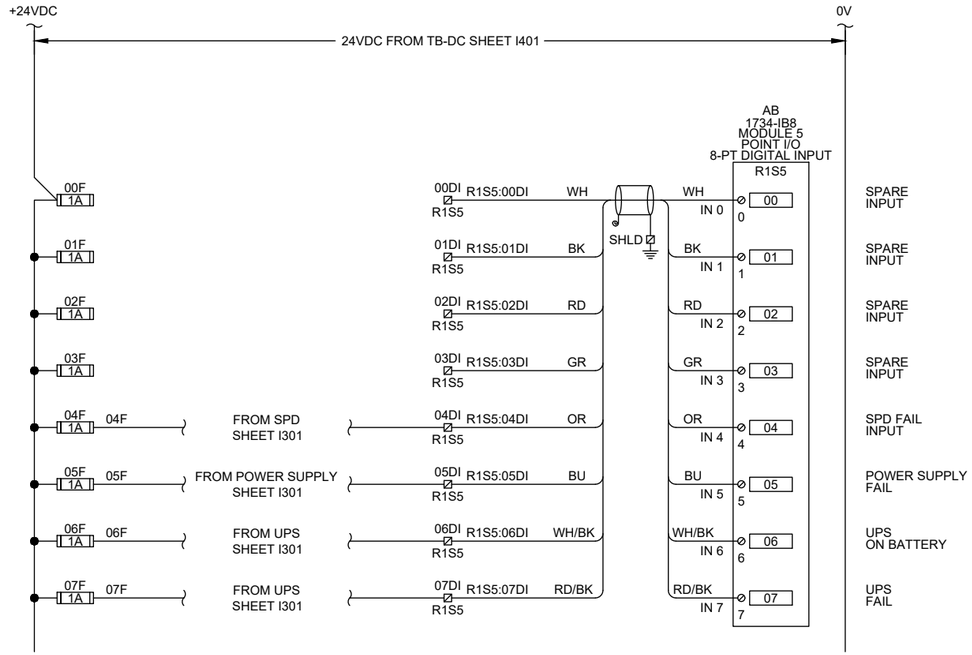


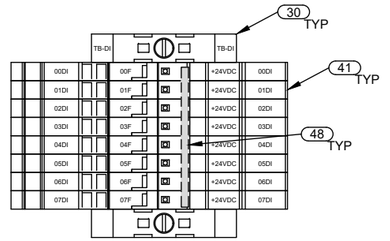
TYPICAL TB-DI TERMINAL BLOCK LAYOUT

502 TYP

DISCRETE INPUTS WIRING DIAGRAM 4

HANSEN ALLEN & LUCE ENGINEERS	PROJECT ENGINEER	DESIGNED LAR	2					SCALE	VINEYARD CITY
		DRAFTED MGJ	1						LIFT STATION #2 UPGRADE INSTRUMENTATION – PLC DRAWINGS DISCRETE INPUTS WIRING DIAGRAM 4
		CHECKED LAR	0						SHEET 8 I504 319.13.100
		DATE OCTOBER 2025	NO.	DATE	REVISIONS	BY	APVD		



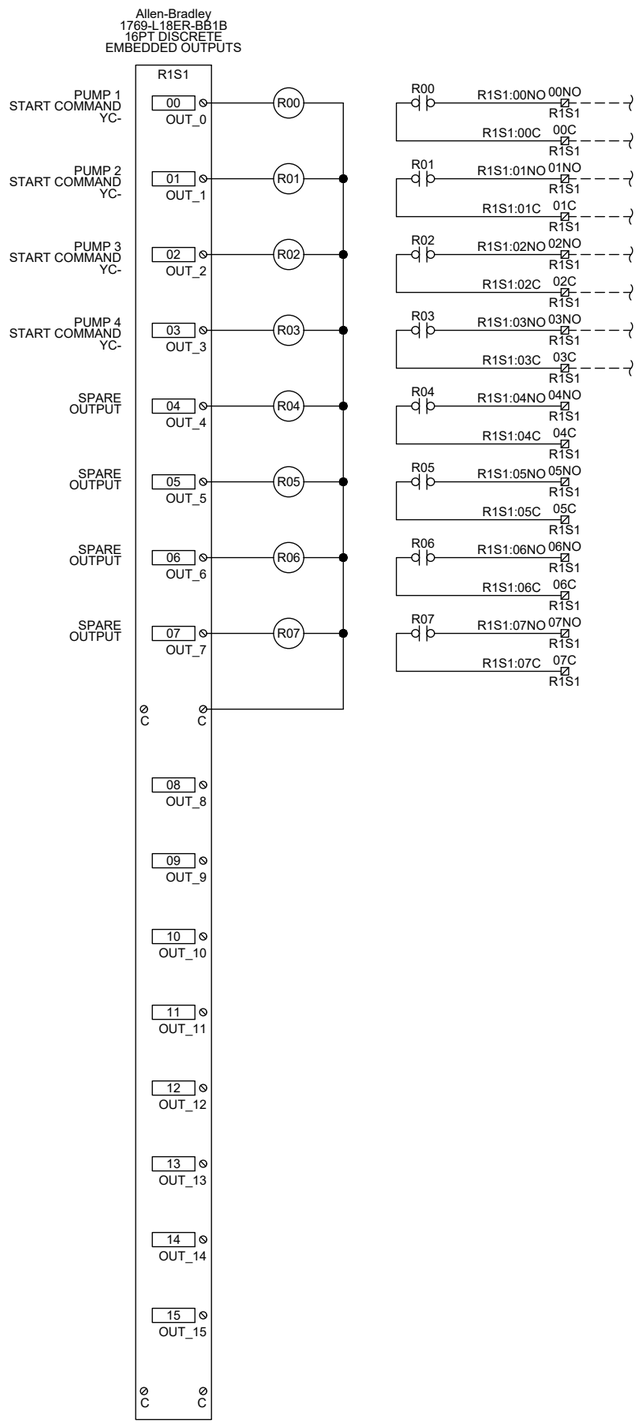


TYPICAL TB-DI TERMINAL BLOCK LAYOUT

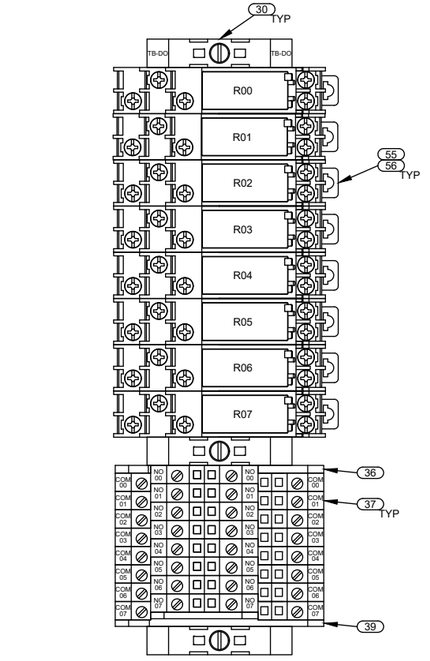
502 TYP

DISCRETE INPUTS WIRING DIAGRAM 5

HANSEN ALLEN & LUCE ENGINEERS	PROJECT ENGINEER	DESIGNED LAR	2					SCALE	VINEYARD STAY CONNECTED VINEYARD CITY	LIFT STATION #2 UPGRADE INSTRUMENTATION – PLC DRAWINGS DISCRETE INPUTS WIRING DIAGRAM 5	SHEET 9 I505
		DRAFTED MGJ	1								
		CHECKED LAR	0								319.13.100
		DATE OCTOBER 2025	NO.	DATE	REVISIONS	BY	APVD				



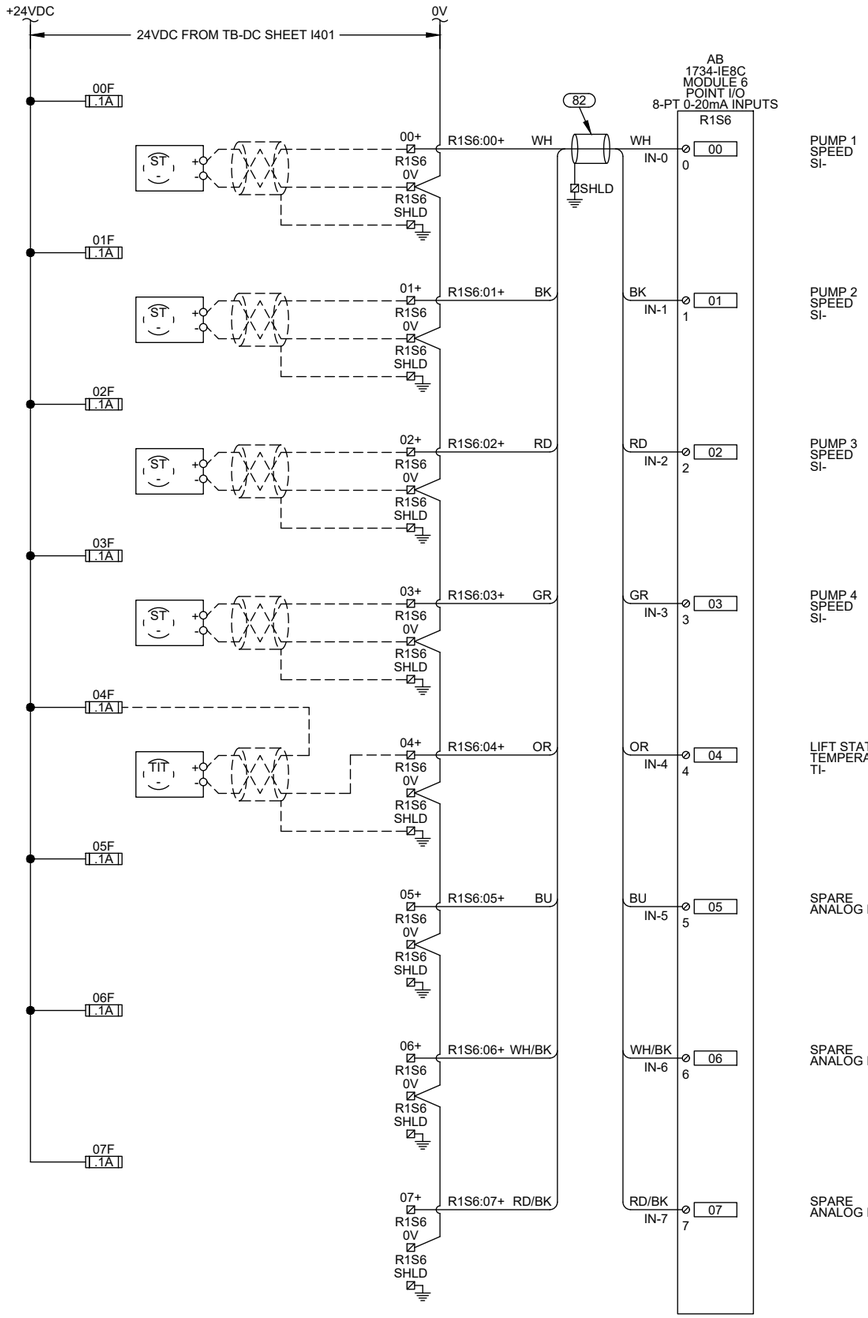
DISCRETE OUTPUTS WIRING DIAGRAM



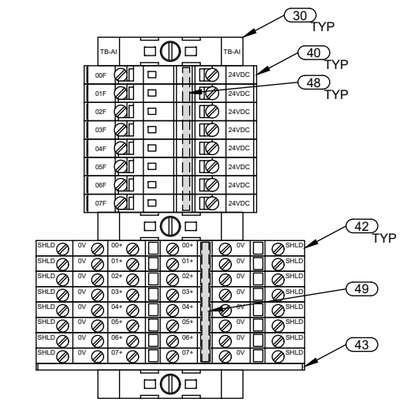
TYPICAL 8 PT TB-DO TERMINAL BLOCK LAYOUT

601 TYP

HANSEN ALLEN & LUCE, Inc. ENGINEERS	PROJECT ENGINEER	DESIGNED LAR	2				SCALE	VINEYARD CITY
		DRAFTED MGJ	1					LIFT STATION #2 UPGRADE INSTRUMENTATION – PLC DRAWINGS DISCRETE OUTPUTS WIRING DIAGRAM
		CHECKED LAR	0					SHEET 10 I601 319.13.100
		DATE OCTOBER 2025	NO.	DATE	REVISIONS	BY APVD		



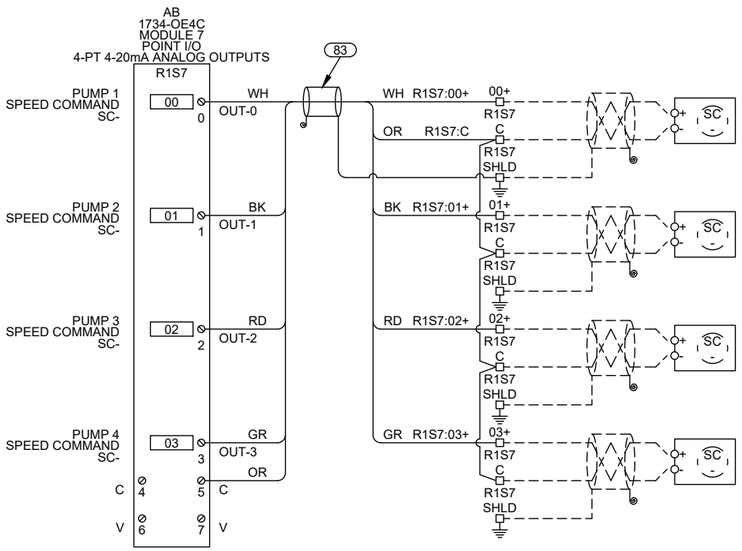
ANALOG INPUTS WIRING DIAGRAM

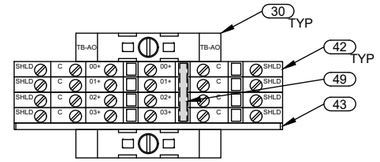


TYPICAL 8PT TB-AI TERMINAL BLOCK LAYOUT

701 TYP

HANSEN ALLEN & LUCE ENGINEERS	PROJECT ENGINEER	DESIGNED LAR	2					SCALE	VINEYARD CITY
		DRAFTED MGJ	1						LIFT STATION #2 UPGRADE INSTRUMENTATION – PLC DRAWINGS ANALOG INPUTS WIRING DIAGRAM
		CHECKED LAR	0						SHEET 11 I701 319.13.100
		DATE OCTOBER 2025	NO.	DATE	REVISIONS	BY	APVD		





TYPICAL 4PT TB-AO TERMINAL BLOCK LAYOUT

801 TYP

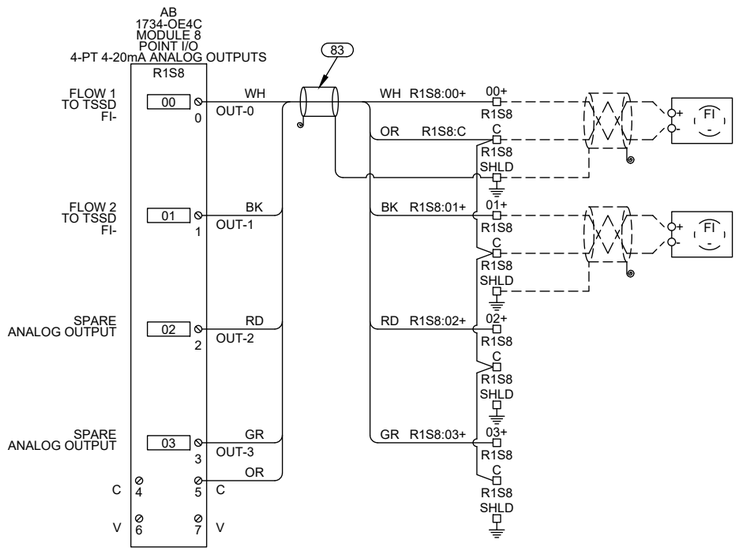
ANALOG OUTPUTS WIRING DIAGRAM 1

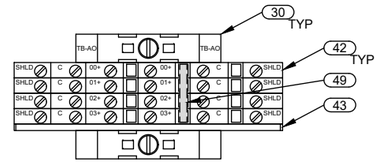
HANSEN ALLEN & LUCE ENGINEERS	PROJECT ENGINEER	DESIGNED LAR	2					SCALE
		DRAFTED MGJ	1					
		CHECKED LAR	0					
		DATE OCTOBER 2025	NO.	DATE	REVISIONS	BY	APVD	

VINEYARD CITY

LIFT STATION #2 UPGRADE
INSTRUMENTATION – PLC DRAWINGS
ANALOG OUTPUTS WIRING DIAGRAM 1

SHEET 12
I801
319.13.100





TYPICAL 4PT TB-AO TERMINAL BLOCK LAYOUT

801 TYP

ANALOG OUTPUTS WIRING DIAGRAM 2

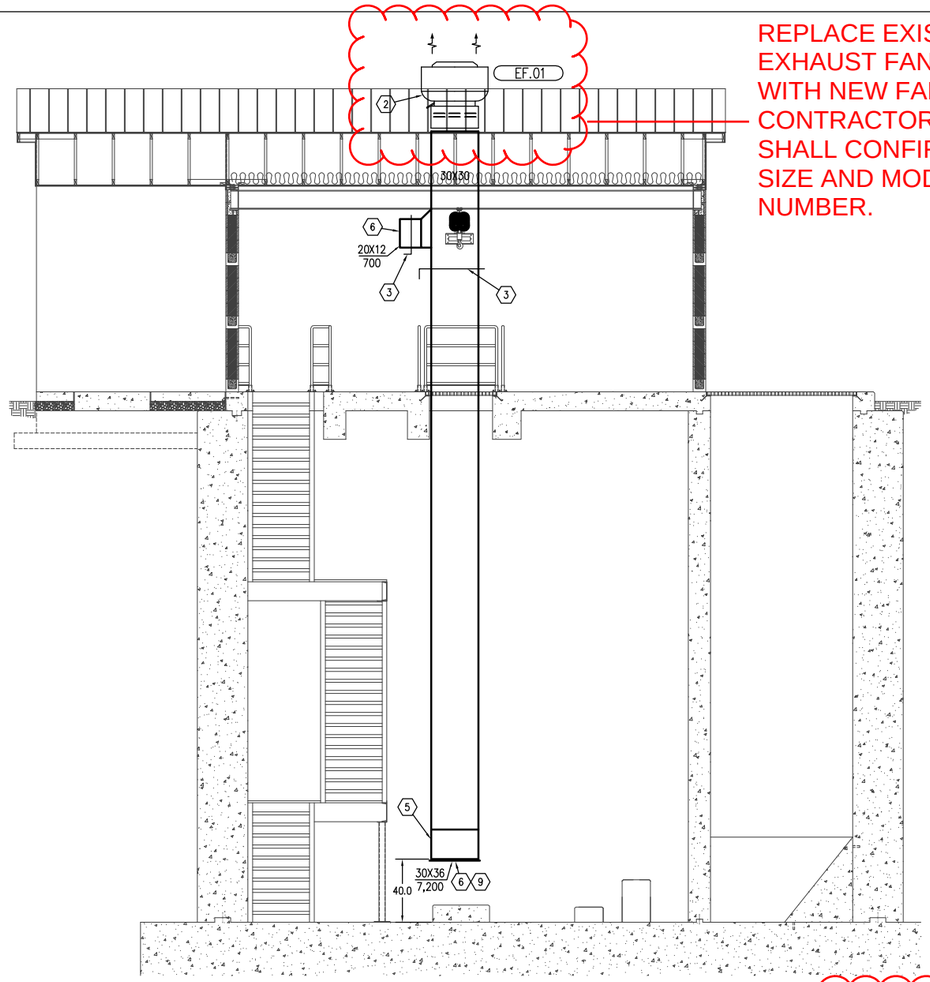
HANSEN ALLEN & LUCE ENGINEERS	PROJECT ENGINEER	DESIGNED LAR	2					SCALE
		DRAFTED MGJ	1					
		CHECKED LAR	0					
		DATE OCTOBER 2025	NO.	DATE	REVISIONS	BY	APVD	

VINEYARD CITY

LIFT STATION #2 UPGRADE
INSTRUMENTATION – PLC DRAWINGS
ANALOG OUTPUTS WIRING DIAGRAM 2

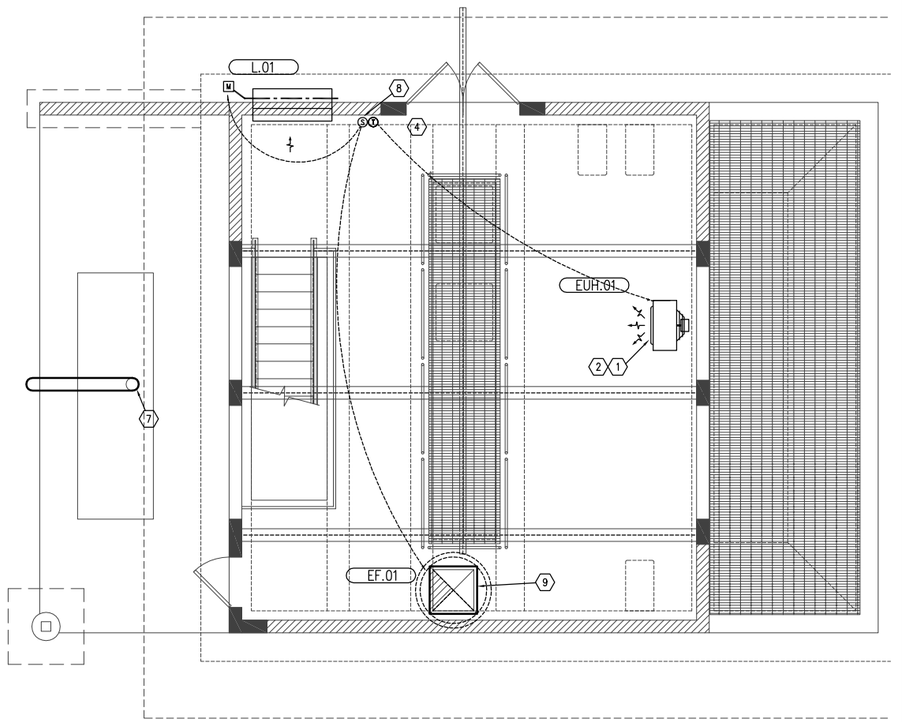
SHEET 13
I802
319.13.100

ATTACHMENT A



REPLACE EXISTING EXHAUST FAN WITH NEW FAN. CONTRACTOR SHALL CONFIRM SIZE AND MODEL NUMBER.

2 H101 MECHANICAL SECTION PLAN
SCALE: 1/4"=1'-0"



1 H101 PUMP ROOM HVAC PLAN
SCALE: 1/4"=1'-0"

UNIT HEATER MOUNTED WITH FACTORY BRACKETS SEE MANUFACTURER SPECIFICATIONS

UNIT HEATER DETAIL
SCALE: NONE
3 H101

FAN SCHEDULE

ID	MANUFACTURER AND MODEL NUMBER	LOCATION	TYPE	AIR TYPE	AIR: AIRFLOW RATE (CFM)	AIR: TOTAL STATIC PRESSURE (IN. WATER)	ELECTRICAL: MOTOR SIZE (HP)	ELECTRICAL: VOLT/ PH/ HZ	PHYSICAL: LENGTH/ WIDTH/ HEIGHT - WEIGHT (IN)	NOTES
EF.01	S&P TXB 24	ROOF	UPBLAST	EXHAUST	7,900	0.5	3	480 / 3 / 60	48 / 48 / 42 - 245 LBS	1,2,3

1. FAN OPERATION TO BE TIED TO WALL SWITCH.

ELECTRICAL UNIT HEATER SCHEDULE

ID	MANUFACTURER AND MODEL NUMBER	LOCATION	TYPE	USE TYPE	AIR: AIRFLOW RATE (CFM)	AIR: LOAD (BTU/ H)	ELECTRICAL: KW	ELECTRICAL: AMP	ELECTRICAL: VOLT/ PH/ HZ	PHYSICAL: DEPTH/ HEIGHT/ WIDTH [IN] - WEIGHT [LB]	NOTES
EUH.01	QMARK MUH10-4	PUMP HOUSE	ELEC.	HTG	700	34,000	10	12	480 / 3 / 60	7 / 21/ 19 - 40	-.-

LOUVER SCHEDULE

ID	MANUFACTURER AND MODEL NUMBER	LOCATION	TYPE	AIR TYPE	AIR: MAXIMUM AIRFLOW RATE (CFM)	AIR: STATIC PRESSURE (IN. WATER)	PHYSICAL: WIDTH/ HEIGHT/ THICKNESS (IN)	NOTES
L.01	NCA - CA-XAD-6	PUMP HOUSE WALL	COMBINATION	INTAKE	7,900	0.15	54 / 48 / 6	1,2,3,4

1. LOUVER SIZED FOR FULL ECONOMIZATION.
2. LOUVER COLOR TO BE COORDINATED WITH ARCHITECT.
3. PROVIDE WITH BELIMO NF24(-S)US AIR DAMPER CONTROLLER.
4. TIE DAMPER OPERATION TO EXHAUST FAN CONTROL.

RECORD DRAWING
– CLOSEOUT DOCUMENT –
DATE25-September-2013

This document has been prepared based on information provided by others. The Engineer of Record has not verified the accuracy and/or completeness of this information and is not responsible or liable for any errors of omissions which may be incorporated herein as a result.

KEYED NOTES

1. SIESMICALLY BRACE AS PER SMACNA REQUIREMENTS. TYPICAL.
2. COORDINATE WITH ELECTRICAL. TYPICAL.
3. MANUAL BALANCING DAMPERS.
4. INSTALL 7-DAY HONEYWELL PROGRAMMABLE CONTROLLER TO OPERATE THE ELECTRIC UNIT HEATER DURING A CALL FOR HEATING.
5. TRANSITION TO INTAKE GRILLE SIZE SHOWN.
6. EXHAUST GRILLE TO BE METAL-AIRE CC5F EGGCRATE. INSTALL DIRECTLY ON DUCT WITH FLANGE.
7. SIDE VENT GENERATOR WITH WELDED 16 GAGE STEEL FLUE. 12" DIAMETER. COORDINATE DIAMETER WITH GENERATOR SPECIFICATIONS.
8. FAN AND LOUVER OPERATION TO BE TIED TO WELL LIGHT SWITCH.
9. 7,200 CFM TO BE 30 AC/HR INTERMITTANT.

GUNTHERS ENGINEERING
81 SOUTH 700 EAST
AMERICAN FORK, UT
TEL: (801) 756-5980

LICENSED PROFESSIONAL ENGINEER No. 280219 E. TAYLOR GROBERG STATE OF UTAH

This document is incomplete without the express coordination with Gunthers Engineering

MECHANICAL GENERAL NOTES

1. COORDINATE WITH ARCHITECTURAL AND ALL OTHER TRADES PRIOR TO INSTALLATION.
2. INSTALL ALL EQUIPMENT WITH PROPER CLEARANCE.
3. ALL INSTALLATION TO BE AS PER IMC 2009, IPC 2009, AND LOCAL CODES.
4. FULL COORDINATION DRAWING SUBMITTALS ARE REQUIRED. SUBMIT DRAWING WITH DIMENSION INSTALLATION DETAILS COORESPONDING TO ALL OTHER TRADES.

MECHANICAL LEGEND

MEANING	SYMBOL OR ABBR.	MEANING	SYMBOL OR ABBR.
SA DIFFUSER		DUCT RISE	
RA GRILLE		DUCT DROP	
EXHAUST VENT		ROUND DUCT RISE	
ACCESS PANEL		ROUND DUCT DROP	
FIRE DAMPER	F	EQUIPMENT TAG	RTU.01.01
FIRE SMOKE DAMPER	FS	THERMOSTAT	T
SMOKE DAMPER	S	SENSOR	S
MANUAL DAMPER		DEMOLITION	
MOTORIZED DAMPER	M	CONNECTION TO EXISTING	
GRAVITY BACKDRAFT	G	1" SCALE VERIFICATION	ONE INCH AT FULL SIZE, IF NOT ONE INCH, SCALE ACCORDINGLY

J-U-B ENGINEERS, INC.
466 North 900 West
Kaysville, Utah 84037
Phone: 801.547.0393
Fax: 801.547.0397
www.jub.com

BID SET

REUSE OF DRAWINGS
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NO.	DESCRIPTION	BY	APR.	DATE
	REVISION			

REDEVELOPMENT AGENCY OF THE TOWN OF VINEYARD
VINEYARD RDA PROJECT LIFT STATOPM #2

MECHANICAL
HVAC PLANS, SCHEDULES AND DETAIL

FILE: 12.069h H101 as built
JUB PROJ. #:
DRAWN BY:
DESIGN BY:
CHECKED BY:
LAST UPDATED: 11/07/2012
SHEET NUMBER: H-101

VINEYARD
STAY CONNECTED

VINEYARD CITY COUNCIL STAFF REPORT

Meeting Date: December 10, 2025
Agenda Item: Update to Vineyard City Development Standards and Design Specifications (Ordinance 2025-15)
Department: Public works
Presenter: Patrick James

Background/Discussion:
Vineyard City adopted its current Development Standards and Design Specifications in 2017. These standards serve as the technical foundation for public infrastructure construction, subdivision improvements, and private development projects. They ensure consistency, durability, and compliance with federal, state, and local regulations while protecting the City's long-term investment in infrastructure.

Since 2017, there have been significant changes in industry practices, federal and state requirements, and agency coordination standards. In particular, the Utah Chapter of the American Public Works Association (APWA) recently completed a comprehensive update of its standards and specifications, providing a modernized framework for local governments to adopt.

Vineyard City has undertaken a review and update of its Development Standards and Design Specifications with the following objectives:

- **Alignment with Utah APWA Standards:** The updated document incorporates the Utah APWA's revamped standards, ensuring regional consistency and compatibility with contractors and engineers across Utah.
- **Integration of New Regulations:** Federal and state requirements related to stormwater management, ADA accessibility, utility construction, and roadway design have been incorporated.
- **City-Specific Needs**: Vineyard has incorporated modifications that reflect the unique conditions within the City, including soils, groundwater, traffic growth, and design expectations for multimodal transportation and sustainability.
- **Clarity for Contractors and Developers:** The updated standards provide clear guidance for contractors, developers, and design professionals, ensuring uniformity and reducing ambiguity during design and construction.

The attached document provides the updated Vineyard City Development Standards and Design Specifications for use by contractors and developers. Adoption of these standards will support consistent infrastructure development, improve construction quality, and streamline the review and approval process.

Future changes to the City Development Standards and Design Specifications will be reviewed and approved by the Development Review Committee (DRC) to allow for changes that are to align with Federal, State, and other statutory requirements, and additionally to update the documents for errors and omissions. The DRC Chair will determine when a proposed change is

substantial and requires review and approval by the City Council.

At the November 12 City Council, Staff was asked to review language regarding infrastructure construction over landfills to protect the city's interests in the event of construction defects. After reviewing Utah state laws, the staff revised it to the following:
"Any work on a landfill as defined by Utah Administrative Code R315-260-10(84) and 40 C.F.R. 260.10 will require review and approval by the Utah Department of Environmental Quality."

Also, the language below was added to the bond section to protect the city's right to seek correction of engineering or construction defects under Utah's Statutes of Limitations and Statutes of Repose.
"Bonds for such improvements shall follow the City's standard bonding requirements. Nothing in this section alters or limits the City's right to seek correction of engineering or construction defects within the timeframes provided under the applicable Utah Statutes of Limitations and Statutes of Repose."

These revisions meet the intent expressed by the City Council on November 12, ensuring environmental oversight by the Utah Department of Environmental Quality and protecting the City's long-term interests without creating redundant processes and unpredictable requirements.

Fiscal Impact:
None, Implementation will improve efficiency in project design and inspection, resulting in long-term cost savings to the City.

Recommendation:
Staff recommends that the City Council adopt the updated Vineyard City Development Standards and Design Specifications by ordinance.

Sample Motion:
"I move to adopt by ordinance 2025-14, the updated Vineyard City Development Standards and Design Specifications as presented."

Attachments:
1. Ordinance - Construction & Design Standards Update - Vineyard - 2025
2. Final Specifications - Construction and Design Standard Update - Vineyard 2025
3. Final - Construction Standard Drawings - Vineyard 2025

VINEYARD

ORDINANCE 2025-15

AN ORDINANCE OF THE VINEYARD CITY COUNCIL AMENDING THE CONSTRUCTION AND DESIGN STANDARDS

WHEREAS, the Vineyard City Council last adopted the Vineyard City Design Standards and Specifications in February 2007; and

WHEREAS, the Standards have and will continue to be updated periodically as new technology, policy changes, procedure changes, updated methods of design and construction are implemented, or infrastructure materials change; and

WHEREAS, the Development Review Committee (DRC) shall review such periodical updates to determine if such updates are considered minor modifications, in which those updates are to align with federal, state, and other statutory standards, or to make corrections for errors or omissions. The DRC shall approve those modifications and corrections, or determine if the proposed updates should be submitted to City Council for approval; and

WHEREAS, in coordination with the City Public Works Director, Engineer, Staff, and Hansen, Allen, and Luce Engineering prepared and recommends revisions to the Construction and Design Standards; and

WHEREAS, the City Council held a public hearing on November 12, 2025, regarding updates to the Standards; and

WHEREAS, the City Council finds good cause for adopting the Standards as revised;

NOW THEREFORE, be it ordained by the Council of the Vineyard, in the State of Utah, as attached.

PASSED AND ADOPTED BY THE VINEYARD COUNCIL DECEMBER 10, 2025.

	AYE	NAY	ABSENT	ABSTAIN
Mayor Julie Fullmer	_____	_____	_____	_____
Sara Cameron	_____	_____	_____	_____
Jacob Holdaway	_____	_____	_____	_____
Mardi Sifuentes	_____	_____	_____	_____
Brett Clawson	_____	_____	_____	___

Presiding Officer

Attest

_____

Julie Fullmer, Mayor, Vineyard

_____

Tony Lara, Deputy City Recorder, Vineyard

Vineyard
Construction and Design Standards

1.04 General Provisions

1.04.010 Definitions

A. AASHTO. The American Association of State Highway and Transportation Officials.

B. APWA. The Utah Chapter, American Public Works Association Manual of Standard Specifications and Plans, latest edition.

C. AWWA. The American Water Works Association Standards, latest edition.

D. City. The City of Vineyard, Utah.

E. City Engineer. The City Engineer or delegated representative. This person shall be the ENGINEER and OWNER as defined by APWA.

F. County. Utah County, Utah.

G. Contractor. A person or company constructing Improvements having required state licenses to perform said work.

H. City Council. The governing body of the City.

I. DRC. The Vineyard City Development Review Committee.

J. Developer. Person, persons, partnership, or corporation developing or making Improvements to a property.

K. Development. A land Improvement that requires a Site Plan or Subdivision.

L. Final Plat. An original recordable plat drawn in a form approved by the City and County, showing all lots, rights-of-way, utility easements, and other items required for recordation.

M. Floodplain. That area designated on the most recent Flood Insurance Rate Map for the City of City, prepared by the Federal Emergency Management Agency, as a flood plain as amended.

N. General Plan. The general plan document as approved by the City Council.

O. Improved Lot. A lot which has all the improvements required in the Subdivision ordinance.

P. Improvements. Improvements include all City infrastructure including but not limited to streets, curb, gutters, sidewalks, grading, landscaping, water, sanitary sewer, irrigation, drainage, power, communication, fencing, and public facilities.

Q. Landowner. An owner of property.

R. Lot. A parcel or tract of land within a subdivision which is or may be occupied by a building or structure and the accessory buildings, structures or uses customarily incident thereto, including such open spaces as are arranged and designed to be used in connection with a building according to the zone within which the lot is located.

S. Minor Land Disturbance Permit. A permit required for construction work under 1 acre in size that does not require a SWPPP permit and is completed in less than 12 months.

T. MUTCD. The Manual on Uniform Traffic Control Devices.

U. Offsite Facilities. Facilities outside of the boundaries of the Subdivision or Development site which are designated and located to serve the needs of the subdivision or development or adjacent property, usually lying between a development and existing facilities.

V. Onsite Facilities. Facilities installed within or on the perimeter of a Subdivision or Development site.

W. OSHA. The Occupational Safety and Health Administration is the main federal agency charged with the enforcement of safety and health legislation.

X. Parcel of Land. A contiguous area of land in the possession or ownership of one entity with one tax identification number.

Y. Planning Commission. The City Planning Commission.

Z. Preliminary Plat. A map or plat of a proposed subdivision or development approved by the City with accompanying supplementary documents.

AA. Prime Subcontractor. Sub-contractor doing the majority of a specific work within the engineering permit.

BB. Public Works Director. The City Public Works Director or delegated representative.

CC. Public Utility Easements (PUE). A Public Utility Easement acquired by the city for city utilities. Easement shall read, “All Public Utility

Easements platted hereon are in perpetuity for installation, maintenance, repair, and replacement of municipal utilities, public walls, fences, sidewalks, trails, and appurtenant parts thereof, and the right to reasonable access. Easement shall run with the real property and shall be binding upon the grantor and the grantor's successors, heirs, and assigns."

DD. Right-of-Way. A public strip of land that is granted, through an easement, deed, plat, or other mechanism, for transportation purposes, including but not limited to street, walkway, trail, or railway.

EE. Site Plan. A plan for a commercial, industrial, institutional, governmental, or planned residential development in the City.

FF. Storm Water Discharge. A Utah Pollutant Discharge Elimination System (UPDES) Storm Water permit may be required before any ground disturbance or construction activities. The purpose of the permit is to prevent storm water runoff from washing pollutants into local surface waters such as streams, rivers, or lakes.

GG. Streets. A thoroughfare which has been dedicated and accepted by the City Council, which the City has acquired by prescriptive right or which the City owns, or is offered for dedication on an approved recorded final plat. For further explanation see the streets section.

HH. Subdivision. Any parcel of land that is divided, re-subdivided or proposed to be divided into two or more lots, parcels, sites, units, plots, or other division of land for the purpose, whether immediate or future, for offer, sale, lease, or development either on the installment plan or upon any and all other plans, terms, and conditions. A subdivision includes (1) the division or development of land whether by deed, metes and bounds description, devise and testacia, lease, map, plat, or other recorded instrument; and (2) divisions of land for all land for all residential and nonresidential uses, including land used or to be used for commercial, agricultural, and industrial purposes.

II. Utilities. Includes drinking water lines; irrigation lines; sanitary sewer; storm, land and groundwater drains; gas lines; electric power lines; cable television and telephone lines; underground conduits; and junction boxes and all appurtenances to the above.

1.04.020 Standards and Codes

A. GENERAL. The purpose of the Construction and Design Standards and Standard Drawings is to govern Development and any public infrastructure or utility work done or Improvements installed within current or proposed public right-of-way, public easement, or that will be under the responsibility of a homeowner's association.

Owners, Contractors, Developers, and Civil Engineers should thoroughly read and understand these specifications and standards before designing or

constructing public improvements. They shall contact the City Engineering Staff for all matters dealing with construction work within a City right-of-way or with any work connecting onto a City utility. SPECIAL PERMITS AND BONDING ARE REQUIRED FOR ALL SUCH WORK.

B. CITY CODE. Improvements shall comply with the City Title 15 Zoning Code and all other City ordinances and codes.

C. APWA. APWA standards shall apply to any standard not included in the City's Construction and Design Standards.

D. CODES AND STANDARDS. Where codes and standards are referred to, they refer to the most current version of the code or standard. It shall be the duty of a supplier of any material to submit evidence, if requested, that its material is in compliance with the applicable codes and standards.

The City Construction and Design Standard Specifications and Standard Drawings are the minimum requirements of the City. If any provisions herein conflict with general industrial standards, or with other requirements specified by the City, the more stringent of the standards as determined by the City Engineer will apply.

E. STATE AND LOCAL LAWS. The Contractor shall conform to all applicable state and local laws in carrying out its obligations under the Contract or Land Disturbance Permit. This shall include, but is not limited to, compliance by the Contractor with the requirements of Chapter 30, of Title 34, of the Utah Code Annotated, 1953 as Amended. If the provisions of Section 34-30-1, of the Utah Code Annotated, 1953 as amended, are not complied with, this Contract shall be void.

F. COMPLIANCE WITH GOVERNMENTAL REGULATIONS. The Contractor's personnel, equipment, and operations shall comply fully with all applicable standards, regulations, and requirements of existing Federal, Utah State, and Local governmental agencies. This shall include, but not necessarily be limited to, the following:

1. United States Occupational Safety and Health Administration (OSHA). Title 29 of the Code of Federal Regulations, Part 1926 (29 CFR Part 1926), Safety and Health Regulations for Construction.

2. Utah State Industrial Commission. The Utah Occupational Safety and Health Act (1973) and Employer-Employee Safe Practices for Excavations and Trenching Operations (Jan. 1, 1974), as published by the Utah State Industrial Commission, including any and all amendments or revisions effective prior to performance of the work.

3. Utah Department of Transportation (UDOT). When crossing or working within UDOT rights-of-way the Contractor shall be responsible to obtain all necessary permits and comply with all appropriate UDOT

regulations including applicable sections in "State of Utah Standard Specifications for Road and Bridge Construction," latest edition.

4. Permits. The Contractor is responsible to obtain all required permits and licenses to complete the work, including land disturbance permits, contractor licenses, business licenses, engineering permits and ~~building permits~~all other applicable permits to this project. Contractor shall be subject to the conditions of all permits and agreements between the Owner and the permitting agencies. See Division 14, Rights-of-Way.

1.04.030 Pre-Construction

A. GENERAL. It shall be unlawful to commence any Improvement or Development in the City without completing the following:

1. Application. Submit complete development application.
2. Application Fee. Pay application fees.
3. Construction Plans Approval. Receive City approval of plans according to Article 1.08.010 A (Plan approval).
4. Contractor Approval. Receive City approval of Contractor according to Section 1.12.010 (Contractor Approval).
5. Land Disturbance Permit. Obtain Land Disturbance Permit as required in Section 1.16.040 (Land Disturbance Permits). If a contract with the City to do such work for the City has been finalized, the contract fulfills the permit requirement.
6. Inspection Fee. Pay inspection fee according to Article 1.16.010 C (Inspection Fee).
7. Special Engineering Review Fee. If applicable, pay specialized engineering review fees according to Section 1.08.040 (Specialized Engineering).
8. Federal, State, and Local Permits. Obtain necessary Federal, State, and Local permits required for Improvements.
9. Bonds. Receive City approval of required bonds.

B. EASEMENTS. Developer shall provide Municipal Utility Easements (MUEs) and/or Public Utility Easements (PUEs) for all utility extensions through private property or property owned by public agencies other than the City and for 10 feet along public rights-of-way. Developments other than single family home developments shall provide 10-foot MUEs along all property lines. If setbacks are less than 10 feet, then MUEs shall be the extent of the setback. Single family lots shall have ~~10 foot~~10-foot public utility easements along

public rights-of-way or streets and not ~~necessarily~~necessarily along the other property lines unless a utility is planned there.

C. BONDS. All Development shall obtain payment and performance bonds for the total cost plus 10% of the Improvements in public Right-of-Way or Easements. Development bonds shall be in the form of an irrevocable letter of credit from a bank, a bond from a surety company, escrow, or ~~a cash~~ other bond approved by the City~~bond paid directly to the City~~. Bonds must be approved by the City before construction begins.

At minimum, ~~E~~each contractor doing work in the City is required to maintain a $2,000.00 contractor ~~bond~~ deposit with the City for public improvements. Improvements that do not require a Site Plan or Subdivision but do require a Minor Land Disturbance Permit shall only require a contractor ~~bond~~deposit.

Payment ~~and~~ of performance and contractor ~~bonds~~ deposits are to guarantee the following:

1. Construction is completed and meets City Construction and Design Standards.
2. Final inspection is conducted.
3. Final inspection punch list items are completed.

No ~~bond~~ deposit shall be released until all improvements are completed and accepted by the City. See Article 1.16.010 (Acceptance of Improvements) and Section 1.04.070 (Post Construction).

D. PRE-CONSTRUCTION CONFERENCE. A Pre-Construction Conference according to APWA 01 31 19 (Pre-Construction Conference) shall be held before any work on Improvements or a Development may commence. The following shall attend the conference:

1. City Engineer
2. Landowner, Landowner Representative, or Developer
3. Contractor
4. ~~Major~~ Prime Subcontractors.

Prime ~~Major~~ Subcontractors not attending the pre-construction meeting must schedule an additional Pre-Construction Conference with the City Engineer before beginning work. ~~The location of the meeting shall be at the City Public Works Office, 240 East Gammon Rd, Vineyard, Utah 84058~~.

The following items shall be furnished at the meeting:

1. Construction Sequence Outline. A detailed outline showing the sequences of construction of principle items of work. The outline shall

show the beginning and ending dates of the major items of work on the Project.

2. Contact List. A list of names, titles, addresses, and mobile telephone numbers of the Developer and Contractor responsible personnel, indicating those who may be reached outside normal working hours.

3. Subcontractor and Material Supplier's List. A list of subcontractors and material suppliers.

4. Other Items and Minutes. Other items may be discussed at this Pre-Construction Conference as determined by the City Engineer. Official minutes of this meeting as prepared by the City ~~Engineer~~ shall become part of the project file for the project.

5. Pre-Construction Inspection Video. The Contractor shall be responsible to take time-dated footage of surrounding property before construction and submit to the City Engineer's office. Any disputes on damage will be resolved with the video. If the Contractor fails to turn in this video, it will be subject to the City Engineer's judgement on the resolution of damage disputes. The City may retain the documentation up until the end of warranty period.

1.04.040 Land Disturbance Permits

A. CITY CONSTRUCTION AND DESIGN STANDARDS. See the following City Construction and Design Standards for additional specifications related to land disturbance permits:

1. Section 1.04.030 (Pre-Construction)
2. Article 1.04.040 C (Land Disturbance Permit Fee)
3. Section 1.04.060 (Traffic Control)
4. Article 1.08.010 B (Construction Plans Approval)
5. Section 1.12.010 (Contractor Approval)
6. Article 1.12.010 A (Contractor's License)
7. Section 1.12.020 (Insurance)
8. Article 1.16.010 C (Inspection Fee)

B. GENERAL. No person, firm, partnership, corporation, or entity of any kind shall open up, break, dig, excavate, construct, reconstruct, repair, alter a grade in or upon any public street, sidewalk, curb, curb cut, driveway, or gutter for any purpose or in any manner commence any construction in or upon any public

rights of way, street, or sidewalk without first procuring from the city engineer a Land Disturbance Permit for the specific construction or other work to be undertaken.

Any emergency activity that is immediately necessary for the protection of life, property, or natural resources including activities required to promote public safety, repairs to water lines, and/or other City infrastructure repairs is exempt from a Land Disturbance Permit with the approval of the City Engineer.

Use the Online Land Disturbance Permit Application to apply. Small Improvements may be constructed with a Minor Land Disturbance Permit as determined by the City Engineer.

C. LAND DISTURBANCE PERMIT FEE. Land Disturbance Permit fees must be paid before a Land Disturbance Permit is issued. Fee shall be established by the City Council by resolution. ~~Fees shall be assessed on the following items:~~

1. ~~Sewer and water lateral installation inspection.~~
2. ~~Re-inspection (When an inspection has been requested, the inspection is performed and the work is not complete, a re-inspection fee shall be assessed.)~~
3. ~~Barricades (provided by, or called out by the City)~~

D. TIME LIMITATIONS. Permits must be approved 48 hours prior to construction. The City may stipulate time limits for completion of work and suspend permits for non-compliance.

Minor Land Disturbance Permits shall expire and become null and void if substantial work authorized by such permit has not commenced within thirty (30) calendar days of issuance or is not complete within ninety (90) days from the date of issuance or the Pre-Construction Conference. Extensions may be given upon approval by the City Engineer.

Other land disturbance permits shall expire and become null and void if substantial work authorized by such permit has not commenced within six (6) months of issuance or is not complete within two (182) ~~years~~months from the date of issuance or the Pre-Construction Conference. Extensions may be given upon approval by the City Engineer. Two one-year extensions may be given prior to a new full permit, review is required.

E. LAND DISTURBANCE PERMIT REQUIREMENTS. Contractors are required to submit the following to obtain a Land Disturbance Permit:

1. License. Copy of contractor's license as required by Article 1.12.010 A (Contractor's License)
2. Certificate of Insurance (COI). COI approved by City. COI shall meet the requirements of Section 1.12.020 (Insurance).

3. Land Disturbance Permit Fee. Pay the Land Disturbance Permit Fee according to Article 1.04.040 C (Land Disturbance Permit Fee).

4. Inspection Fee. Pay inspection fee according to Article 1.16.010 C (Inspection Fee).

5. Bond. Bond approved by the City. Bond shall meet the requirements of Article 1.04.030 (Bonds).

6. Approved Construction Plans. Receive City approval of plans according to Article 1.08.010 B (Construction Plans Approval).

7. Traffic Control Plan. If applicable, a copy of the approved Traffic Control Plan according to Section 1.04.060 (Traffic Control).

8. Contractor Approval. Receive City approval of Contractor according to Section 1.12.010 (Contractor Approval).

9. Local/State/Federal Permits. An approved copy of any Federal, State, and Local permits required for the Improvements. The applicant shall obtain from any state or federal agency including any ~~other~~ appropriate environmental permits that pertain to the property. Copies of these approved permits shall be included with the Land Disturbance Permit. However, the inclusion of those permits in the application shall not preclude the City Engineer from imposing additional development requirements and conditions, commensurate with this Chapter, on the development of property covered by those permits. Failure of the applicant to obtain the necessary permits may be a basis for denial of issuance of a Land Disturbance Permit among other required permits. Such other required permits will be to obtain and maintain coverage during the duration of the project under the UPDES with a Notice of Intent (NOI) permit. Developers are also required to maintain a SWPPP during the duration of the project. A completed SWPPP is required to obtain an NOI permit from the State.

   Drainage Channels, Waterways, and Sensitive Areas. Property owners shall not fill, alter, or restrict natural channels, wetlands, waterways or any other Sensitive Lands without proper permits from all responsible governing agencies, including a Land Disturbance Permit from the City. Property owners proposing to redirect runoff, surface, and/or pipe flow to properties or facilities outside City boundaries must provide written approval from the applicable governing agency. Discharges or modifications to irrigation ditches or canals require written approval from the canal owners and applicable governing agencies. Property owners are responsible for the protection of channels located within their property in compliance with this ordinance.

1.04.050 Construction

A. APWA. Unless otherwise specified in the City Construction and Design Standards, construction work shall meet the requirements and specifications of the following APWA sections and related sections:

1. APWA 00 72 00 4.4 (Reference Points and Monuments)
2. APWA 01 25 00 (Product Options and Substitutions)
3. APWA 01 26 00 (Contractor Modification Procedure)
4. APWA 01 57 00 (Temporary Controls)
5. APWA 01 64 00 (Owner-furnished Products)
6. APWA 01 65 00 (Product Delivery and Handling)
7. APWA 01 66 00 (Product Storage and Protection)
8. APWA 31 05 10 (Boundary Markers and Survey Monuments)
9. APWA 31 25 00 (Erosion and Sedimentation Control)

B. CITY CONSTRUCTION AND DESIGN STANDARDS. All construction work shall conform to the related City Construction and Design Standards. More specifically, See the following City Construction and Design Standards for additional specifications related to this section:

1. Chapter 1.16 (Inspection and Testing)
2. Section 1.12.030 (Submittals)
3. Section 1.20.020 (Excavation)

C. SURVEY. The alignment of the side property lines for each lot in a subdivision shall be marked in the top back of curb with a lot line witness marker that meets the requirements and specifications of APWA 31 05 10 (Boundary Markers and Survey Monuments). Developer shall provide survey benchmarks and monuments as required by the City Engineer.

All property corners shall be marked with a rebar corner marker that meets the requirements and specifications of APWA 31 05 10 (Boundary Markers and Survey Monuments). Corners must be marked before acceptance of a subdivision's improvements by the City. The rebar must be offset 2 to 4 inches by a steel tee post four feet out of the ground on the property line alignment.

D. INSPECTION AND TESTING. All work shall be inspected and tested by the City according to Chapter 1.16 (Inspection and Testing).

E. VARIATIONS, SUBSTITUTIONS, EXCEPTIONS AND CHANGES. Any variation, substitution or exception from the standards in this policy must be authorized in writing by the City Engineer. Product options and substitutions must meet

the requirements of APWA 01 25 00 (Product Options and Substitutions) and APWA 01 26 00 (Contractor Modification Procedure). Any item of construction not covered in these standards must have plans and specifications approved by the City Engineer. Requests for changes to the Construction Standards shall be made in writing to the City Engineer. These requests will be reviewed during revision process conducted in conjunction with the APWA revisions.

F. TEMPORARY CONTROLS. Temporary controls such as noise, dust, mud, surface water, ground water, pollution and erosion controls shall meet the requirements and specifications of APWA 01 57 00 (Temporary Controls).

1. Dust and Debris. The Contractor shall control dust and debris originating with the construction. Dust and other debris shall be controlled on a daily basis by methods that shall include, but not be limited to, the use of a dust setting spray, a "pick-up broom or street sweeper and trash disposal. The Contractor shall maintain on the project site a water truck with a minimum two thousand (2,000) gallon capacity.

   The Contractor shall be responsible to secure a source of water and shall obtain the necessary permission or permit for its use. Failure by the Contractor to adequately control dust and debris may result in the City initiating dust and debris control measures and deducting the cost from Bond.

2. Groundwater. Pumping groundwater into the sanitary sewer system is prohibited.

3. Erosion and Sedimentation Control. Erosion and sedimentation shall be controlled according to APWA 31 25 00 (Erosion and Sedimentation Control).

4. Storm Water. Ground water and surface water must be kept on the construction site. If either ~~leave~~leaves the site by any manner, additional temporary controls must be implemented to protect the storm water drain system.

   A Storm Water Pollution Prevention Plan (SWPPP) and Notice of Intent (NOI) may also be required. See Vineyard Municipal Code: 7.08 Stormwater Management Requirements and specifically Section 7.08.060 Stormwater Design and BMP Manuals. SWPPP shall include a plan to control erosion and sedimentation according to APWA 31 25 00 (Erosion and Sedimentation Control).

G. PUBLIC SAFETY AND CONVENIENCE. The convenience of the general public and the protection of persons and property is of prime importance and shall be provided for by the Contractor during this project. The Contractor shall use every reasonable precaution to safeguard persons and property. Failure of a Landowner or City to notify the Contractor of any deficiencies in providing for

public safety and convenience shall not relieve the Contractor from this responsibility.

No person shall be cut off from access to their residences or places of business without a permit from the City with specific time and duration of closure. Notice shall be provided to the residence or business 48 hours before the closure. In no case shall a closure~~for a period exceeding~~ exceed eight (8) hours, unless the Contractor has made special arrangements in writing with the affected persons prior to commencing work in the area.

H. NOTIFICATION OF RESIDENTS. All property owners and residents adjacent to the streets or easements affected by the construction shall be notified by the Contractor at least forty-eight (48) hours in advance of time construction begins. The Contractor can satisfy this requirement by placing a written notice on the door of each residence or business reading "Notice of Construction Operation". [Contractor] will be working on ~~the construction of street improvements on~~ your street starting ~~about~~ on [start day and time]." The Contractor shall provide their contact information on the notice and shall provide a copy of the notification form at the pre-construction meeting and the method to be used (hang on door, etc.) See Article 1.04.060 C (Traffic Control Plan) and Article 1.04.060 E (Road Closure Communication Plan) for additional notice requirements for road closures.

I. WORK ZONE. The Contractor will be required to confine construction operations within the dedicated right-of-way for public thoroughfares or within areas for which construction easements have been obtained unless it has made special arrangements in writing with the affected property owners in advance. The Contractor will be required to protect stored materials, lawn, trees, and other features located adjacent to the proposed construction site. During construction operations, the Contractor shall construct and maintain such facilities as may be required to provide access by all property owners to their property.

J. REFERENCE POINTS AND MONUMENTS. See APWA 00 72 00 4.4 (Reference Points and Monuments) for work affecting or related to reference points and monuments.

K. ABANDONED UTILITY SERVICE. Abandoned water services shall first be permitted through the engineering office. Abandoned water services shall be disconnected at the main. Saddle and corporation stop shall be removed, and a Romac Industries stainless steel repair clamp (Style SS1) shall be installed. Unneeded sewer services shall have a cleanout at property line with a watertight plug on the private property side of the cleanout wye.

L. INTERFERING STRUCTURES, UTILITIES AND FACILITIES. The Contractor shall exercise all possible caution to prevent damage to existing structures and utilities, whether above ground or underground. While these structures and utilities may be shown on the improvement plans, the information has been

compiled from the best available sources, its completeness and accuracy cannot be guaranteed, and it is presented simply as a guide to possible difficulties. See Section 1.20.020 (Excavation) In Areas with Concrete for repair of damaged concrete.

The Contractor shall notify all utility offices concerned at least forty-eight (48) hours in advance of construction operations in which a utility agency's facility may be involved. Notification to blue stakes does not necessarily cover all buried lines. This shall include, but not be limited to, irrigation, water, telephone, electric, sewer, storm drain, gas, and cable television. The Contractor shall be responsible for any and all changes to, relocation of, or re-connection to public utility facilities encountered or interrupted during the prosecution of the work, and all costs relating thereto shall be at the Contractor's expense.

The Contractor shall contract with and pay Public Utility Agencies for work required in connection with all utility interferences and handle all necessary notifications, scheduling, coordination and details. It shall be the responsibility of the Contractor to relocate and expose all existing underground structures and utilities in such a manner as to prevent damage to the same. Any structure or utilities damaged by the Work shall be repaired or replaced at the Contractor's expense.

If the Contractor encounters existing structures that will prevent construction, it shall notify the City Engineer before continuing with the construction in order that the he or she may make such field revisions as necessary to avoid conflict with the existing structures.

M. MATERIALS. Acquire, provide, and safeguard materials and turn in submittals according to Section 1.12.030 (Submittals).

1.04.060 Traffic Control

A. APWA. Unless otherwise specified in the City Construction and Design Standards, traffic control work shall meet the requirements and specifications of the following APWA sections and related sections:

1. APWA 01 55 26 (Traffic Control)

B. CITY CONSTRUCTION AND DESIGN STANDARDS. See the following City Construction and Design Standards for additional specifications related to traffic control:

1. Article 1.04.060 D (Road Closures)
2. Article 1.04.060 E (Road Closure Communication Plan)

C. TRAFFIC CONTROL PLAN. Construction Work that will impact vehicle or pedestrian traffic will require a City approved traffic control plan that meets the requirements of APWA 01 55 26 (Traffic Control) and the following:

1. Traffic Obstructions. The Contractor shall, at all times, conduct its work so as to ensure the least possible obstruction to traffic and normal commercial pursuits.

2. UDOT and County Roads or Right-of-Ways. If vehicle or pedestrian traffic along a County or UDOT road is impacted, the traffic control plan must also be approved by the agency whose road is impacted.

3. Road Closures. Traffic control plans must include any road closures with estimated dates for closing and opening the road. See Article 1.04.060 D (Road Closures). Traffic Control Plans shall also include Road Closure Communication Plans if required. See Article 1.04.060 E (Road Closure Communication Plan).

4. Road Surfaces. The Contractor shall be responsible for maintaining existing road surfaces ~~suitable~~safe for travel by the public.

D. ROAD CLOSURES. If conditions are justified, the City Engineer may authorize the Contractor to close general traffic to not more than one (1) City block at any given time. No such closure shall be made without the authorization of the City Engineer. Closure of streets or highways shall be in conformance with APWA 01 55 26 (Traffic Control) and the following:

1. Garbage Pickup Day. Road closures are not permitted on garbage pick-up day. This requirement can be waived by the City Engineer.

2. Overnight Road Closures. If a road is closed overnight, all open trenches shall be covered with a steel plate with appropriate warning sign.

3. Forecasted Snow. If snow is forecasted and the road is to remain open, no steel plates are allowed. Instead, local road trenches shall be backfilled and compacted with road base. Other roads shall be backfilled with cold mix.

E. ROAD CLOSURE COMMUNICATION PLAN. City Engineer may require a Road Closure Communication Plan for significant road closures. Road closure communication plans shall include the following:

1. Using a Public Involvement Firm. The contractor shall be required to hire a reputable public involvement firm to oversee public communication. This requirement can be waived by the City Engineer if the project would not measurably benefit from a public involvement firm. The public involvement firm shall ensure, as reasonably possible, the public that are affected by the project are well informed of project details, including schedule.

2. Map of Affected Entities. Public involvement firm shall provide the City with a map of properties affected by the closure. property owners.

3. Critical Notifications. The public involvement firm shall notify the following offices of all closures with the start and end date of closure:

    a. PUBLIC WORKS

    b. CITY ENGINEERING

    c. POLICE

    d. FIRE

    e. AMBULANCE

    f. SCHOOL DISTRICT

    g. GARBAGE AND RECYCLING COLLECTION SERVICE

    h. CITY PUBLIC INFORMATION OFFICER

    i. COUNTY DISPATCH

    j. UTA DISPATCH

4. Notice. Public involvement consultant shall send notice of closure with the approved traffic control plan to affected property owners within 500 feet of the closure or as defined in the traffic control plan. Notices shall be sent 5 days and again at 48 hours before closure unless otherwise approved in the traffic control plan. The traffic control plan shall include begin and end dates of closure. Notices may be in the form of a door hanger, phone call and/or email.

1.04.070 Post-Construction

A. APWA. Unless otherwise specified in the City Construction and Design Standards, post-construction work shall meet the requirements and specifications of the following APWA sections and related sections:

    1. APWA 01 78 23 (Operation and Maintenance Data)

B. BOND RELEASE. The Public Works Director will release bonds when the following is completed:

    1. Operation and Maintenance Manuals. Contractor must submit and make requested revisions to operation and maintenance manuals according to Article 1.04.070 C (Operation and Maintenance Manuals).

    2. Record Drawings. Record drawings must be submitted and revised according to Article 1.04.070 D (Record Drawings).

3. Final Inspection. The final inspection must be completed according to Article 1.16.020 Q (Acceptance of Improvements).

4. Final Inspection Punch List. Contractor must complete the final inspection punch list according to Article 1.16.020 Q (Acceptance of Improvements).

5. Payment and Performance Bond. A payment and performance bond will only be released once a warranty bond is received and approved according to Article 1.04.070 E (Warranty Bond).

6. Warranty Bond. A warranty bond will only be released once the warranty inspection and warranty inspection punch list are completed according to Article 1.16.020 Q (Acceptance of Improvements).

   Bonds for such improvements shall follow the City's standard bonding requirements. Nothing in this section alters or limits the City's right to seek correction of engineering or construction defects within the timeframes provided under the applicable Utah Statutes of Limitations and Statutes of Repose.

C. OPERATION AND MAINTENANCE MANUALS. Operation and maintenance manuals shall meet the requirements of APWA 01 78 23 (Operation and Maintenance Data). The Contractor shall furnish the City Engineer with two (2) paper sets, a pdf, and a Word version of all operation and maintenance manuals, drawings, diagrams, etc., for all pumps, motors, control panels, valves, meters, etc. The Contractor shall be responsible for all costs associated with the preparation of operation and maintenance manuals.

   Final inspection shall not be scheduled until the operation and maintenance manuals are received, reviewed by the City Engineer, and corrections made~~, for use in the Operation and Maintenance Manual~~. The Contractor shall be responsible for all costs associated with the preparation of operation and maintenance manuals.

D. ~~ELECTRONICS AND~~ RECORD DRAWINGS. ~~When the Owner's Engineer has the capability, p~~Record Drawings including the plat, site plan, and as-built improvement drawings shall be furnished electronically in a color PDF and ~~MicroStation Format (.dgn),~~ AutoCAD format (.dwg) ~~or Data Exchange Format (.dxf)~~.

   Field record drawings shall be kept on site throughout the project duration. They will be used to create the electronic record drawings. The field Record Drawings should be updated whenever a change from the design is made to assure accuracy. The drawings must show a record of all departures from the contract drawings that occur during construction. These shall be kept on a clean set of prints of the contract drawings. The Project Manager will review the field Record Drawings to verify that changes are being recorded as construction occurs.

Record drawings and the required electronic files may be required to be received, reviewed by the City Engineer, and corrections made prior to Final ~~i~~Inspection being schedule.~~shall not be scheduled until the records drawings and the required electronic files are received, reviewed by the City Engineer, and corrections made.~~ The Contractor shall be responsible for all costs associated with the preparation of record drawings.

~~In addition to the electronic files, after completion of all public works improvements the Owner shall provide the City with two sets of velum or sepia (reproducible) "Record Drawings" which have been corrected to show the constructed improvements. Final payment from the bond shall not be made until these records are received.~~

1. PDF File Submittal. PDF submittals shall consist of the Approved Final Construction Set with all construction updates and changes clouded. Dimensions shall be provided for all services and laterals from the nearest lot line to their constructed locations. All sewer, land drain, and storm drain pipes shall have sizes, slopes, and measurements between structures labeled. Actual constructed rim and flow line elevations for each manhole and or box shall be shown.

2. AutoCAD DWG File Submittal. All CAD files shall be registered to the North American Datum 83 (NAD83), U.S. Survey Feet, Utah State Plane Central Zone Coordinate system (grid) with ties to monument information available through the Utah County Surveyor.

   Record drawings shall reflect all changes and show all constructed public improvements and utility line work with labeled survey points and elevations on all features (i.e. service laterals, valves, fittings, manholes, etc.). All feature types shall be given unique layer names and color coded by utility type as follows:

   - Culinary - Blue
   - Storm Drain/Gravity Irrigation - Purple
   - Sanitary Sewer - Green
   - Land Drain - Brown
   - Pressure Irrigation - Orange
   - Electrical and Dry Conduits - Red
   - Road Features - White

   All files shall be constructed in a format that is geometrically correct; meaning that all lines that intersect are snapped together at a common point (no overlapping lines or short shots vertically or horizontally).

Storm, land drain, and sewer pipes shall be drawn in the direction of flow and shall be a continuous polyline between structures and snapped together at the centerline of the structure. Water lines shall be continuous polylines between pipe intersections or changes in pipe size. Street centerlines shall be continuous polylines between intersections. The edge of pavement or curb and gutter, sidewalks, and street centerlines shall be as shown on the design drawing unless field adjustments are made, which will require resurveying for the record drawings. Culinary waterline, storm drain lines, and power conduit lines shall be polylines representing their actual horizontal location. Where text is being placed for a polygon feature, the text justification point shall be placed within the boundary of the polygon. It is acceptable to have the text overlap one another. FREE HAND DRAWINGS WILL NOT BE ACCEPTED!

E. WARRANTY BOND. All Development shall submit a ~~cash~~ letter of credit warranty bond after final inspection and before final acceptance. Bond shall be in the amount of 10% of the payment and performance bond. For Minor Land Disturbance Permits, a minimum $500 of the contractor bond will be held for warranty.

1.08 Design Requirements

1.08.010 General Requirements

A. GENERAL. The purpose of the Design Criteria is to govern any design and engineering performed regarding public improvements. Engineers and designers working on projects within the City should thoroughly read and understand these requirements before designing and creating construction plan sets for public improvements.

This division contains design criteria that are in addition to normal and acceptable engineering practices and are to be used on designs in the City. The City Engineer shall have authority to modify the criteria as needed to meet changing or unusual needs or conditions.

The design engineer shall contact the City for all matters dealing with engineering within the City's existing or proposed right-of-way or with any work connecting onto a City utility.

B. ENGINEERING. The criteria contained in this document are organized into divisions and sections covering specific areas of design. It will often be necessary to use a number of sections for the design of a single project. For instance, the design of a street may require the use of standards regarding streets, sidewalks, pressure pipe, sewer, and storm drain.

These standards are a guide for design, but not a substitute for quality engineering. It is the obligation of the designer to use these standards responsibly and professionally to produce designs conforming with commonly accepted engineering practices and the Code of Professional Conduct. It will at times be desirable and/or necessary to vary from the standards in this document to produce a quality product. When the need arises, please refer to the following section on variances.

C. VARIANCES. When it becomes necessary or desirable to vary from the standards presented in this document, a variance may be requested from the City Engineer. Such a request shall be made in writing and will include:

1. The standard to be varied.
2. The proposed variation.
3. Justification for the variance.

A written response will be given within a reasonable time period. A variance determination may be appealed to the Development Review Committee~~, then the Planning Commission,~~ and then the City Council.

D. AMENDMENTS. Amendments to these standards may be requested by writing the City Engineer with details and justification for an amendment. The

City Engineer along with ~~the City~~the City Staff will meet periodically to discuss proposed amendments and make recommendations to ~~the City~~the City Council. ~~The City~~The City Council will entertain changes to the standards once a year at their discretion.

1.08.020 Construction Plans

A. CITY CONSTRUCTION AND DESIGN STANDARDS. See the following City Construction and Design Standards for additional specifications related to construction plans:

1. Chapter 1.44 (Landscaping)
2. Chapter 1.48 (Irrigation Sprinkler Systems).
3. Section 1.04.060 (Traffic Control)

B. CONSTRUCTION PLANS APPROVAL. The City Engineer shall approve construction plans in accordance with this Chapter ~~and cut sheets~~ before any work begins. Contractors proceeding with work without such approvals shall have the project shut down until such approvals are obtained. Repeated offenses may result in the Contractor losing its pre-qualification to perform work in ~~the City~~the City.

C. Traffic Control Plan. If applicable, a copy of the approved Traffic Control Plan according to Section 1.04.060 (Traffic Control) shall be ~~included in the construction plans~~submitted 7 working days prior to start of construction operations.

D. CONNECTION. Developers shall extend street and utility improvements to the boundaries of the development and to a connection with existing improvements of the same kind according to master plans and as directed by the City Engineer. Developers are required to upsize utilities based on latest master plans. Development layout must provide for future street and utility extension to adjacent development and be compatible with the contour of the ground.

E. PLAN SETS. The following instructions are for the purpose of standardizing the preparation of construction plans to obtain uniformity in appearance, clarity, size, and style. Plans and designs shall meet the standards defined in the specifications and drawings hereinafter outlined. All drawings and/or prints shall be clear and legible and conform to good engineering and drafting room practice.

Include the following in construction plans for all Developments:

1. Final Plat or Site Plan. A copy of the final plat or site plan if applicable.

2. Comprehensive Plan View. A comprehensive plan view of the entire project showing all utilities, roads, and appurtenances.

3. Plan and Profiles. Plan and profiles of all storm, land and groundwater drains, sanitary sewer, curb, gutter, and irrigation.

4. Detail Drawings. Detail drawings of street cross sections according to the City Construction and Design Standard Drawings and other detail drawings only for items not found in the City standard drawings. Detail drawings shall be to scale and completely dimensioned and described. All items shall be designed in accordance with minimum requirements established by the City Construction and Design Standards.

5. Off-Site Work Plans. Complete plans for all off-site work to be done in conjunction with the Development.

6. Professional Civil Engineer Stamp and Signature. A stamp and signature of a Professional Civil Engineer licensed in the state of Utah on each plan sheet, detail drawing, and design sheet.

7. Detailed Engineer's Estimate. Detailed engineer's take off quantities and cost estimate for all construction work related to the project.

8. Existing and Proposed Conditions and Improvements. All plan and profile sheets shall show all existing and proposed improvements including but not limited to concrete, structures, pavement, landscaping, boxes, pipe, valves, manholes, poles, power and communications boxes, conduit, water ways, water bodies, and wetlands.

F. PLAN AND PROFILE SHEETS. Include the following on each plan sheet:

1. North Arrow. Generally, north should be up or to the right if up is not feasible.

2. Scale. Only use standard engineering scales between 1 inch equals 10 feet and 60 feet. A scale of 1 inch equals 100 feet may be used on the plan view of the entire project if necessary to fit project on one sheet.

3. Title Block. Title block along right side of sheet with title of drawing in lower right corner. Include in title block:

    a. Name of subdivision and plat or site plan.

    b. Name of City.

    c. Specific type of drawing (construction drawings, plan view, plan and profiles, off-site construction, detail drawings).

    d. Name of engineer, surveyor, or firm preparing drawings.

e. Drawing number of total number of drawings.

4. Profile Sheets. Also include the following with profile drawings:

   a. Vertical scale of 1 inch equals 1, 2, 3, 4, 5, or 6 feet.

   b. Reference to the vertical datum. The 1929 or 1988 North American Vertical Datum (NAVD29 or NAVD88) shall be used for all elevation data. NAVD29 may only be used when approved by the City Engineer.

   c. Benchmark location and elevation for checking construction.

   d. Stationing aligned from plan view.

   e. Existing ground, ditch, and utility lines.

   f. A sheet index on each sheet showing profiled area in relation to the overall project.

G. ELECTRIC AND COMMUNICATION PLANS. Construction plans must include the location of all existing and proposed poles, transformers, secondary junction boxes, sectionalizers, switchgears, overhead or underground electrical wire and communication cable and any other significant electric or communication infrastructure.

H. STREET, PARKING LOT, AND DRIVEWAY PLANS. Include the following for curb, gutter, sidewalks, and street surfacing plans:

1. Plan and Profile. Plan and profile for top back of curb for each side of the street. Label profile line as top back of curb for both sides of street if it is the same.

2. Elevations and Flow Direction Arrows. Flow line elevations and flow direction arrows for gutters.

3. Curb and Gutter Type. Type of all standalone curbs and curb and gutter if other than the standard APWA Plan 205.1 Type A 30 inch Curb and Gutter. City Engineer may approve twenty four inch curb and gutter to match existing.

4. Accesses. Location and width of all accesses.

5. Street Cross Sections. Street cross sections with all proposed and existing utilities and base sections as per pavement design and soils report and Construction and Development Standards.

I. SANITARY SEWER, STORM, LAND AND GROUNDWATER DRAIN PLANS. Include the following for sanitary sewer, storm, land and groundwater drain plans:

1. Plan and Profile. Plan and profile of all new and existing mains and manholes.

2. Boxes and Manholes. Box and manhole size, location, and elevations of flow lines and rim.

3. Pipe. Location, size, grade, and type of pipe of new and existing mains.

4. Service Laterals. Location of each service lateral with distance stubbed back into property clearly drawn and dimensioned. For abandoned sanitary sewer services see Article 1.04.050 K (Abandoned Utility Service). Service lateral connections to the main shall be spaced a minimum of 4 feet apart.

5. Storm Calculations. Storm water calculations required by Section 1.08.070.

6. Storm Inlet Boxes. Storm inlet boxes shall be located on street corners and or property lines according to the Standard Drawings.

J. DRINKING WATER PLANS. Include the following for drinking water and plans:

1. Pipe. Location, size, and type of pipe of new and existing water mains.

2. Fittings. Location of valves, fittings, hydrants, boxes, meters, and appurtenances.

3. Minimum Cover. Minimum cover of four (4) feet.

4. Service Laterals. Location of each service lateral with distance stubbed back into property clearly drawn and dimensioned. For abandoned water services see Article 1.04.050 K (Abandoned Utility Service). Service lateral connections to the main shall be spaced a minimum of 4 feet apart.

5. Redundant Water Loops. Looping of the drinking water lines will be required at the discretion of the City Engineer to provide adequate fire flows, pressures, water quality, and redundancy. Below are guidelines as to when redundant connections may be required:

    a. PRESSURE SWINGS: Looping is required if modeled or existing pressure swings exceed 20 psi during a peak day.

    b. FIRE FLOW AND MINIMUM PRESSURE: Looping is required if modeled or existing pressures and fire flow do not meet State or City minimum standards.

    c. NUMBER OF UNITS ON A DEAD-END LINE: If a development's plans will create an additional drinking water line connection in future phases, 50 homes, or equivalent residential units, may be

installed onto the dead-end drinking water main line. Permanent dead-end lines may only have 35.

d. SUPPLY TO CRITICAL FACILITIES: If the waterline will or does supply water to a critical facility (as determined by the City Engineer), looping is required.

e. WATER QUALITY: Looping is required if there is reasonable risk of the design causing degradation of water quality.

K. LANDSCAPING PLANS. For landscaping that will be maintained by the City or a homeowner's association submit one copy of the landscaping plans including all irrigation system layouts, details, legends, and drawings. These project plans shall meet the requirements of the Chapter 1.44 (Landscaping) and Chapter 1.48 (Irrigation Sprinkler Systems).

L. IRRIGATION CANAL AND PIPE PLANS. Plans that affect canals or irrigation pipes must be stamped approved by those responsible for their maintenance before they are approved by the City unless otherwise required by law.

1.08.030 Land Development

B. GENERAL. The following land development criteria shall apply to all designs for land development in the City. It will be necessary to refer to the current general plan and zoning plan for correct land use designations. Design shall comply with the current City Zoning Ordinance and Subdivision Ordinance. Additional design criteria are specified in the Standard Drawings.

C. PROJECT IMPACT ON ADJACENT PROPERTIES. The design of public improvement and utility projects shall evaluate the project impact to adjacent private and public property. The evaluation shall include mitigation measures for right-of-way acquisition, public utility easements, and construction easements. The design engineer shall give consideration to traffic and pedestrian safety, accessibility and storm water surface flows that may have an impact on all adjacent properties.

The design of the new development must not create a non-conforming use out of a neighboring parcel. For example, if a pre-existing lot designed to function as an interior lot will change to a corner lot because of the design of the new development, additional property may need to be deeded to that lot to insure it is in conformance to the current zoning ordinance for a corner lot.

D. DESIGN CONSIDERATIONS TO PRESERVE NATURAL FEARUES AND MITIGATE HAZARDOUS CONDITIONS.

1. Natural Features. The design of public improvements shall preserve the natural features such as natural drainage, wetlands, existing native vegetation and wild life habitat where applicable. The Applicant(s) or his/her representative shall delineate the location of such natural

feature when submitting concept plans or preliminary design drawings for all public improvement projects. The design engineer shall be responsible to incorporate all natural features identified by City Staff reviews and shall be required to notify and get approval from all state and federal agencies that control the natural features.

2. Hazardous Conditions. Land subject to hazardous conditions such as wetlands, soil liquefaction, shallow water table, floods, landfill, and polluted or non-potable water supply shall be identified and shall not be developed until the hazards have been preserved or will be mitigated during development process and will appear on construction design plans. The approval of a subdivision plat or construction drawings do not terminate the responsibly of the design engineer in using standard duty of care in the investigation and design for the hazardous conditions associated with the project. The design engineer shall be required to notify and get approval from all state and federal agencies that control the preservation or mitigation processes.

E. IDENTIFICATION OF EXISTING EASEMENTS AND RIGHTS OF WAY. The design engineer shall identify all easements and rights of way that exist on the subject property that is to be developed. Sufficient investigation and agreements must take place to illustrate to the City the status of all easements and rights of way on the property. These easements and rights of way must be illustrated on the appropriate drawings and in a clear manner.

F. RECORD~~S~~ DRAWING SUBMITTAL REQUIREMENTS. See Article 1.04.070 (Record Drawings).Record drawings ~~shall~~ may be required to be submitted before ~~warranty request~~scheduling final inspection.

1.08.040 Streets

A. APWA. Unless otherwise specified in the City Construction and Design Standards, street work shall meet the requirements and specifications of the following APWA sections and related Divisions:

1. APWA DIVISION 34 (Transportation)
2. APWA DIVISION 03 (Concrete)
3. APWA 03 30 04 (Concrete)
4. APWA 32 16 13 (Driveway, Sidewalk, Curb, Gutter APWA 31 05 19 (Geotextiles)
5. APWA 31 05 21 (Geogrids/Geocomposites)
6. APWA 32 12 16 (Plant-Mix Asphalt Paving)
7. APWA 32 12 16.13 (Plant-Mix Bituminous Paving)

8. APWA 32 14 13 (Precast Concrete Unit Paving)
9. APWA 32 14 16 (Brick Unit Paving)
10. APWA 32 17 23 (Pavement Markings)
11. APWA 34 71 13 (Vehicle Barriers)
12. APWA 34 71 19 (Vehicle Delineators)

B. CITY CONSTRUCTION AND DESIGN STANDARDS. See the following City Construction and Design Standards for additional specifications related to Storm, Land, and Groundwater Drain design standards:

1. Chapter 1.36 (Streets and Pavements)
2. Chapter 1.40 (Portland Cement Concrete and Masonry Work)
3. Drawing 1 (Standard Street Intersection and Utility Locations)
4. Drawing 2 (Standard Utility Locations in Knuckle)
5. Drawing 3 (Standard Street Cross Sections and Utility Locations)
6. Drawing 4 (Standard Street Cross Sections and Utility Locations)
7. Drawing 5 (Curb, Gutter, and Sidewalk)
8. Drawing 6 (Typical Curb Approach)
9. Drawing 7 (Standard Curb Return at Intersection)
10. Drawing 8 (Pedestrian Access)
11. Drawing 9 (Pedestrian Access Mid Block)
12. Drawing 15 (Standard Cul-De-Sac)
13. Drawing 16 (Standard Knuckle)
14. Drawing 31 (110-Foot Roundabout for Local Street Intersection)
15. Drawing 32 (Typical Street/Stop Sign Installation Detail)
16. Drawing 33 (Typical Street Light 1)
17. Drawing 34 (Typical Street Light 2)
18. Drawing 35 (Typical Street Light 3)
19. Drawing 36 (Concrete Pole Base (Street Light))

C. GENERAL. The following street design criteria shall apply to all street designs in the City. It will be necessary to refer to the current master transportation plan for correct street designation. Design shall comply with the current AASHTO guidelines on geometric design. Additional design criteria are specified in the Standard Drawings

D. CITY CONSTRUCTION AND DESIGN STANDARDS. See the following City Construction and Design Standards for additional specifications related to street improvements:

1. Article 1.44.010 H (Fences and Walls)

E. DRIVEWAY AND INTERSECTION LOCATION. Driveways and street intersection locations shall be designed according to the City Transportation Master Plan. No driveways shall be constructed within the following distances from an adjoining street. These distances are from top back of curb (TBC) to the edge of driveway for accesses along local streets:

a. 34' from an adjoining local street.

b. 100' from adjoining collector/arterial (approach).

c. 120' from adjoining collector/arterial (departure).

Curb cuts shall only be allowed for driveways. Driveways shall be a minimum of 3 feet from any above grade utility box. All accesses and streets onto collectors and arterials must be approved by the City Engineer.

No at grade street intersection shall be allowed along the crossing road within 250 feet from the railroad right-of-way. No access shall be allowed along the crossing road within 250 feet unless authorized and approved by the Development Review Committee. Any access approved within 250 feet of the railroad right-of-way shall require a railroad crossing diagnostic be completed and approved by both Union Pacific Railroad and UDOT.

F. PARKING. Parking shall meet the requirements of the City Title 15 Zoning Code and City Construction and Design Standard Drawings.

G. REVERSE FRONTAGE LOTS. New residential developments shall only be designed to allow direct access from individual lots or dwelling units to local streets unless otherwise authorized by the City Engineer.

H. ALLOWABLE GRADES. The maximum grade allowed for any City street or private driveway is 8.0% unless otherwise approved by the City Engineer. In no case shall grades greater than 12.0% be allowed. The minimum grade allowed for any City street is 0.50%.

I. STAMPED CONCRETE. The color and pattern of stamped concrete shall be approved by the Development Review Committee.

J. PRECAST CONCRETE OR BLOCK WALLS. Masonry walls, six feet tall, shall be provided along the sides of residential developments which have reverse or side frontage to arterial streets, collector streets, interstates or railroads. If a lot has frontage on a Residential collector street, a 6' masonry wall is required.

K. PEDESTRIAN RAMPS. Pedestrian ramps shall be placed at all corners of intersections and at all other locations of regular pedestrian traffic across roads as determined by the City Engineer or his/her designee. All ramps shall conform to the requirements of the Americans with Disabilities Act and City standards. Utility access fixtures shall not be located within 2 feet of the closest edge of a pedestrian ramp. Concrete aprons for fire hydrants, electrical boxes & etc. shall extend to ramps or driveways to eliminate landscape strips between utility aprons and ramps/driveways. Storm inlet boxes are not allowed within the pedestrian ramp.

L. HORIZONTAL AND VERTICAL CURVE. Horizontal and vertical curve alignments shall be determined by AASHTO Geometric Design of Highways and Streets (Greenbook) and additional ASSHTO design standards.

M. MAILBOXES. Proposed neighborhood mailbox locations shall be required with the development plans.

N. INTERSECTIONS. Full intersections that are encompassed in one subdivision need to be built in the same phase of the subdivision. Up to the curb returns on all 4 corners. Section of an intersection cannot wait for future phases.

O. TRAFFIC IMPACT STUDIES. A traffic impact study may be necessary to identify, review and make recommendations for mitigation of the potential impacts a development may have on the roadway system. Physical and operational characteristics of the roadway are typically identified. The development design engineer is expected to follow the Utah Department of Transportation document entitled "Traffic Impact Study Requirements" (current edition). Generally, a traffic study may be required for all developments expected to produce over 100 average daily trips (ADT). The City engineer will have the authority to dismiss this requirement if it can be illustrated that the traffic impact will be negligible on the roadway system. All developments expected to produce over 100 ADT must be discussed with the City Engineer to determine the necessity of this requirement.

P. STREET CLASSIFICATION. Streets will be classified according to their functional use as described below. Existing facilities may not fully comply.

1. ~~Boulevard Streets~~ Arterials. The ~~Boulevard~~ Arterial Streets provide continuous routes for the movement of large volumes of all types of through traffic across the City and between the City and outlying areas. Geometric design and traffic control should emphasize the safe movement of through traffic and minimize property access. Access to arterials shall be limited from local streets or individual driveways.

Arterials will typically be multi-lane streets and shall have separate turning lanes at intersections. Arterials will connect to the Expressway system.

2. ~~Parkway Streets~~ Collectors. The ~~Parkway~~ Collector Streets provide continuous routes for the movement of large volumes of all types of through traffic across the City and may also connect to outlying areas. Geometric design and traffic control should emphasize the safe movement of through traffic and minimize property access. Access to collectors shall be limited from local streets or individual driveways. Collectors will typically be two-lane streets with separate turning lanes at intersections and may be multi-lane streets if warranted by traffic volumes.

3. Local Streets. The Local Streets serve as a means of access to abutting property. They are intended to serve low speeds and short trip routes, with usually less than 500 vehicles per day.

4. Design Vehicle for Classification Type. All street classifications are designated to carry passenger vehicles and up to the following Design Vehicle Types:

    a. ~~Boulevard~~ Arterial Streets up to WB50.

    b. ~~Parkway~~ Collector Streets up to WB40.

    c. Local Streets up to SU30.

Q. MINIMUM AND MAXIMUM GRADES. The minimum acceptable grade slope measured at the centerline of the street is one-half percent (0.5%). The flow line of curb returns, knuckles and cul-de-sacs' shall also be no less than one-half percent (0.5%). The maximum slope varies depending on road classification. The sub-sections below shall be used to determine maximum slope.

1. ~~Boulevards and Parkways~~Arterial and Collector Streets. ~~Boulevard and Parkway s~~Arterial and Collector Streets shall be limited to a maximum grade of eight percent (8%). Sustained grades (600 feet or more) shall be limited to seven percent (7%).

2. Local Streets. Local streets shall be limited to maximum grade of ten percent (10%). Sustained grades (600 feet or more) shall be limited to nine percent (9%).

3. Cul-de-sacs. Cul-de sacs with shall be limited to a maximum grade of six percent (6%). The cul-de-sac shall terminate at the bulb with a grade not to exceed three percent (3%) for the last one hundred feet (100') of traveled surface.

4. Vertical Alignment. All changes in vertical alignment shall be made by vertical curves with minimum length of one hundred feet (100') for local streets and three hundred feet (300') for boulevard and parkway streets. Actual vertical curve length shall be a function of design speed.

R. STREET DESIGN. The following street design criteria shall apply to all street designs in the City. Additional design criteria are specified in the Standard Drawings.

1. Design Speeds. The design speed will be used to design and establish geometric features including sight distance, intersections, etc. to current AASHTO standards. The following minimum design criteria shall be met.

    a. Local street shall be designed to at least 30 mph.

    b. ~~Parkway~~ Collector Streets shall be designed to at least 40 mph.

    c. ~~Boulevard~~ Arterial Streets shall be designed to at least 50 mph.

        1. Posted speed limits shall be 5 mph less than the listed design speeds.

2. Horizontal Curves. Changes in horizontal alignment of over one degree shall be made using horizontal curves. In some cases, horizontal alignment changes on local streets may be allowed without a horizontal curve if the resulting alignment functions as a two-legged intersection.

    a. Local Streets shall have a centerline radius of at least 150 feet.

    b. Collector Streets shall have a centerline radius of at least 370 feet.

3. Vertical Curves. Streets shall be designed with vertical curves where grade changes greater than 1% occur. Vertical curves shall be designed using the appropriate design speed according to the latest AASHTO design guidelines. It is encouraged to include the “K” value in the profile illustrating the vertical curve.

4. Cul-de-sacs. The cul-de-sac shall be limited to a maximum length of six hundred fifty feet (650') as measured form the intersection centerline to the center of the cul-de-sac. Downhill cul-de-sacs are strongly discouraged and may only be allowed if it can be demonstrated that surface drainage will be controlled in a manner acceptable by the City Engineer and approved by City Council.

5. Widening Asphalt along an Existing Road. When a development project requires asphalt widening due to the placing of new curb and gutter along an existing road, the cross slope of the new asphalt must

be between one percent (1%) and four percent (4%). The construction drawings must adequately show the cross slope and the asphalt "saw cut line" required to create the slope. The new asphalt shall match the existing cross slope or shall be replaced from the crown of the roadway to the gutter.

6. Finished Width of Exterior Roads. When authorized by the City Engineer, roads with development on one side may construct a minimum of half the road plus ten (10) feet of pavement and three (3) feet of shoulder. ~~roads are designed along the exterior of developed property, a minimum of ten (10) feet of unobstructed asphalt on the opposite side of the designed centerline must be constructed.~~ Depending on the classification of the road, additional width may be requested by the City.

7. Lane Widths, Turning Lanes and Clear Zones.

    a. The minimum traffic lane width will be 11 feet. Pavement widths are as defined in the City Standard Drawings.

    b. Turning lanes shall be incorporated on ~~Boulevard~~ ~~Arterail~~Arterial and ~~Parkway~~ Collector Street designs. Length of separate turning lanes shall be designed using the current addition of AASHTO and based on a capacity analysis. Width of separate turning lanes shall be 12-foot in width for ~~Boulevard~~ Arterial streets and 11-foot width for ~~Parkway~~ Collector streets.

    c. A three (3) foot clear zone shall be required on all streets built with a curb and having a speed limit of 25 mph or less. Streets with speed limits greater than 25 mph will use the AASHTO Standard to determine clear zone limits. Variances to clear zone requirements will be considered for overhead electrical facilities where compliance will significantly impact existing trees. In no case will a clear zone of less than eighteen (18) inches be allowed. A clear zone variance must be approved by the City Engineer.

8. Pavement Loading and Design. The following charts shall be used in the determination of pavement loading and design.

TRAFFIC CLASSIFICATIONS			
Traffic Class	Maximum EAL(a)	Type of Street	Total Heavy Trucks During

			Design Period
I	5000	Light Traffic Cul-de-sac	7,000
II	10,000	Local Streets	7,000 - 15,000
III	100,000	Collector Streets	70,000 – 150,000
IV	1,000,000	Arterial Streets	700,000 – 1,500,000
(a) Equivalent axle load for 20 year design period (b) Roadway serving as access for construction vehicles may require additional structure design prior approval			

a. The table below illustrates the traffic classifications to be used for determination of the minimum roadway structural sections.

b. The table below illustrates the California Bearing Ratio (CBR) values as they relate to the subgrade soil classifications.

SUBGRADE SOIL CLASSIFICATION			
Subgrade Class	Resilient Modulus (Mpa)	Characteristics of Soil	CBR Value
Very Poor Soil	<30	Clay and fine silt - Extremely soft and plastic when wet	3
Poor Soil	30-80	Clay, fine silt and sandy soils - soft and plastic when wet	3-8
Medium Soil	80-170	Loans, silty sands and some clayey sand gravel, retains moderate degree of firmness with moisture	8-17
Good to Excellent Soil	170	Clean sands, sand gravel and free of plastic materials- retains load support when wet	17

c. The table below illustrates the minimum required structural section based on the specific CBR value.

ASPHALTIC CONCRETE PAVEMENT STRUCTURAL SECTION					
Subgrade Class	Pavement Section	Traffic Classification			
		I	II	III	IV
Very poor CBR <3	Asphalt Concrete Surface	3"	3"	4"	6"
	Untreated Aggregate Roadbase	10"(b)	12"(b)	8"(b)	12"(b)

	Aggregate Subbase	-	-	12"(b)	16"(b)
Poor CBR 3-8	Asphalt Concrete Surface	3"	3"	4"	6"
	Untreated Aggregate Roadbase	8"	8"	8"	8"
	Aggregate Subbase	-	-	6"	12"
Medium CBR 9-17	Asphalt Concrete Surface	3"	3"	4"	6"
	Untreated Aggregate Roadbase	8"	8"	8"	8"
	Aggregate Subbase	-	-	4"	6"
Good to Excellent CBR >17	Asphalt Concrete Surface	3"	3"	4"	6"
	Untreated Aggregate Roadbase	8"	8"	8"	8"
	Aggregate Subbase	-	-	-	-

(a) Subbase soil must be of sufficient depth for the stabilization of the road structural section.
(b) Road structural design must be submitted by a licensed and qualified engineer for review and approval.
(c) Traffic Classification III & IV requires the addition of an appropriate geotextile fabric conforming to AASHTO M288-96 to separate the roadbase course from the subbase.
(d) Traffic Classification III & IV requires a 3/4" mix design.
(e) Traffic Classification I & II requires a 1/2" mix design.

S. INTERSECTION DESIGN. The following intersection design criteria shall apply to all intersection designs in the City. Additional design criteria are specified in the Standard Drawings.

1. Street Alignment and Offsets. Angular street alignment at an intersection shall be as close to perpendicular as possible. In no case shall an intersecting street be more than 10° from perpendicular. Centerlines of opposing streets should match at the intersection whenever possible. Offsets of up to ten (10) feet may be allowed in a single intersection but separate intersections must have at least one-hundred fifty (150) feet of separation.

2. Curb Returns. Curb returns shall be designed such that there is a smooth transition from one leg of the intersection to another, using vertical curves where grade changes greater than 2% occur. The designer shall include enough information on the plans to demonstrate compliance. In some cases, this requires profiling the top back of curb through the curb returns. Elevations at the PC, PT, and appropriate sub-divided delta (central angle) locations will be required.

3. ADA Curb Ramp Design. Curb ramps shall be designed in accordance with current ADA standards and guidelines, and shall meet the Accessibility Standards found in the City Standard Specifications (see Division 12, Concrete Curb and Gutter and Sidewalk). The standard drawings also include specific dimensional information.

4. Stop Controlled Grades at Intersections. Streets that will have stop control at an intersection shall not have a grade slope of greater than three percent (3%) for a distance of fifty (50) feet from the intersecting streets right-of-way.

5. Roundabout Design. Roundabouts shall be designed in accordance with the U.S. Department of Transportation publication FHWA-RD-00-067 (Roundabouts: An Informational Guide). Roundabouts in local streets shall also follow the criteria shown in the standard drawings. The engineer shall submit the circulatory design speeds with the design drawings.

6. Sight Distance Triangle. A clear line of sight must be provided at all intersections, see Vineyard City Access Management Manual. The "Sight Distance Triangle" must be calculated using the stopping "Sight Distance" of the road being intersected. The stopping "Sight Distance" is 200 feet for a Local street, 300 feet for a ~~Parkway~~ Collector and 425 feet for ~~a Boulevard~~Arterial. The figure below illustrates the required "Sight Distance Triangle" based on the "Sight Distance".

T. PARKING. See Standard Drawing 30A and 30B.~~The dimensions of each off-street parking space shall be at least nine feet (9') by eighteen feet (18'). Diagonal parking spaces shall be nine feet (9') by eighteen feet (18') measured from the nearest curb face. Ninety (90) degree parking spaces shall be nine feet (9') by eighteen feet (18') measured from the curb face. Parallel parking spaces shall be nine feet (9') by twenty-four feet (24') measured from the curb face~~

U. STREET LIGHTING. All streets shall have street lights spaced 250 feet on center on alternating sides of the street. Street lights shall be located at or on property lines or corners.

1. Residential Streets. Street lights along residential streets shall be placed on 12-foot (12') poles. At a 4-way intersection a street light shall be placed at a minimum of 2 adjacent corners. At a 3-way or a tee intersection a street light shall be placed on the property line along the through street across from the odd street leg. At knuckles or 2-way intersections a street light shall be placed on the inside corner. A street light shall be placed at the end of cul-de-sacs.

2. Arterial and Collector Streets. Street lights along arterial and collector streets shall be placed on 20-foot (20') poles. At all intersections a street light shall be placed at each corner of the intersection.

1.08.050 Drinking Water

A. APWA. Unless otherwise specified in the City Construction and Design Standards, drinking water work shall meet the requirements and specifications of the following APWA sections and related Divisions:

1. APWA DIVISION 33 (UTILITIES)
2. APWA 33 11 00 (Water Distribution and Transmission)

B. CITY CONSTRUCTION AND DESIGN STANDARDS. See the following City Construction and Design Standards for additional specifications related to Storm, Land, and Groundwater Drain design standards:

1. Chapter 1.24 (Drinking Water)
2. Drawing 1 (Standard Street Intersection and Utility Locations)
3. Drawing 2 (Standard Utility Locations in Knuckle)
4. Drawing 3 (Standard Street Cross Sections and Utility Locations)
5. Drawing 22 (Fire Hydrant and Water Valve Detail)
6. Drawing 23 (Thrust Block Details)
7. Drawing 24 (Typical Culinary Water Connection)
8. Drawing 25 (Large Meter Assembly)
9. Drawing 26 (Backflow Prevention Assembly)

C. GENERAL. See Chapter 1.24 (Drinking Water). The Developer shall connect the development with the city drinking water system with all appurtenances and shall make such drinking water available to each lot or unit within the development. Adequacy of supply and sizes of drinking water mains shall be established by the City Engineer. Looped connection of the drinking waterlines will be required at the discretion of the City Engineer to provide adequate fire flows and redundancy.

D. GENERAL. The following pressure pipe design criteria shall apply to all pressure pipe designs in the City. Design shall comply with the current applicable AWWA standards. Additional design criteria are specified in the Standard Drawings.

E. CULINARY WATER PIPE DESIGN.

1. Pipe Material. Polyvinyl Chloride (PVC) pipe for the transmission and distribution of water shall be manufactured in accordance with the most current AWWA C900 standards, "AWWA Standard for Polyvinyl Chloride Pressure Pipe, 4-inch through 12-inch, for Water". The PVC pipe shall have a cast-iron-pipe-equivalent outside diameter. PVC pipe 14 inches and larger shall be manufactured in accordance with the most current AWWA C905 standards, "AWWA Standard for Polyvinyl Chloride (PVC) Water Transmission Pipe, Nominal Diameters 14-inch through 36-inch". All PVC pipe 4-inch and larger shall be DR. 18 with a working pressure of 150 PSI. Pipe smaller than 4-inch shall be schedule 40 PVC.

2. Fire Hydrant Spacing. Fire Hydrants shall be placed in locations that allow for accessibility by the lay of a fire hose of no more than two hundred fifty (250) feet from the hydrant to the most remote point of any structure intended for occupancy. Buildings that are to be equipped with sprinkled fire suppression are to have a hydrant within one hundred (100) feet of the “Fire Department Connection” (FDC). Other requirements shall be based on the “International Fire Code” or designated Fire Marshall. A fire hydrant shall be located at the end of a cul-de-sac or temporary dead-end street.

F. PIPE LOOPING. Culinary pipe shall not be looped under a sanitary sewer pipe.

G. AIR VAVLES. Water system designs shall be designed without the requirement of air valves.

1.08.060 Sanitary Sewer

A. APWA. Unless otherwise specified in the City Construction and Design Standards, sanitary sewer work shall meet the requirements and specifications of the following APWA sections and related Divisions:

1. APWA DIVISION 33 (UTILITIES)

2. APWA 33 31 00 (Sanitary Sewerage System)

B. CITY CONSTRUCTION AND DESIGN STANDARDS. See the following City Construction and Design Standards for additional specifications related to Storm, Land, and Groundwater Drain design standards:

1. Chapter 1.28 (Sanitary Sewer)

2. Drawing 1 (Standard Street Intersection and Utility Locations)

3. Drawing 2 (Standard Utility Locations in Knuckle)

4. Drawing 3 (Standard Street Cross Sections and Utility Locations)

5. Drawing 18 (Typical Sewer Manhole Detail)

6. Drawing 19 (Typical Manhole on Existing Pipe)
7. Drawing 20 (Typical Sampling Manhole)
8. Drawing 21 (Typical Sewer Drop Manhole)
9. Drawing 27 (Typical Sewer Lateral)
10. Drawing 28 (Typical Grease Trap)
11. Drawing 14 (Typical Land Drain Manhole Detail)

C. GENERAL. The Developer shall provide each lot with a sanitary sewer system in accordance with the ordinances of the City. All said work shall be done as directed and under the supervision of the City Engineer. Note that abandoned sewer services shall have a cleanout at property line with a watertight plug on the private property side of the cleanout wye.

The following sewer design criteria shall apply to all gravity sewer system designs in the City. Additional design criteria are specified in the Standard Drawings.

D. PIPE SLOPES. Slopes shall be designed to have a 2 foot per second velocity unless otherwise approved by the City Engineer. Sewers shall be laid with uniform slope between manholes. Whenever possible the slope should exceed 0.006 ft/ft. The pipe should be sized to meet anticipated hydraulic loads, increasing the pipe size to reduce the minimum slope requirements shall not be allowed. Sewer slopes shall not exceed 0.12 ft/ft, drop manholes shall be used when steeper slopes are needed, drop manholes shall be used to keep line grade below maximum grade allowed.

The minimum sewer ~~pipe~~ main shall be eight-inch (8") diameter and shall not be designed at a grade no flatter than that, which is specified in the table below. If the State guidelines require steeper grades than indicated below, the State guidelines shall apply. The engineer shall coordinate the pipe size with the City Engineer for future design capacities.

Minimum Sanitary Sewer Slopes

Pipe Diameter (inches)	Minimum Slope (%)
4	2.000
6	1.000
8	0.400
10	0.280
12	0.220
14	0.158
15	0.150
16	0.132

18	0.120
21	0.100
24	0.080
27	0.066
30	0.057
36	0.045
48	0.031
54	0.027
60	0.023

Unless otherwise approved and/or required by the City Engineer, sewer lines eight (8) through fifteen (15) inches in diameter shall be designed to flow no more than half-full during peak flow. Sewer lines larger than fifteen (15) inches in diameter shall be designed to flow three-fourths full.

E. MANHOLE DESIGN. See Section 1.28.020 (Manholes).~~Minimum interior diameter for manholes with one or two connections is four-foot (4'). Minimum interior diameter for manholes with three or more connections is five-foot (5'). The diameter of the manhole shall be determined by the intersection pipe sizes and the clearances required between the pipes for proper construction. Generally, there should be a minimum of twelve inches (12") clear distance between any two connecting pipes.~~ See Article 1.28.020 (Manholes Size) for sizing manholes. Spacing between manholes shall be no more than four hundred (400) feet.

All manholes and combination boxes shall feature steps made of copolymer polypropylene conforming to ASTM D4101.

Pipe inverts through a manhole shall have a minimum two-tenths (0.20) fall from the inlet to the outlet when the pipes are greater than 100° apart in alignment. When the pipes are 90° to 100° apart in alignment, three-tenths (0.30) fall will be required. Pipe alignments under 90° will not be allowed and will require the construction of additional manholes.

A manhole must be provided at the end of all piping sections in a development. The manhole must be located as close to the edge of the project as reasonably allowable when future adjacent land development is possible. The manhole base shall be constructed for the future connections with a plug installed.

Separation between sewer and or land drain manholes shall be a minimum of three foot (3') measured from the outside of the structures. Where design requirements cannot accommodate the minimum separation, flowable fill will be required between the structures and a combined elongated concrete.

F. SERVICES. See Section 1.28.040 (Sanitary Sewer Services). Service connections directly into a manhole will not be allowed. No service laterals will be allowed in stubs. Wherever possible, buildings shall be discharged to the Sewer Main

Line with a gravity flow Sewer Lateral. Sewer Laterals shall conform to the requirements of the Adopted Plumbing Code.

~~New sewer laterals installed to lots shall be located ten feet (10') uphill of the lowest front property corner.~~ The minimum cover of sewer laterals is 3 feet, and 3 foot 6 inches at the property line. One sewer service lateral per unit unless otherwise authorized by the City Engineer. ~~Each unit of separate ownership shall be required to have a separate sanitary Sewer Lateral, unless otherwise approved by the City Council.~~

~~Sewer Laterals shall have at least four (4) feet of cover unless otherwise authorized by the City Engineer.~~

Gravity Sewer Laterals.

The size of Sewer Laterals shall be determined on the basis of the total fixture units drained by such sewer, in accordance with the Adopted Plumbing Code. See Article 1.28.040 D (Clean-Outs) for clean-out requirements.

The minimum size for gravity Sewer Laterals shall be four (4) inches in diameter. Sewer Laterals shall be run at a uniform slope of not less than 2% grade. Where it is impractical to run the sewer at a 2% grade due to the depth of the Sewer Main Line, the design engineer will provide a solution to the City Engineer for approval.

Pressure Sewer Laterals

Professional advice should be obtained prior to installing pumping equipment or pressure Sewer Laterals.

In locations where buildings cannot be discharged to the Sewer Main by a gravity flow Sewer Lateral, flows shall be discharged into a tightly covered and vented sump from which the flows shall be pumped, by automatic pumping equipment and discharged into a gravity flow Sewer Lateral, connecting at a cleanout, or the Sewer Main, connecting in a manhole, with an approved restrained coupling(s).

Pumping equipment and pressure Sewer Laterals shall be designed to meet or exceed the anticipated use requirements. The total maximum system head shall not exceed the pump manufacturer's recommended allowable head for the pump system being proposed.

Pressure Sewer Laterals shall be constructed of HDPE. Pressure Sewer Laterals shall be sized to provide a minimum velocity of 2.0 feet per second at the design pumping rate. Pressure Sewer Laterals shall be designed and constructed on a constant reverse grade.

G. SEWER LIFT STATIONS. Sewer lift stations will only be allowed upon written approval by the City Engineer.

1.08.070 Storm, Land, and Groundwater Drains

A. APWA. Unless otherwise specified in the City Construction and Design Standards, storm, land, and groundwater drain work shall meet the requirements and specifications of the following APWA sections and related Divisions:

1. APWA DIVISION 33 (UTILITIES)
2. APWA 33 08 00 (Commissioning of Water Utilities)

B. CITY CONSTRUCTION AND DESIGN STANDARDS. See the following City Construction and Design Standards for additional specifications related to Storm, Land, and Groundwater Drain design standards:

1. Chapter 1.32 (Storm, Land, and Groundwater Drains)
2. Drawing 1 (Standard Street Intersection and Utility Locations)
3. Drawing 2 (Standard Utility Locations in Knuckle)
4. Drawing 3 (Standard Street Cross Sections and Utility Locations)
5. Drawing 10 (Standard Curb Face Inlet Detail)
6. Drawing 11 (Mountable Curb Inlet Detail
7. Drawing 12 (Manhole Access Curb Inlet Box (Combo Box) Detail)
8. Drawing 13 (Storm Drain Junction Box Detail)
9. Drawing 14 (Typical Land Drain Manhole Detail)

C. GENERAL. The Developer shall provide on-site storm drainage facilities ~~according to the Storm Water Drainage Design Manual and~~ in accordance with the ordinances of the City and the City Construction and Design Standards.

Calculations will need to be completed and submitted to the City documenting the following design parameters:

1. Detention. All detention shall detain a 25 year 24 hour storm with a maximum 0.15 cfs per acre release rate. Release rates shall be determined by the City Engineer.
2. Retention. All retention shall retain and infiltrate a 100 year 24 hour storm event. Retention shall drain out after 48 hours.

The following storm drainage design criteria shall apply to all storm drainage designs in the City that will be maintained by the City. Additional design

criteria are specified in the Standard Drawings. The minimum allowed pipe size for all storm drain pipe is fifteen-inch (15") diameter.

D. INLET BOXES AND MANHOLES.

1. Storm Water Inlets. Curb face inlets must be constructed at all low lying areas. Curb face inlet boxes will serve tributary piping and shall not be used as junction boxes or manholes. If multiple piping is required in a structure using a curb face inlet, a combination box shall be constructed which must include a manhole for access. No inlets shall be allowed at the bottom of an ADA ramp structure or in a designated pedestrian path. Refer to standard details for more information.

   As a general rule, inlets shall be installed at intervals not to exceed 500 feet. Inlet spacing shall be addressed during the design phase. Storm drain catch basins or inlets shall generally be located on both sides of the street to avoid cross gutters. Inlet spacing and configuration shall be designed to collect runoff from a 10-year design storm.

2. Storm Drain Boxes. No storm drain manholes allowed. Minimum junction box interior width is four-foot (4'). A minimum of six inches (6") clear distance between the pipe and a side wall is required. Refer to the Storm Drain Junction Box Standard Detail for additional details.

   Spacing between storm drain boxes shall be no more than four hundred (400).

3. Pipe Material. Pipe material shall be reinforced concrete or ~~solid wall HDPE pipe~~dual wall polypropylene pipe as approved by City Engineer's office.

   HDPE pipe for storm drain shall be manufactured in accordance with most current ASTM D 3350, "Standard Specification for Polyethylene Plastics Pipe and Fitting Materials" and most current AWWA C906, "AWWA Standard for Polyethylene (PE) Pressure Pipe and Fittings, 4 inch through 63 inch, for Water Distribution." Pipe and fittings shall be High Density Polyethylene made of PE 4710 material, and shall have a minimum cell classification of PE 445474C or higher.

   Polyethylene pipe shall be joined by thermal butt-fusion, electrofusion, or other methods as recommended for use by the pipe manufacturer. Fusion shall be conducted only by persons who have received training in the use of fusion equipment according to the recommendations of the pipe supplier or equipment supplier. In situations where different polyethylene piping materials must be joined, the fusion procedure shall be approved by the Engineer. Polyethylene piping shall not be joined by solvent cements, adhesives (such as epoxies), or threaded type connections.

4. Storm Water Treatment. All new land development will require provisions for storm water treatment before the water is allowed to discharge into the existing City system. A design that will separate oils and particulates from the discharged water will have to be approved by the City Engineer. The treatment facility must be easily accessible and maintainable without unreasonable effort.

E. MULTIPLE-LOT STORM DRAINAGE CALCULATIONS. The following information shall be included in the storm drainage calculations for multiple-lot development.

1. Hydrologic (Flow) Calculations.

    a. A map showing drainage sub-basins and the piping system.

    b. Cumulative peak flow calculations for each sub-basin (submit all input data, calculations and results).

2. Hydraulic (Inlet and Pipe) Calculations.

    a. Capacity calculations for each segment of the pipe system.

    b. Calculations demonstrating that flow rates in streets do not exceed maximums before being caught in storm drain inlets. “Section 5.07, Sub-Section C: Inlet Spacing” dictates the criteria required for allowable water spread.

    c. Calculations demonstrating that inlets are sufficiently long to capture peak design flows.

    d. Calculations demonstrating that all pipes have a 2 fps minimum velocity for the design storm.

    e. Detention Calculations.

        1. Detention volume requirement which includes an analysis that identifies the storm whose duration creates the greatest detention volume requirement, given storm duration and stage storage curve and outlet discharge curve.

        2. Orifice calculations illustrating that the maximum release rate is not exceeded.

        3. Engineer to provide certification with stamp that constructed detention meets design volumes and capacities

F. COMMERCIAL SITE STORM DRAINAGE CALCULATIONS. The following information shall be included in the storm drainage calculations for commercial site property development.

1. Hydrologic (Flow) Calculations.

    a. Peak flow calculations for the site (submit all input data, calculations and results).

2. Hydraulic (Inlet and Pipe) Calculations.

    a. Capacity calculations for each segment of the pipe system.

3. Detention Calculations.

    a. Detention volume requirement-an analysis that identifies the storm whose duration creates the greatest detention volume requirement, given storm duration and stage storage curve and outlet discharge curve.

    b. Stage storage curve - generally required only on large detention basins.

    c. Outlet discharge curve - generally required only on large detention basins.

    d. Orifice calculations illustrating that the maximum release rate is not exceeded.

    e. Detention Basins Acceptance. Prior to acceptance of detention basin construction, a Registered Professional Engineer shall provide a stamped letter and exhibit verifying that the constructed volume, side slopes, high water/spillway elevations, box/orifice plate elevations, pipe sizes and slopes, etc. have met the requirements set forth within the storm drainage report and the construction plans

G. LANDSCAPED STORM DETENTION BASIN REQUIREMENTS. Storm water must be detained such that the peak flow rate released from the site does not exceed 0.15 cubic feet per second per acre of development (cfs/acre). Detention basins must have vehicular access for maintenance and will not be allowed in the backyards of single family residences. The following limitations apply to detention basins.

1. The side slopes of the basin may not be steeper than 3:1 unless special circumstances warrant a change. The bottom of the detention basin must slope toward the drain.

2. Within 10 feet of the outlet, the slope of the basin bottom must not be flatter than 5% unless a concrete apron is constructed around the outlet.

3. Excluding areas within 10 feet of the outlet, the maximum allowable depth of water in the basin is 3 feet. An additional one (1) foot of freeboard must be constructed on all basins.

4. Storm drain pipes are to be continuous through detention areas to allow low flows to proceed through the storm drainage system without having to come to the surface. These flows must still pass through the outlet restriction that limits runoff rates.

5. Basins are to be designed such that water does not run into them after storm water reaches a maximum depth (unless a free flowing overflow is provided)—this can usually be controlled by the elevation of an inlet box in the street adjacent to the basin.

6. Basins are to be designed such that when runoff exceeds design values or when restrictions plug, excess storm water will be directed to the street system or bypass the restriction by entering the piped system via a free flowing overflow.

7. A basin may be designed for dual use, but uses other than the detention of storm water must be approved by the City Engineer.

8. In cases where the basin detains water from and is part of a project controlled by a "Home Owners Association" (HOA), the HOA will be responsible to maintain the operation, landscaping and irrigation sprinkling of the basin.

H. HARD SURFACE STORM DETENTION STORAGE REQUIREMENTS. If property is not available for a landscaped detention basin or cannot meet the one-foot depth criteria, storm water shall be detained underground in an approved underground system. Storm water must be detained such that the peak flow rate released from the site does not exceed 0.15 cubic feet per second per acre of development (cfs/acre). Underground storage designs should be discussed with the City Engineer before submittal. The following limitations apply to underground detention storage.
    1. Basins are to be designed such that when runoff exceeds design values or when restrictions plug, excess storm water will be directed to the street system or bypass the restriction by entering the piped system via a free flowing overflow.

    2. The private property owner benefiting from the hard surface or underground detention storage will be responsible to maintain the operation of the system.

I. UNDERGROUND STORM DRAIN DETENTION. Standards coming soon.

J. STORM WATER QUANTITY CRITERIA AND DESIGN GUIDELINES. The following storm drainage criteria and design guidelines apply to all storm drainage plans in the City and shall be used in storm drainage calculations. The City Engineer has authority to modify the criteria and guidelines as needed to meet changing or unusual needs or conditions.

1. Design Storm.

    a. Frequency.

        1. Design storm drain piping system for a 10-year storm.

        2. Design detention for the 25-year storm.

        3. Design for the flooding hazard and overflow point of any storm greater than the 25-year storm.

    b. Intensity—per the following table.

Rainfall Intensities (inches/hour)

Duration	10 Year	25 Year	100 Year
5 min	3.18	4.19	6.16
10 min	2.42	3.18	4.69
15 min	2.00	2.63	3.87
30 min	1.34	1.77	2.60
60 min	0.83	1.09	1.61
2 hours	0.47	0.61	0.87
3 hours	0.34	0.43	0.59
6 hours	0.20	0.24	0.31
12 hours	0.12	0.14	0.18
24 hours	0.07	0.08	0.10

2. Runoff Coefficients. The City requires the design engineer to calculate a composite runoff coefficient based on surface type and associated runoff coefficient, weighted by the area of each surface type.

3. Inlet Spacing. Two criteria must be met.

    a. Spread of water in the street:

        1. Storm water must be delivered from the street into an underground piped system when the spread of water in the street covers the outside 7 feet of asphalt on a local street, the outside 2 feet on a Parkway street and the

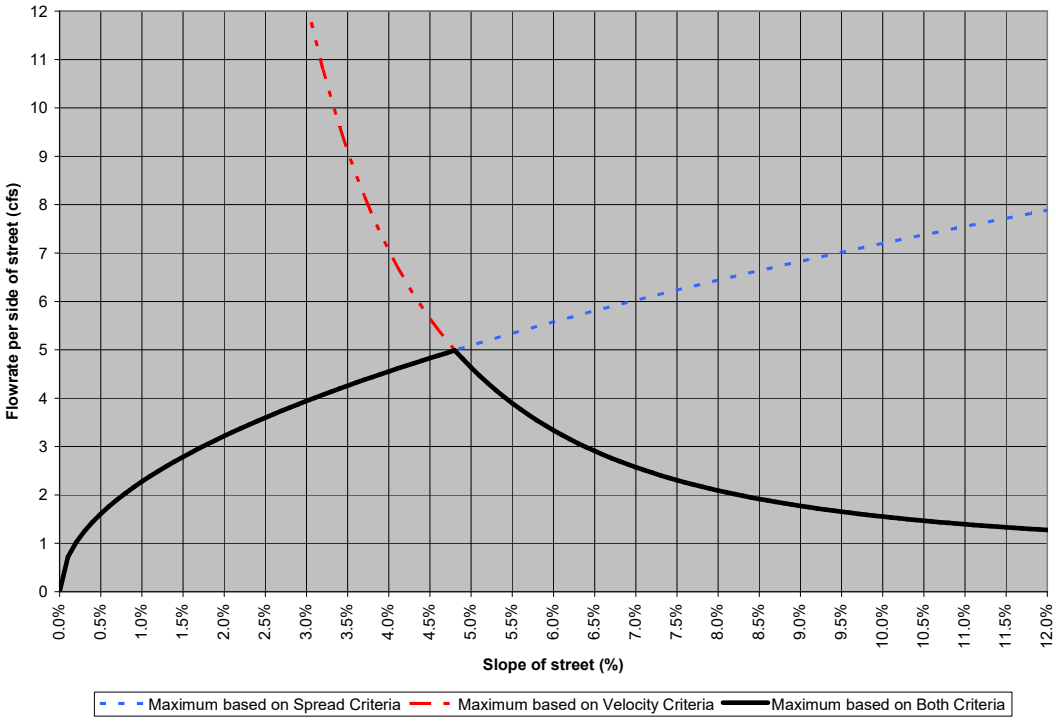
outside 2 feet on a Boulevard street. This will leave 12-feet of unsubmerged asphalt for local streets (that have 26 feet of asphalt), 10-feet in each direction of unsubmerged asphalt for Parkway streets (that have 24 feet of asphalt) and 22-feet in each direction of unsubmerged asphalt for Boulevard streets (that have 48 feet of asphalt).

b. Gutter velocity:

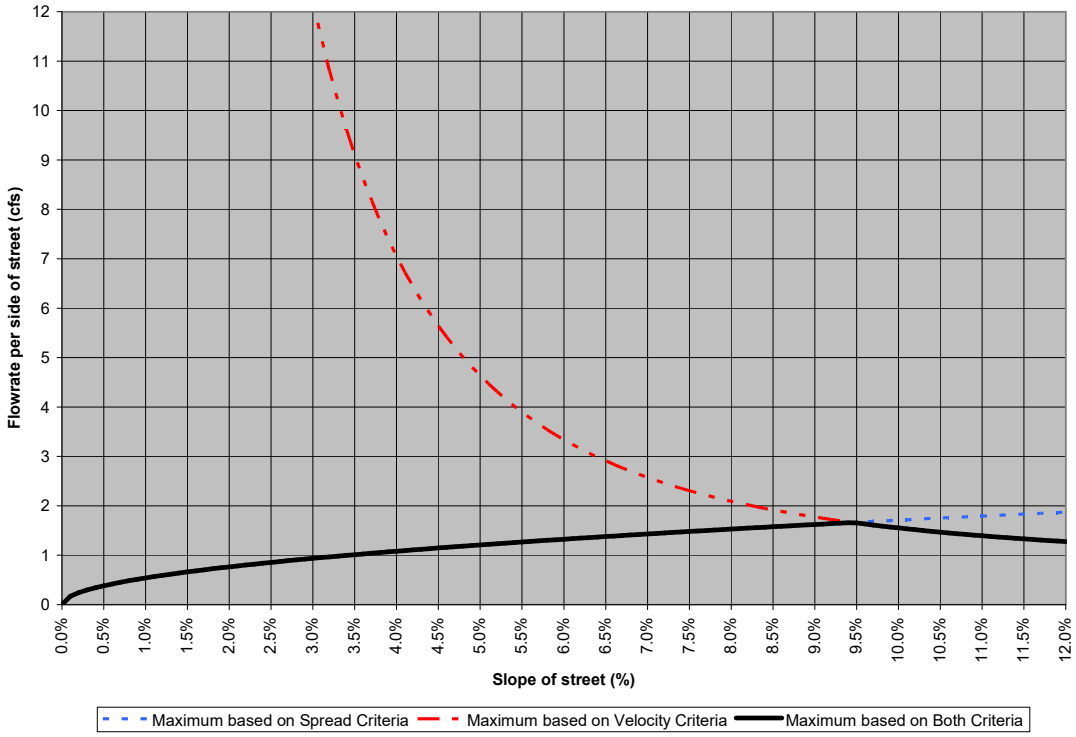
    1. Water must be delivered from the street into an underground piped system when the velocity of water in the deepest part of the gutter reaches 10 feet per second (as a safety consideration).

Both of these requirements are a function of street slope and storm water flow rate. Storm water must be delivered from the street to storm drains when flows reach amounts shown in the following graphs. This means that for a given longitudinal street slope, flows on the street surface must be delivered into the underground piped system when they reach the amount indicated on the graph by the solid line.

GRAPH FOR LOCAL STREETS



GRAPH FOR PARKWAY AND BOULEVARD STREETS



Note: The spread of water in the street is calculated using the Manning equation in the form developed by Izzard, with a roughness coefficient of 0.013 and the standard street cross section. The velocity criteria is based on the velocity at the deepest part of the gutter with the Manning Equation, with a roughness coefficient of 0.013, and using a depth at a point six inches from the face of the curb as the hydraulic radius

4. Inlet Capacity. The designer is to assume 50% blockage of inlets when considering storm drain inlet capacity.

5. UPDES and Storm Water Pollution Prevention Plan. All construction sites, which disturb an area of 1 acre or more, or disturb less than one acre and are part of a common plan of development, need to obtain a UPDES permit from the State of Utah. As a condition of the permit, a Stormwater Pollution Prevention Plan (SWPPP) must be developed and implemented as outlined by the Department of Environmental Quality website (http://www.deq.utah.gov/Permits/water/updes/stormwater.htm).

1.08.080 Power and Communication

A. POWER. Electrical lines shall be underground except when the City Engineer feels that such underground lines are not in the best interest of the City. Lines shall be located opposite water and pressurized irrigation lines if possible

B. COMMUNICATION. Communication lines shall be underground except when the City Engineer feels that such underground lines are not in the best interest of the City.

1.08.090 Specialized Engineering

A. GENERAL. Any specialized engineering beyond the expertise of city staff such as, but not limited to, geotechnical, traffic, environmental, hillside, floodplain, bank stabilization and erosion control will require the review of qualified consultants. All review costs shall be paid by the Developer.

B. LANDFILL. Any work on a landfill as defined by Utah Administrative Code R315-260-10(84) and 40 C.F.R. § 260.10 [or as a backup R315-301-2(7)-(11)] will require review and approval by Utah Department of Environmental Quality.

C. HILLSIDE GEOTECHNICAL ENGINEERING. Any development or land disturbance of any kind shall be required to submit a site specific geotechnical report including a slope stability analysis. Close proximity to a steep slope shall be defined as the horizontal distance from the slope which is less than or equal to the vertical distance from the crest of the slope to the toe of the slope. The geotechnical report shall include sufficient subsurface exploration, laboratory testing and geotechnical engineering analysis to

render design level geotechnical recommendations and opinions regarding slope stability and required mitigation to protect planned or future development above and below the slope(s) from earth deformations and other adverse soil or geological conditions.

All work completed in connection with the site specific geotechnical report shall be performed by an experienced geotechnical engineering firm and under the direct supervision and direction of a professional geotechnical engineer properly licensed in the state of Utah. The scope of work described below is considered the minimum requirement for the geotechnical investigation. The geotechnical firm shall use their experience and engineering judgment in conjunction with the minimum requirements outlined below to develop an appropriate site-specific geotechnical scope of work and report.

1. Field Explorations. Prior to commencing field explorations, the geotechnical engineer shall review available geologic maps, aerial photographs and other pertinent literature to develop an understanding of the site and its geologic setting.

2. Utilities. Locate utilities within areas of explorations by notifying the appropriate local one-call state utility locate service. Independent private utility locates may be required for utilities not identified by the local one-call service.

3. Soil Borings. Complete at least one (1) soil boring for every residential lot. The number of borings for other types of development shall be determined by standard geotechnical practice. Boring(s) shall be located within close proximity to slope crests so as to render a representative soil profile of the slope for analysis. The boring(s) shall extend to a minimum depth of 15 feet below the tow of the slope. For example, if a 30-foot tall slope is being evaluated the boring shall extend at least 45 feet below the top of the slope. Borings shall extend through existing fill materials so that at least one sample is collected in native soil. Adjust boring depths for anticipated site development cuts and fills and for known soil conditions.

   The geotechnical engineer shall consider past property use and location. Additional soil borings shall be planned for sites located in areas that are known or suspected to have had previous slope deformations or seeps, springs or other adverse features. Special attentions shall be given to identifying, to the extent practical, the presence and extent of existing fill.

4. Soil Samples. Collect a minimum of four (4) soil samples in the upper ten (10) feet of the profile and at intervals of five (5) feet thereafter. Adjust sampling intervals to include major changes in soil layering. Collect a sufficient number of undisturbed samples in fine-grained soils

to properly assess strength and consolidation properties. Perform split barrel sampling in granular soils. Field blow counts should be corrected for energy and depth and presented as Standard Penetration Test (SPT) blow counts on the soil boring logs.

Field classify encountered soil in accordance with the American Standard for Testing and Materials (ASTM) and Unified Classification System (USCS).

5. Bedrock. Borings encountering bedrock shall be extended a minimum of 5 feet into the bedrock. Rock coring equipment shall be used where practical to aid in assessing rock properties. Where cores are collected, Rock Quality Designator (RQD) values should be presented on the boring logs.

6. Laboratory Testing. Samples collected in the field shall be properly packaged to avoid disturbance or freezing and transported to an accredited geotechnical and materials testing laboratory for further observation and testing. Laboratory testing shall be performed under the direction of a Utah licensed professional geotechnical engineer and in accordance with appropriate ASTM standards. At a minimum laboratory testing shall include the following:

    a. SIEVE ANALYSIS: Determine grain size distribution and percent fines (minus 200 sieve).

    b. ATTERBERG TESTS: Classification, indexing, shrinkage and expansiveness.

    c. DENSITY: In-place density.

    d. MOISTURE CONTENT: Natural moisture content.

    e. SHEAR STRENGTH: Direct shear and/or triaxial shear.

    Additional laboratory testing may be required to address site conditions and provide necessary engineering properties for analysis. The geotechnical engineer shall use his professional judgment and local experience to determine an appropriate scope for laboratory testing. Laboratory test results shall be presented in the Geotechnical Report, on individual summary sheets in the report appendix or on the boring logs.

7. Geotechnical Report Requirements. The results of the field and laboratory programs shall be evaluated by a Utah registered professional geotechnical engineer. Based on the results of their evaluation, an engineering report shall be prepared that details the results of the testing performed, provides logs of the borings and a

diagram of the site/boring layout and provides geotechnical recommendations and information regarding the following:

a. SUITABILITY: General suitability of the site for the planned development.

b. PRECAUTIONS AND LIMITATIONS: Recommended precautions and limitations.

c. PROCEDURES: Subsurface exploration procedures.

d. EXISTING CONDITIONS: Soil and rock conditions encountered.

e. GROUNDWATER: Groundwater depth during and after drilling.

f. SETTING: Geologic setting.

g. HAZARDS: Geologic hazards.

h. SLOPE STABILITY EVALUATION: Slope stability evaluation including provisions, recommendations and designs to mitigate the effects of unstable slopes and other geologic hazards that may adversely impact planned developments above and below the slope(s).

i. SPECIAL DESIGN AND CONSTRUCTION PROVISIONS: Special design and construction provisions for footings or foundations near steep slopes, including type and depth of foundation system and set back distance from slopes.

j. RUNOFF AND DRAINAGE: Surface water runoff control and drainage.

k. SUBSURFACE DRAINAGE: Existing subsurface drainage conditions.

l. SITE GRADING AND EARTHWORK REQUIREMENTS: Recommended site grading and earthwork requirements, as appropriate.

8. BORING LOGS. Detailed individual boring logs and graphical cross sections summarizing soil / rock profiles and slope stability analysis and results shall be included in the geotechnical report. The logs shall contain sufficient detail to render a clear description of the soil stratigraphy, soil descriptions and classifications, SPT blow counts, sample locations and depths, groundwater depths and appropriate laboratory test results. Individual boring logs shall include a description of the boring location, exploration equipment used, relative or actual elevation, date of exploration and other pertinent information relative to the field exploration. The cross sections shall contain sufficient detail

to render a clear description of the slope stability analysis results, and any mitigation measures required. The cross sections shall contain soil profile data, and a summary of engineering properties and parameters used in the analysis for each significant soil / rock layer.

9. SURFACE WATER BANK STABILIZATION. In order to protect future development adjacent to surface water and natural erosion hazards, all future development that borders surface water within the boundaries of the City shall complete a natural hazards analysis for flooding, erosion, and groundwater hazards. A technical report must be prepared by a professional engineer, registered in the State of Utah, to document that analysis. The analysis and report shall, at a minimum, include the following items:

10. WATER HAZARD MAPS. A figure with a recent aerial photograph for a base map showing the study area and the FEMA Special Flood Hazard Areas. The study area shall include the proposed lot(s) or parcel(s) that are to be developed 1,000 feet either side of Development along flood hazard (measured along the water bank) of the proposed development. Map shall show the location of proposed structures, or building envelopes, adjacent to the flood hazard.

    A review of historic surface water in the area. Use the following items, if available:

    a. HISTORICAL AERIALS: Historical aerial photographs of the area.

    b. ORIGINAL CADASTRAL SURVEY: Original government cadastral survey of the area.

    c. HISTORICAL QUADANGLE MAPS: Historic quadrangle maps of the area.

    d. RECENT AERIALS: Recent aerial photographs and maps of the area.

11. OTHER WATER HAZARD ANALYSIS. Include a figure in the report that documents the results of the following analysis:

    a. CHANNEL MIGRATION AND EROSION TRENDS: An assessment of channel migration and erosion trends in the area.

    b. TYPICAL FIELD CHANNEL: Provide a figure that shows one or more typical field surveyed channel cross sections of the river channel adjacent to the proposed development. Comment on banks slopes, material on channel bottom, and vegetation.

    c. AVERAGE VELOCITY: Average anticipated flow velocities in the channel adjacent to the development associated with flood

events that have a 10-, 2- and 1-percent chance of occurring in any given year.

A field assessment of the condition and stability of the existing channel in the study area, on both sides of the river. This field assessment shall primarily be a visual assessment completed by a professional with a member of the City Engineering staff in attendance. It shall include, but not be limited to:

a. SOILS: Soil types.

b. ERODIBILITY: Erodibility of the channel bed and banks.

c. CHANNEL AND BANKS: General condition of the channel and banks.

d. VEGETATION: An assessment of the condition and percent cover of existing vegetation on the channel banks and in the floodplain.

e. EXISTING EROSION CONTROL MEASURES: An assessment of any existing erosion control measures that exist in the area.

f. EROSION HAZARDS: Identification of any erosion hazards that need to be mitigated.

g. MAINTENANCE EASEMENTS: Identify maintenance easements needed to access the channel. surface water.

h. EROSION AND FLOOD HAZARD: Provide an overall "professional opinion" based on previous experience, professional judgment, and technical analyses of any existing erosion and flood hazards that could potentially endanger proposed structures, utilities or infrastructure and recommend means to mitigate those hazards.

12. GROUNDWATER. In addition to the erosion hazard assessment, the following issues shall also be addressed in this report:

a. RUNOFF: Generally identify how storm water runoff from the proposed development will be managed. If storm water will be discharged into the surface waters confirm that backwater will not back up into the pipe and cause flooding in the newly developed area during a 1-percent annual chance flood.

b. BASEMENTS: Assess whether the area is suitable for basements based on anticipated groundwater levels during the 1-percent annual chance flood.

c. GROUNDWATER LEVELS: Historic groundwater levels in the area (if any).

d. 1-PERCENT FLOOD GROUNDWATER LEVELS: If a ground water drain is proposed as part of the development, assess how it will function during the 1-percent annual chance flood.

e. CERTIFIED BASEMENT STATEMENT: Provide a certified statement from a professional geotechnical engineer regarding whether the proposed area is suitable for the construction of basements based on the assumption that the river will be conveying the 1-percent annual chance flood.

13. PROFESSIONAL GEOTECHNICAL ENGINEER STAMP AND SIGNATURE. The final geotechnical report shall bear the geotechnical engineer's stamp and signature.

14. REPORT. One (1) electronically submitted PDF copy of the report shall be delivered to the City within sufficient time for review and comment. The City will have the report reviewed by its own geotechnical engineer. The cost of that review will be borne by the applicant.

1.12 Contractor Requirements

1.12.010 Contractor Approval

A. CITY CONSTRUCTION AND DESIGN STANDARDS. See the following City Construction and Design Standards for additional specifications related to contractor approval:

1. Article 1.04.030 C (Bonds)
2. Article 1.08.010 B (Construction Plans Approval)
3. Section 1.12.020 (Insurance)

B. GENERAL. Before a Contractor performs any Improvement within the City, the City shall approve the Contractor. Approval is granted for a period of one (1) year upon submission of the following:

1. Contractor's License. An active Utah State Division of Occupational and Professional Licensing contractor's license. License must be an E100, S410, or S390. Work will be restricted to that authorized by the license.
2. Certificate of Insurance (COI). COI approved by City. COI shall meet the requirements of Section 1.12.020 (Insurance).
3. Status Verification. Contractor agrees that it, and its subcontractors, will register with and use a Status Verification System to verify the federal employment authorization status of all employees hired after July 1, 2009. Contractor, and its subcontractors, will comply, in all respects, with Utah Code Annotated §63-99a-103, as it may be amended from time to time.

C. APPROVED PLANS. Contractor shall not begin construction without approved plans according to Article 1.08.010 B (Construction Plans Approval). Contractors proceeding with work without such approved plans shall have the project shut down until plans are approved. Repeated offenses may result in the Contractor losing its Contractor Approval to perform work in the City.

1.12.020 Insurance

A. GENERAL. A Contractor must acquire the insurance stipulated in this section to prequalify to do construction work. The city must receive and accept proof of the insurance before any work may begin. The submittal of said evidence to the City shall not relieve or decrease the liability of the Contractor hereunder.

B. WORKERS' COMPENSATION. Contractor shall obtain worker's compensation insurance as required by State law.

C. Proof of comprehensive general liability insurance. Bodily injury insurance will be in an amount of not less than three hundred thousand dollars ($300,000.00) for any one occurrence. Property damage insurance will be in an amount of not less than two hundred thousand dollars ($200,000.00) for any one occurrence and shall include underground exposure. Combined liability insurance will be in an amount of not less than five hundred thousand dollars ($500,000.00) for any one occurrence.

D. COMMERCIAL GENERAL LIABILITY INSURANCE. A 30-day written notice shall be provided to the City in the event of cancellation and a 10-day written notice for non-payment of premium. Also, the following statement is required on the COI: "Vineyard City, its elected and appointed officials, employees, agents, volunteers and the Utah Department of Transportation are listed on the referenced policy as additional insureds." The ~~following~~ commercial general liability insurance must be obtained and submitted on ISO Form CG 00 01 (11/85) or equivalent, occurrence policy. Refer to state requirements for limits.~~, with limits not less than:~~

~~General Aggregate $1,000,000~~

~~Products - Comp/OPS Aggregate $1,000,000~~

~~Personal and Advertising Injury $ 500,000~~

~~Each Occurrence $500,000~~

~~Fire Damage (any one fire) $50,000~~

~~Medical Expense (any one person) $5,000~~

Also include the following endorsements or their equivalents attached thereto:

1. ISO Form CG 25 03 (11/85), Amendment of Limits of Insurance (Designated Project or Premises), describing the subject contract and specifying limits ~~as shown above~~.

2. ISO Form CG 20 10 (11/85), Additional Insured — Vineyard City, Lessees, or Contractors (Form B), naming the City as additional insured and containing the following statement, "This Endorsement Also Constitutes Primary Coverage in the Event of any Occurrence, Claim, or Suit".

E. AUTOMOBILE LIABILITY INSURANCE. Contractor shall obtain automobile liability insurance with limits of not less than $500,000 Combined Single Limit per accident. Coverage shall apply to any auto.

1.12.030 Submittals

A. APWA. Unless otherwise specified in the City Construction and Design Standards, material submittals work shall meet the requirements and specifications of the following APWA sections and related Divisions:

1. APWA 01 33 00 (Submittal Procedure)
2. APWA 01 64 00 (Owner-Furnished Products)
3. APWA 01 65 00 (Product Delivery and Handling)
4. APWA 01 66 00 (Product Storage and Protection)

B. GENERAL. Contractors are required to provide to the City submittals according to APWA 01 33 00 (Submittal Procedure) for all materials to be used in the City for review and approval.

1. For pre-manufactured items, documentation must be submitted a minimum of 2 weeks before installation and must include sufficient information, including shop drawings, if applicable, to establish models, colors, sizes, installation requirements, etc. that will be used.
2. For on-site manufactured items, such as asphalt, concrete or base courses, submit mix designs, hot/cold weather installation plans, and materials certifications a minimum of 5 working days prior to planned installation.
3. Submittals for the following, at a minimum, should be submitted:
    a. All pre-manufactured items meeting city standards such as light fixtures, electrical components, utility fixtures and piping, landscaping, etc.
    b. Hot Mix Asphalt Mix Designs
    c. Portland Cement Concrete Mix Designs
    d. Treated Base Course Mix Designs
    e. Untreated Base Course Job Mix Formulas
    f. Tack and Prime Coats
    g. Concrete Curing Compounds
4. Submit copies of all Quality Control testing and inspection reports within 48 hours of placement of materials.

C. NEW MATERIALS. Only new materials may be used during construction unless otherwise authorized by the City Engineer.

D. CITY FURNISHED PRODUCTS. If the City furnishes any products the Contractor shall conform to requirements and specifications of APWA 01 64 00 (Owner-Furnished Products).

E. PRODUCT DELIVERY AND HANDLING. The Contractor shall conform to requirements and specifications of APWA 01 65 00 (Product Delivery and Handling).

F. PRODUCT STORAGE AND PROTECTION. The Contractor shall conform to requirements and specifications of APWA 01 66 00 (Product Storage and Protection).

1.12.040 Quality Assurance and Quality Control

A. APWA. Unless otherwise specified in the City Construction and Design Standards, quality assurance and quality control work shall meet the requirements and specifications of the following APWA sections and related Divisions:

    1. APWA 01 43 00 (Quality Assurance)

    2. APWA 01 45 00 (Quality Control)

B. CITY CONSTRUCTION AND DESIGN STANDARDS. See the following City Construction and Design Standards for additional specifications related to quality assurance and quality control:

    1. Chapter 1.16 (Inspection and Testing)

C. QUALITY ASSURANCE. Perform Quality Assurance work in accordance with APWA 01 43 00 (Quality Assurance). Quality assurance work shall be conducted at the Contractor's expense. The City will verify quality assurance at their discretion and inform the contractor of acceptance or rejection.

D. QUALITY CONTROL. Perform Quality Control work in accordance with APWA 01 45 00 (Quality Control). Quality Control work shall be conducted at the Contractor's expense. The City will verify quality Control at their discretion and inform the contractor of acceptance or rejection.

E. MATERIALS PRODUCTION. Use UDOT certified facilities for asphalt and portland cement concrete. Submit verification of Plant Certifications with mix designs.

F. TESTING. Perform testing in accordance with APWA 01 43 00 (Quality Control). Use UDOT certified laboratories and personnel. Submit verification of lab and personnel with mix designs.

1.16 Inspection and Testing

1.16.010 General

A. APWA. Unless otherwise specified in the City Construction and Design Standards, inspections and testing work shall meet the requirements and specifications of the following APWA sections and related Divisions:

1. APWA DIVISION 1 (GENERAL REQUIREMENTS)
2. APWA 00 72 00 Part 13 (Tests and Inspections; Correction, Removal or Acceptance of Defective Work)
3. APWA 00 72 00 14.7 (Final Inspection)
4. APWA 01 43 00 (Quality Assurance)
5. APWA 01 45 00 (Quality Control)
6. APWA 01 66 00 (Product Storage and Protection).
7. APWA 03 20 00 (Concrete Testing)

B. CITY CONSTRUCTION AND DESIGN STANDARDS. See the following City Construction and Design Standards for additional specifications related to inspection and testing:

1. Chapter 1.16 (Inspection and Testing)
2. Article 1.04.030 D (Pre-Construction Conference)

C. INSPECTION FEE. Inspection fees established by the City Council in the annual budget or by resolution shall be charged for Improvements and Development. Inspection fees shall include a charge for inspection callbacks.

D. INSPECTIONS. All inspections will be done by appointment only with a minimum 24-hour notice. If no inspection for a Minor Land Disturbance Permit is called for and performed 60 days after permit issuance, Contractor's Deposit will be forfeited. Items buried without City approval will be re-excavated by the permittee at no additional cost to the City.

Inspections and testing shall be conducted according to APWA 00 72 00 Part 13 (Tests and Inspections; Correction, Removal or Acceptance of Defective Work) and in accordance with City standards.

1. Notification of Needed Inspections:
    a. Inspection performed during regular working hours requires at least twenty-four (24) hours' notification.

b. Inspections needed after 4:00 p.m., require notification be given ~~by 1:00 p.m. on~~ the day ~~of~~ before the inspection and will be accommodated if personnel are available.

c. Inspections needed on the weekend require that notification be given by 1:00 p.m. on the preceding ~~Friday~~Thursday and will be accommodated if personnel are available.

E. PRE-CONSTRUCTION CONFERENCE. The Contractor must schedule a Pre-Construction Conference according to Article 1.04.030 D (Pre-Construction Conference) before any inspection work.

F. FEDERAL, STATE, AND LOCAL INSPECTING AGENCIES. The site of construction is to be open at all reasonable times and places for periodic observation by accredited representatives of the Federal, State, and local agencies who have regulatory or supervisory authority over any part of the work proposed or regulated thereto.

G. DEFECTIVE WORK AND PROTECTION OF WORK AND MATERIALS. Contractor shall protect any construction work against damage from weather vandalism or any other hazard. See APWA 00 72 00 Part 13 (Tests and Inspections; Correction, Removal or Acceptance of Defective Work). See APWA 01 66 00 (Product Storage and Protection).

H. TESTING AND SAMPLING. The City Engineer or City Inspector may require that testing or sampling be performed in his or her presence.~~, in which case the Developer or Contractor shall be notified of this requirement in writing at the time the building permit is issued, or at the Pre-Construction Conference, or when construction drawings are released by the City for construction, as applicable~~.

~~The Contractor will perform quality control inspection, sampling and testing in accordance with the APWA Manual of Standard Specifications and City standards. Quality control testing will consist of all testing identified for acceptance within the individual specifications. At minimum, this will include the following:~~

~~Material quantity, by weight or volume.~~

~~Aggregate gradations for all fill, asphalt or concrete materials.~~

~~Thickness testing for all materials with a specified thickness.~~

~~Density testing for all materials with a specified density.~~

~~Mix properties for asphalt, including binder content, air voids at design compaction, voids in the mineral aggregate (VMA) at design compaction.~~

~~Mix properties for asphalt, including air content, slump, and 28-day compressive strengths.~~

~~Each sample or test shall be accompanied by the following written data, which shall be reported to the City with test results:~~

~~Name of Project~~

~~Name of Developer/Contractor~~

~~Project Street Address~~

~~Appropriate Test Name~~

~~Date of Sampling~~

~~Sample Number (if more than one sample per day)~~

~~Name of Technician~~

~~Location~~

I. TESTING AGENCY. All materials testing, whether in a laboratory or in the field, shall be conducted by a testing agency approved by the City Engineer.

J. WORK WITHOUT REQUIRED INSPECTION AND TESTING. Failure to provide proper notification or to perform work without inspection or testing will result in rejected material. Rejected material will be subject to additional verification requirements including, but not limited to, post-placement sampling and laboratory testing for material conformance, in-place testing for asphalt and base thickness and density, in-place testing for concrete strength and air content. All post-placement testing for uninspected work will be at no additional cost to the City.

   Additionally, any work performed without required inspection or testing will give the City the option to hold the bond covering that portion of the improvements in violation, or, require the removal and replacement of the un-inspected work. ~~The City shall have the option of retaining part or all of the bond for up to 10 years after installation of improvements constructed without required inspection or testing~~The City Engineer may require specialized testing to verify acceptance. The City Engineer may also accept the work at a reduced price.

K. SUB-STANDARD WORK AND PAY FACTORS. If any inspection or test indicates that work does not meet City standards the City Engineer may require that the work be redone. If the work has a pay factor option in the APWA or City standards, the City Engineer may accept the work at a reduced price upon condition that the pay factors outlined in the City standards apply. Payment reduction amounts shall either be assessed to the developer as a fee based upon bond estimates for the work or be applied against payments to Contractors for City contracts. When any work is done to a lower standard than allowed for in the pay factor tables the work shall be redone until it meets City standards.

L. WEEKLY PROGRESS MEETINGS. All active construction projects in the City will have a weekly progress meeting at the City inspector. Progress meetings may be held on site.

M. ROAD CONSTRUCTION. Road construction may not commence until all underground utilities are installed and pass all the inspections and tests required by these standards.

N. ASPHALT PAVING ACCEPTANCE DETAILS. Unless otherwise stated, the City will determine acceptance of asphalt paving, including underlying base layers, based on a combination of contractor quality control testing, City quality assurance testing, and asphalt plant production records.

O. ACCEPTANCE OF IMPROVEMENTS. Inspections made by the City or a company hired by the City to determine compliance with the specifications do not imply final acceptance of the work. The City requires the completion of all facilities before any are accepted for maintenance. The following inspections must be scheduled and passed before final acceptance of any improvements:

1. Final Inspection. The Contractor must schedule with the City Final Inspection according to APWA 00 72 00 14.7 (Final Inspection).

2. One Year Warranty Inspection. One year after the Contractor or Developer passes the end of construction inspection, he or she must schedule a one year warranty inspection. This inspection must be conducted after the one year asphalt preservation coat is applied when applicable.

If the Contractor or Developer does not pass one of these inspections a punch list of work items necessary to pass the inspection will be given to the Contractor or Developer. The Contractor or Developer must reschedule inspections with the City until the project or development passes the inspection.

All improvements shall be free from defects, damage, or debris at the time of these inspections. The Contractor or Developer shall not be responsible for debris or damage not caused as a result of his or her work or quality of work.

Any faulty or defective work shall be corrected by the Contractor within 30 days of the failed inspection or according to the contract the City has with the Contractor.

If the Contractor or Developer fails to do so, the City Engineer may have such repairs made, and the cost of such repairs shall be paid by the Developer before bond release.

1.16.020 Drinking Water

A. APWA. Unless otherwise specified in the City Construction and Design Standards, drinking water work shall meet the requirements and specifications of the following APWA sections and related Divisions:

1. APWA DIVISION 33 (UTILITIES)
2. APWA 01 45 00 (Quality Control)
3. APWA 33 08 00 (Commissioning of Water Utilities)
4. APWA 33 08 00 3.9 (Tracer Wire Continuity Test)
5. APWA 33 11 00 (Water Distribution and Transmission)
6. APWA 33 13 00 (Disinfection)

B. GENERAL. Inspections and tests shall be conducted according to APWA 01 45 00 (Quality Control) and shall ensure drinking water installations meet the requirements of APWA DIVISION 33 (UTILITIES) and related APWA sections.

C. MAIN LINE INSPECTION. The City must inspect all drinking water main line installations on an ongoing basis. Inspection notification must be given before any construction of main line may begin. All fittings, crosses, tees, bends, valves, bell insertions, and hydrants must be inspected by the City before they are backfilled.

D. TRACER WIRE CONTINUITY TEST. Entire length of tracer wire shall be tested and approved prior to paving as required by APWA 33 08 00 3.9 (Tracer Wire Continuity Test).

E. DRINKING WATER SERVICE INSPECTION. The City must inspect all drinking water services before service trenches are backfilled. The City must be able to survey services at the main during the inspection. Use stainless steel stiffeners installed to manufacturer's specifications in all small diameter polyethylene pipe, City must be able to verify that stainless steel stiffeners were installed.

F. HIGH CHLORINE TEST. High chlorine tests shall meet the requirements and specifications of APWA 33 13 00 (Disinfection). The City must conduct a high chlorine test at every hydrant on a new drinking water main installation. If a hydrant does not exist on the test section, tests must be taken at the end of each line. The chlorine residual shall be at least 25 mg/L.

G. PRESSURE TEST. Pressure test must be conducted after the successful completion of the bacteria test. The Contractor must pressure/leakage test all drinking water systems, system extensions and service laterals to the setter in the presence of the City Engineer or have tests documented and submitted by a certified testing company approved by the City. Test shall be performed in accordance with APWA 33 11 00 (Water Distribution and Transmission) requirements for leakage and exfiltration.

H. LEAKAGE TEST. Leakage tests shall be conducted concurrently with the pressure tests and according to APWA 33 08 00 (Commissioning of Water Utilities). Leakage shall be defined as the quantity of water that must be supplied into the newly laid pipe, or any valved section thereof, to maintain pressure within 5 psi of the specified test pressure after the air in the pipeline has been expelled and the pipe has been filled with water.

No pipe installation will be accepted if the leakage is greater than that determined by the following formula:

$$Q \equiv \frac{LD * \sqrt{P}}{133{,}200}$$

In which Q is the allowable leakage, in gallons per hour; L is the length of pipeline tested in feet; P is the average test pressure, in pounds per square inch (gage) and D is the nominal diameter of the pipe in inches.

Provide 2002~~5~~ psi test pressure for 2 hours unless specified otherwise. If any test of pipe laid discloses leakage greater than specified, the Contractor shall, at their own expense, locate and repair the defective material until the leakage is within the specified allowance. All visible leaks are to be repaired regardless of the amount of leakage.

I. BACTERIA TEST. Pipes shall be cleaned thoroughly before disinfection. If flushing alone is insufficient to remove debris or contamination (as determined by the City Engineer), mechanical cleaning will be required, followed by swabbing with a 1% hypochlorite disinfection solution. Only after proper cleaning should disinfection commence.

Bacteria tests shall meet the requirements and specifications of APWA 33 13 00 (Disinfection). Tests may only be scheduled at certain regular times set by the City. Only City staff may open and close valves and fire hydrants. The Contractor shall be present ~~and~~ when City opens all hydrants or other locations to be tested from. The City shall submit samples to a certified lab to be tested according to state drinking water regulations.

If any sample point fails on the first test, the line will be flushed and re-tested at all sample points. If any sample point fails a second time, the complete line will be re-disinfected and re-tested at all sample points. If any samples come back marked “presence”, which means coli form bacteria is present, the line will be re-disinfected and re-tested at all sample sites. Contractor is responsible to pay for all bacteria tests and retests.

Drinking water services on main replacements will not be installed until bacteria sample results have been approved by the City Engineer. All testing lab fees shall be paid by the Contractor. Services on new subdivisions will be tested at the same time as the main line.

1.16.030 Earthwork

A. APWA. Unless otherwise specified in the City Construction and Design Standards, earthwork shall meet the requirements and specifications of the following APWA sections and related Divisions:

1. APWA DIVISION 31 (EARTH WORK)
2. APWA DIVISION 32 (EXTERIOR IMPROVEMENTS)
3. APWA DIVISION 33 (UTILITIES)
4. APWA 01 45 00 (Quality Control)
5. APWA 32 05 10 (Backfilling Roadways) Section 3.9

B. GENERAL. The inspections and tests in this section are required for all ~~sanitary sewer~~utility construction in the City boundaries and on all construction relating to the City ~~sanitary sewer~~utility systems outside the city boundaries. Inspections and tests shall be conducted according to APWA 01 45 00 (Quality Control) and shall ensure earthwork meets the requirements of APWA DIVISION 31 (EARTH WORK), DIVISION 32 (EXTERIOR IMPROVEMENTS) and related APWA sections.

C. COMPACTION AND MOISTURE CONTENT TESTS. The City will require testing on all sub-grade and fill material for compaction and moisture content by an appropriately licensed and certified testing agency. Test locations shall be determined by the City.

1. Trenches. Tests will generally be taken 1 per 200 lineal feet of trench per 8-inch lift.
2. Streets. Tests will generally be taken 3 per 200 lineal feet of street per 8-inch lift.
3. Other Cuts and Fills. Tests will generally be taken 1 per 2,000 square feet of compacted area.

D. REDHEAD INSPECTION. The project engineer must provide redheads for all grade work when brought to within 3 inches of finish grade. The City must inspect and accept finished grading to the engineered redheads.

E. PROOF ROLL INSPECTION. Proof roll inspections shall be conducted according to APWA 32 05 10 (Backfilling Roadways) Section 3.9.

F. THICKNESS TEST. Material thickness tests will be conducted by the City when the City Engineer considers it necessary. The total depth shall be reasonably close to that shown in the typical section. Depth analysis shall be made on at least four holes for each section. Base thickness shall be accepted if 75% of the

test holes are less than 1/4" below the specified thickness and no individual hole shall be more than 3/4" below the specified thickness.

1.16.040 Landscaping and Irrigation Sprinkler Systems

A. APWA. Unless otherwise specified in the City Construction and Design Standards, landscaping and irrigation sprinkler systems work shall meet the requirements and specifications of the following APWA sections and related Divisions:

1. APWA 01 45 00 (Quality Control)

B. GENERAL. The inspections and tests in this section are required for all landscaping and irrigation sprinkler work that will be owned or maintained by the City or a Home Owners Association unless otherwise specified by the Construction and Design Standards or otherwise required by the City Engineer. Inspections and tests shall be conducted according to APWA 01 45 00 (Quality Control) and shall ensure work meets requirements of plans and City standards.

All work shall be inspected by the City ~~Assistant Director Parks and Open Spaces or designee~~. All inspections shall be done by appointment only with a minimum 24-hour notice. Items buried without City approval shall be re-excavated by the permittee at no additional cost to the City.

C. PLANT MATERIAL INSPECTION. All plant materials are to be inspected and approved by the City at the time of delivery on site. This approval does not constitute final acceptance of any plant material by the City Parks Department Representative. All plant materials will be inspected again at time of final inspection and once again at the end of the warranty period. See Article 1.16.020 Q (Acceptance of Improvements). Any plant found to be unacceptable at any of these inspections shall be immediately removed and replaced.

D. FLUSHING INSPECTION. When the pipelines are connected and the sprinkler risers in place but before any heads are installed, the control valves shall be opened and flushed with a full head of water to clean out the system. This shall be done in the presence of the City.

E. SPRINKLER SYSTEM ASSEMBLY INSPECTION. An on-site inspection shall be conducted by the City after the entire sprinkler system is assembled and prior to backfilling the trenches. During this inspection all fittings, bends, sweeps, valves, sprinkler heads and any other appurtenance on the system may be surveyed by the City. This inspection will not be conducted for landscaping that is not planned to be owned by the City.

F. FALL SPRINKLER WINTERIZING TEST. In the fall of the year during the installation and guarantee period, the Contractor shall meet with the City on the project site. The Contractor shall winterize the system by draining all the

water and doing everything necessary to insure the protection of the system until spring. Blowing out the lines by compression shall be permitted during the 1 year guarantee. The individuals involved from both parties shall exchange all information necessary for the eventual takeover of the system by the City Maintenance Personnel. This inspection will not be conducted for landscaping that is not planned to be owned by the City.

G. SPRING SPRINKLER ENERGIZING TEST. The Contractor with the City Maintenance Personnel in attendance shall energize the sprinkler irrigation system the spring following the fall winterizing test. Contractor shall repair all defects found as a result of winter damage, improper installation, improper maintenance, defective materials or inadequate sprinkler drainage. This inspection will not be conducted for landscaping that is not planned to be owned by the City.

H. FINAL INSPECTION. Landscaping shall be completed prior to the final inspection and acceptance of warranty with the appropriate phase of the development. The Contractor shall operate, maintain, and guarantee the irrigation sprinkler system until all landscaping on the project is approved by the City Parks Department at a final inspection. Contractor shall submit record drawings, manufacturer's technical product maintenance data, and installation instructions for irrigation sprinkler system materials and products to the City before final inspection.

I. ONE YEAR WARRANTY INSPECTION. At the end of the one (1) year warranty period, all landscaping and irrigation sprinkler systems must then be inspected and tested by the Contractor with the City present. This inspection will not be conducted for landscaping that is not planned to be owned by the City.

    1. Irrigation sprinkler systems must operate in a satisfactory manner, with a full uniform coverage of the areas that are indicated to be sprinkled. Sprinkler heads shall be adjusted to proper level.

    2. Landscape and irrigation sprinkler systems will not be inspected for acceptance in parts. Where inspected work does not comply with requirements, Contractor shall replace rejected work and continue specified maintenance until reinspected by the City and found to be acceptable. Remove rejected plants and materials promptly from the project site and replace with approved plants and materials.

1.16.050 Portland Cement Concrete Work

A. APWA. Unless otherwise specified in the City Construction and Design Standards, Portland cement concrete work shall meet the requirements and specifications of the following APWA sections and related Divisions:

    1. APWA DIVISION 3 (CONCRETE)

2. APWA 01 45 00 (Quality Control)
3. APWA 03 30 05 (Concrete Testing)
4. APWA 03 39 00 (Concrete Curing)

B. GENERAL. The inspections and tests in this section are required for all concrete work that will be owned or maintained by the City or a Home Owners Association unless otherwise specified by the Construction and Design Standards or otherwise required by the City Engineer. Inspections and tests shall be conducted according to APWA 01 45 00 (Quality Control) and shall ensure Portland cement concrete work meets the requirements of APWA DIVISION 3 (CONCRETE), and related APWA and City standards.

C. COMPRESSION, SLUMP, TEMPERATURE AND AIR ENTRAINMENT TEST. Test concrete work according to APWA 03 30 05 (Concrete Testing). The City Engineer may allow the following pay factors for sub-standard Portland cement concrete strength:

Pay Factor	Tolerance (psi below 28-day specified strength)
0.98	1 to 100
0.94	101 to 200
0.88	201 to 300
0.80	301 to 400
0.50	401 to 500
Replace	More than 500

These pay factors may not be applied toward concrete in structures.

D. FORMS AND STRING LINE INSPECTION. The City shall inspect all forms and string lines before concrete may be placed.

E. GUTTER DRAINAGE INSPECTION. The City shall inspect all gutters for drainage prior to paving. Water shall be let into all gutters and any gutters with standing water in excess of 1/4 inch after runoff shall be replaced. Contractor must supply water truck for gutter drainage inspection.

F. THICKNESS TEST. The City shall determine the number, if any, and location of core tests necessary to ensure the proper thickness of Portland cement concrete. Tests shall be taken at equal intervals in a test area. A test area shall be defined as a total area placed at the same time and by the same process. The average thickness shall then be determined from all the cores taken. Tests shall be taken and verified by a certified testing lab contracting to the City.

When the average thickness is more than 0.25 inches below the specified thickness, a minimum of 1 core per 1,500 square feet of pavement shall be taken. Work with sub-standard thickness may be accepted at reduced price if the appropriate pay factor for the lowest tested thickness is applied to all of the substandard work. The City Engineer may allow the following pay factors for substandard Portland cement concrete thickness:

Portland Cement Concrete
Thickness Pay Factors

Pay Factor	Tolerance (inches below specified thickness)
1.00	0.00 to 0.25
0.90	0.26 to 0.50
0.70	0.51 to 0.75
0.50	0.76 to 1.00
Replace	More than 1.00

G. CURING INSPECTION. The City shall inspect the curing of all Portland cement concrete work within 24 hours of pouring the concrete. Curing shall be completed according to APWA 03 39 00 (Concrete Curing).

1.16.060 Sanitary Sewer

A. APWA. Unless otherwise specified in the City Construction and Design Standards, sanitary sewer work shall meet the requirements and specifications of the following APWA sections and related Divisions:

1. APWA DIVISION 33 (UTILITIES)
2. APWA 01 45 00 (Quality Control)
3. APWA 33 08 00 (Commissioning of Water Utilities)
4. APWA 33 08 00 3.6 (Exfiltration Test)
5. APWA 33 08 00 3.7 (Distortion Test)

B. GENERAL. Inspections and tests shall be conducted according to APWA 01 45 00 (Quality Control), and APWA 33 08 00 (Commissioning of Water Utilities) and shall ensure sanitary sewer installations meet the requirements of APWA DIVISION 33 (UTILITIES) and related APWA sections.

C. MAIN LINE INSPECTION. The City must inspect all sanitary sewer main line installation on an ongoing basis. Inspection notification must be given before any construction of the main may begin.

D. SERVICE INSPECTION. The City must inspect all sanitary sewer services before service trenches are backfilled. The City must be able to survey services at each end during the inspection.

E. AIR PRESSURE TEST. Contractor shall conduct a low pressure air test according to APWA 33 08 00 3.6 (Exfiltration Test) by the following method under the direction of the City Engineer with equipment equal to Cherne Industrial, Inc., or provide proof that test was conducted by a certified testing company. Sanitary sewer pipes with inside diameters of 30 inches or larger shall be leak tested according to manufacturer's specifications.

1. All wyes, tees, or ends of lateral stubs shall be suitably capped and braced to withstand the internal test pressures. Caps shall be easily removable for future lateral connections or extensions. After a manhole to manhole section of line has been backfilled and cleaned, it shall be plugged at each manhole with pneumatic plugs.

2. Low pressure air shall be introduced into the sealed line until the internal air pressure reaches 4 psi-G greater than the average back pressure of any ground water that may be over the pipe. At least 2 minutes shall be allowed for the air pressure to stabilize.

3. The portion of line being tested shall be accepted if the portion under test does not lose air at a rate greater than 0.003 cubic feet per minute per square foot of internal pipe surface or 2.0 cubic feet per minute minimum when tested at an average 3.0 psi-G greater than any back pressure exerted by ground water that may be over the pipe at the time of the test.

4. The pipe and joints shall also be considered acceptable when the time required in minutes for pressure to decrease from 3.5 To 2.5 psi-G (greater than the average back pressure of any ground water that may be over the pipe) shall not be less than the time shown for the given diameters in the following table:

Pressure Reduction Time Limits

Pipe Diameter (inches)	Time (minutes)
4	2.0
6	3.0
8	4.0
10	5.0
12	5.5
15	7.5
18	8.5
21	10.0
24	11.5

If the installation fails to meet this requirement, the Contractor shall determine at his/her own expense the source of leakage. He shall repair or replace all defective materials and/or workmanship. All sanitary sewer mains shall be tested, cleaned and accepted by the City before laying the street surface.

F. VIDEO INSPECTION. Contractor shall clean all sanitary sewer lines prior to video inspection. The ~~City~~ Contractor shall video inspect all sanitary sewer main lines prior to paving with a NASSCO certified company.

Cleaning shall be done using a high pressure jet cleaning machine, producing a minimum of 800 psi. Debris shall not be permitted to enter the City storm drain system. Wastewater and debris shall not be permitted to enter the City sanitary sewer system but shall be removed at the lowest manhole of the extension.

Main line determined to be defective by the City Engineer shall be remedied by the Contractor. Contractor shall then clean and video inspect the main lines again.

G. DISTORTION TEST (MANDREL TEST). Contractor shall perform a distortion test according to APWA 33 08 00 3.7 (Distortion Test) on all sewer lines after video inspection. Distortion tests must be conducted in the presence of the City Engineer or be documented and submitted by a certified testing company approved by the City. The Mandrel must be pulled by hand or air. A pipe distortion test shall be required of the Developer/Contractor after backfilling and compaction of the trench.

1.16.070 Storm, Land, and Groundwater Drains

A. APWA. Unless otherwise specified in the City Construction and Design Standards, storm, land, and groundwater drains work shall meet the requirements and specifications of the following APWA sections and related Divisions:

1. APWA DIVISION 33 (UTILITIES)
2. APWA 01 45 00 (Quality Control)

B. GENERAL. Inspections and tests shall be conducted according to APWA 01 45 00 (Quality Control) and shall ensure storm water installations meet the requirements of APWA DIVISION 33 (UTILITIES) and related APWA sections.

C. MAIN LINE INSPECTION. The City must inspect all storm, land, and groundwater drain main lines during installation on an ongoing basis. Inspection notification must be given before any construction of the pipe may begin. All groundwater drain designs shall be pre-approved by the City Engineer.

H. VIDEO INSPECTION. Contractor shall clean all sanitary sewer lines prior to video inspection. The ~~City~~ Contractor shall video inspect all sanitary sewer main lines prior to paving with a NASSCO certified company.

Cleaning shall be done using a high pressure jet cleaning machine, producing a minimum of 800 psi. Debris shall not be permitted to enter the City storm drain system but shall be removed at the lowest manhole or box of the extension.

Main line determined to be defective by the City Engineer shall be remedied by the Contractor. Contractor shall then clean and video inspect the main lines again.

1.16.080 Streets

A. APWA. Unless otherwise specified in the City Construction and Design Standards, streets work shall meet the requirements and specifications of the following APWA sections and related Divisions:

1. APWA DIVISION 31 (EARTH WORK)
2. APWA DIVISION 32 (EXTERIOR IMPROVEMENTS)
3. APWA 01 45 00 (Quality Control)
4. APWA 32 12 16 (Plant-Mix Asphalt Paving)

B. GENERAL. Inspections and tests shall be conducted according to APWA 01 45 00 (Quality Control) and shall ensure street installations meet the requirements of APWA DIVISIONS 31 (EARTH WORK) and 32 (EXTERIOR IMPROVEMENTS) and related APWA sections.

C. PRE-PAVING MEETING. The paving contractor must schedule a pre-paving meeting with the City's engineering secretary at least 7 days before any asphalt paving on a new development or city project may begin. Paving may not begin until after the pre-paving meeting and/or written notice-to-proceed is given by the City.

The paving contractor, developer, project engineer, supplier and testing firm must be present at the Pre-Paving Meeting. Topics for the meeting will include:

1. Contact Information and Project Responsibility
2. Submittal Review
3. Placement Schedule
4. Placement Tonnages

5. Density testing and inspection details, including field targets, roller pattern and whether cores will be used for thickness and density acceptance.

6. Mix sampling and testing details, including sampling locations, procedures, testing facility and result turnaround time.

7. Inclement weather plans.

Workmanship issues, including tack coverage, limitations on raking and smoothness requirements.

D. ASPHALT PAVEMENT MATERIAL TESTS. Material tests will be conducted by the Contractor when the City Engineer considers it necessary.

E. COMPACTION TESTS. The Contractor shall have a certified testing company test all bituminous pavement for compaction and moisture content. Test locations may be determined by the City but will generally be taken 3 per 200 lineal foot of street or 1 per 2,000 square foot of paved area. Pay factors as per APWA 32 12 16 (Plant-Mix Asphalt Paving) shall apply. Test results shall be sent to the City by the testing company within 3 business days of the tests.

F. GRADING INSPECTION. The subgrade, sub-base, and road base shall all be graded to an engineered red-head and accepted by the City. Red-heads shall be placed every 50 feet at the crown of the road. If the distance between redheads and edge of pavement exceeds 25 feet additional redheads shall be installed halfway between the crown and edge of pavement. Red-heads shall also be placed every 50 feet at the edge of pavement where there is no curb and gutter.

G. THICKNESS TEST. Material depth tests will be conducted by the Contractor with the City present. City Engineer may waive this requirement if he or she considers it unnecessary. The total depth shall be reasonably close to that shown on the typical section. Depth analysis shall be made on at least four holes for each section. Base thickness shall be accepted if 75% of the test holes are less than 1/4" below the specified thickness and no individual hole shall be more than 3/4" below the specified thickness. Work with sub-standard thickness may be accepted at reduced price if the appropriate pay factor for the lowest tested thickness is applied to all of the substandard work. The following table outlines the pay factors for sub-standard asphalt pavement thickness:

Pavement Depth Pay Factors

Pay Factor	Tolerance (inches below specified thickness)
0.95	0.00 to 0.25
0.90	0.26 to 0.50

Replace	More than 0.5

H. PROFILE TOLERANCE INSPECTION. Profile tolerance inspections may be required by the City any time within a year of paving. Collector and arterial streets shall meet the requirements of APWA 32 12 16 (Plant-Mix Asphalt Paving). For local streets profiling, the maximum vertical distance from the pavement surface to a straight edge is:

1. 1/4-inch in 10-feet parallel to centerline.
2. 3/8-inch in 10 feet perpendicular to centerline except at cross section grade breaks.

I. ASPHALT CONCRETE TEMPERATURE TEST. This test shall be conducted on the first three loads of asphalt concrete installed, and on one in four of all future loads as required by the City. Testing shall be conducted according to the requirements and specifications of APWA 32 12 16 (Plant-Mix Asphalt Concrete Paving). Temperature gauge shall be allowed to stabilize for 1 minute before taking reading if using probe type. If using infrared "gun" type, reading shall consist of an average of a minimum of 3 readings, where reading is taken immediately after displacing a minimum of 2 inches of material from the surface being tested and the "gun" is within 18" of the surface being tested.

J. ASPHALT PAVING LIMITATIONS. Pave according to Section 02741 Part 3.8 of the 2012 Standard Specifications for Road and Bridge Construction published by the Utah Department of Transportation (UDOT) unless otherwise approved by the City Engineer. Place HMA between April 15 and October 15, and when the air temperature in the shade and the roadway surface temperature are above 50 degrees Fahrenheit. In the event the City Engineer approves paving between October 15th and April 15th, an overlay in the spring will be required as outlined in the table below. Do not place HMA on frozen base or during adverse climatic conditions such as precipitation or when roadway surface is icy or wet. Use a release agent that does not dissolve asphalt and is acceptable to the City Engineer for all equipment and hand tools used to mix, haul, and place the HMA.

Pavement Depth After October 15TH / Before April 15TH

Street	Typical	Base Asphalt	Spring Overlay	Total Asphalt
Local	3"	2.5"	2"	4.5"
Collector	4"	3"	2"	5"
Arterial	5"	4"	2"	6"
Parking lot & Driveway	3"	2.5"	2"	4.5"
Commercial Local	4"	3"	2"	5"

The City Engineer may, at his/her discretion, waive this date restriction requirement if outside temperatures are at least 60°F and the base material condition is approved.

1.20 Earthwork and Trenches

1.20.010 General

A. APWA. Unless otherwise specified in the City Construction and Design Standards, earthwork and trenches work shall meet the requirements and specifications of the following APWA sections and related Divisions:

1. APWA DIVISION 31 (EARTH WORK)

B. CITY CONSTRUCTION AND DESIGN STANDARDS. See the following City Construction and Design Standards for additional specifications related to earthwork and trenches:

1. Chapter 1.08 (Improvement and Design Requirements)
2. Chapter 1.12 (Inspection and Testing)
3. Chapter 1.16 (Contractor Requirements)

1.20.020 Excavation

A. APWA. Unless otherwise specified in the City Construction and Design Standards, excavation work shall meet the requirements and specifications of the following APWA sections and related sections:

1. APWA 31 11 00 (Site Clearing)
2. APWA 31 23 16 (Excavation)
3. APWA 31 23 17 (Rock Removal)
4. APWA 31 25 00 (Erosion and Sedimentation Control)
5. APWA 31 41 00 (Shoring)

B. CITY CONSTRUCTION AND DESIGN STANDARDS. See the following City Construction and Design Standards for additional specifications related to excavation.

1. Article 1.20.030 E (Cement Treated Fill)
2. Drawing 1 (Standard Street Intersection and Utility Locations)
3. Drawing 2 (Standard Utility Locations in Knuckle)
4. Drawing 3 (Standard Street Cross Section and Utility Locations)
5. Drawing 17 (Typical Trench Section)
6. Drawing 22 (Fire Hydrant and Water Valve Detail)

7. Drawing 23 (Thrust Block Details)

8. Drawing 25 (Large Meter Assembly)

9. Drawing 26 (Backflow Prevention Assembly)

C. SAFETY. All construction shall be done in accordance with the provisions of the Utah State Industrial Commission, OSHA regulations and APWA 31 23 16 (Excavation). No trenches deeper than 4 feet shall be left open at any time unless construction is in process. When construction is in process only 200 feet of trench may be open at one time and must be completely backfilled before proceeding. No trenches shall be left open at any time unless guarded with adequate barricades, warning lamps and signs.

Any injury or damage resulting from lack of adequate bracing and shoring shall be the responsibility of the Contractor and the Contractor shall, at his/her own expense, affect all necessary repairs or reconstruction resulting from such damage. No inspections will be done in unsafe trenches and will be the cause for immediate shutdown at the project until the trench is deemed to be safe by the City Engineer.

D. IN GRAVEL AND PAVED SURFACE AREAS. Where any excavation occurs in a gravel or paved surface area such as a road, driveway or parking area, the surface shall be restored according to the requirements and specifications of APWA 33 05 25 (Pavement Restoration) and the following conditions.

1. Base. Only engineered fill as outlined in this chapter may be used as backfill or sub-base material under gravel and paved surfaces. A minimum of 8 inches of untreated base course shall be placed over backfill or sub-base. All fill material shall be placed and compacted to City standards. Flowable fill shall not be allowed for backfill unless authorized by the City Engineer, see Article 1.20.030 E (Cement Treated Fill).

2. Surface Maintenance. The surface shall be maintained by blading, sprinkling, rolling, adding gravel, etc., to maintain a safe uniform surface satisfactory to the City.

3. Cutting of Pavement. Before any excavation in a paved area, the surface along the entire excavation shall be cut to provide a vertical joint in the surface. Cut shall be made 6 inches from the edge of excavation in straight lines parallel or perpendicular to the trench or edge of pavement. A pavement saw shall be used for all pavement cutting. If excavation damages the cut pavement, pavement shall be cut again before patching. A roto-milled edge shall be acceptable as a cut.

4. Time Limitation. All road cuts shall be repaired within 2 working days of excavation unless otherwise authorized by the City Engineer.

5. Cold Weather Patching. Trenches cut during winter months or when asphalt plants are not operating, shall be patched the same day of the cut with a good quality cold mix according to the requirements and specifications of APWA 32 12 16.19 (Cold-Mix Asphalt Paving).These trenches shall be maintained until asphalt plants open. When asphalt plants open, the temporary cold patch shall be removed and a new patch of hot mix asphalt shall be placed. All cold mix patches shall be replaced with hot mix patches within 20 days of the opening of the hot mix plant.

6. Adjust Incidental Structures to Grade. Adjust incidental structures to grade according to APWA 33 05 14 (Utility Grade Adjustment).

E. IN AREAS WITH CONCRETE. When damaged, existing concrete improvements shall be removed and replaced to the next joint or scoring line beyond the damaged or broken sections. If joints or scoring lines do not exist or are three or more feet from the removed or damaged section, the damaged portions shall be removed and reconstructed to neat, plane faces. All concrete work shall meet the requirements and specifications of Chapter 39.65. (Portland Cement Concrete Work) and APWA 33 05 25 (Pavement Restoration).

F. ROCK EXCAVATIONS AND BLASTING. Rock excavations shall meet the requirements and specifications of APWA 31 23 17 (Rock Removal). Blasting will not be allowed except by permission from the City Engineer and shall meet the requirements and specifications of APWA 02 41 13 (Selective Site Demolition). The Contractor shall comply with all laws, regulations, ordinances, and safety codes relative to the handling, storage, and use of explosives. The Contractor shall be fully responsible for all damage to life and property attributable to its blasting operations. Excessive blasting or overshooting will not be permitted. The Contractor shall remove any material outside the authorized cross section, which may be shattered or loosened by blasting.

G. SITE CLEARING AND THE DISPOSAL OF EXCESS MATERIALS. Site clearing shall be conducted according to APWA 31 11 00 (Site Clearing). All excavation material, which is not required for construction or is unsuitable for fill material, shall be immediately disposed of by the Contractor. All roads, sidewalks, curbs, gutters and ditches shall be kept clean of excavated material except as outlined in Title 10.06.040 of the City Municipal Code.

All demolition work shall meet the requirements and specifications of APWA 02 41 13 (Selective Site Demolition), APWA 02 41 14 (Pavement Removal) and APWA 02 41 15 (Pavement Pulverizing).

Removal and disposal of Asbestos Cement Pipe shall be per the Utah Department of Environmental Quality (DEQ) Division of Air Quality (DAQ) guidance document, How to Handle Non-friable Asbestos Cement Pipe, A

Guide for Meeting Utah Department of Environmental Quality/Division of Air Quality Rules ("Guidance").

H. BARRICADES. Barriers shall be placed at each end of all excavations, and at such places as may be necessary along excavations, to warn all pedestrians and vehicular traffic of such excavations. Lights shall also be placed along excavations from one hour before sunset each day to one hour after sunrise of the next day, until such excavations are entirely refilled, compacted, and surfaced or final graded. All excavations shall be barricaded in such a manner as to prevent persons from walking into, falling into, or otherwise entering those excavations.

I. CONTROL OF GROUNDWATER. All trenches shall be kept free from water during excavation, fine grading, pipe laying and jointing, and pipe embedment operations. Where the trench bottom is mucky or otherwise unstable because of the presence of groundwater, and in all cases where the static groundwater is above the bottom of any trench or bell hole excavation, such groundwater shall be lowered to the extent necessary to keep the trench free from water and the trench bottom stable when the work within the trench is in progress. The discharge from excavation dewatering shall be conducted to natural drainage channels, gutters, drains, or storm sewers. No sanitary sewer shall be used for disposal of trench water. Surface water shall be prevented from entering trenches. A state dewatering permit is required if the groundwater is pumped into the storm drain or leaves the site.

J. TRENCH CROSSINGS AND EASEMENTS. At road crossings or where existing driveways occur on a road, the Contractor shall make provisions for trench crossings either by means of backfill, tunnels, or temporary bridges.

Any disturbance to property caused by the Contractor's activity within easements shall be restored to the satisfaction of the owner of the property. If necessary, shrubs, fences, or other objects shall be removed carefully. If work must occur on a lawn, the lawn shall be cut to a width of two feet (2') wider than the intended work area (one foot (1') on each side). The lawn sod shall be stacked separately from and shall not be mixed with other excavated material.

After the sod is removed, if excavation is necessary, the topsoil shall be removed to a depth of twelve inches (12"), or the actual depth of the topsoil, whichever is less. The topsoil shall be stored separately from and shall not be mixed with other excavated material.

Following completion of the backfilling and the compaction of the trench, the Contractor shall replace topsoil, lawn sod, shrubs, fences, and other items that may have been removed from within the easement area and shall clean up and remove any rocks, dirt or any other debris that remain from the construction work. The Contractor shall obtain a release from the property owner stating that the repairs have been made to the satisfaction of the Owner. A copy of said release shall be delivered to the City Engineer.

K. RESTORATION OF CONSTRUCTION SITE. During the progress of the Work, the Contractor shall clean up all construction debris, excess excavation, and excess materials, and shall restore all fences, irrigation structures, ditches, culverts, and similar items. The Contractor shall stockpile the excavated trench material so as to do the least damage to adjacent grassed areas, or fences, regardless of whether these are on private property or public rights-of-way. All excavated materials shall be removed from grassed and planted areas and these surfaces shall be left in a conditions equivalent to their original surface and free from all rocks, gravel, boulders, or other foreign materials.

1.20.030 Subgrade

A. APWA. Unless otherwise specified in the City Construction and Design Standards, subgrade work shall meet the requirements and specifications of the following APWA sections and related sections:

1. APWA 31 23 16 (Excavation)
2. APWA 31 23 17 (Rock Removal)
3. APWA 31 23 26 (Compaction)
4. APWA 31 25 00 (Erosion and Sedimentation Control)

B. CITY CONSTRUCTION AND DESIGN STANDARDS. See the following City Construction and Design Standards for additional specifications related to subgrade:

1. Drawing 17 (Typical Trench Section)

C. PREPARATION. All subgrade shall be shaped and compacted in reasonably close conformity with lines, grades and typical cross section as established by the City Engineer. All grading shall be based on an engineered survey, accepted by the City.

In trenches and cut or fill areas the subgrade shall be scarified to a depth of 8 inches and compacted according to the compaction standards of this chapter. No rocks larger than 4 inches in diameter, organic material, soft clay, spongy material, or other deleterious material will be permitted in this scarified subgrade layer.

D. SOFT AND YIELDING AREAS. Soft and yielding areas which do not compact to City standards shall be removed and replaced with enough compacted engineered fill to bridge the area. Trenches excavated within 10 feet of the lip of gutter shall remove the pavement to the gutter and replace it as part of the trench asphalt pavement repair unless otherwise approved by the City Engineer.

E. TRENCHES. When the sub-grade material does not afford a sufficiently solid foundation to support the pipe and superimposed load, the trench shall be over-excavated to a sufficient depth and backfilled with enough compacted fill as approved by the City to bridge the area.

F. ROADS. Road sub-grades shall be shaped and graded to within a tolerance of 0.15 feet of design grade. Drainage shall be maintained at all times.

G. STRUCTURES. Sub-grade material for all concrete structures, regardless of type or location, shall be firm, dense, thoroughly compacted and consolidated; shall be free from mud and muck; and shall be sufficiently stable to remain firm and intact under the feet of the workmen engaged in sub-grade surfacing, laying reinforcing steel, and depositing concrete.

   Coarse gravel or crushed stone may be used for subsoil reinforcement if results are satisfactory to the City Engineer. Such material shall be applied in layers, not exceeding 6 inches in thickness, each layer being embedded in the sub-soil by thorough tamping. All excess soil shall be removed to compensate for the displacement of the gravel or crushed stone and the finished elevation of any subsoil reinforced in this manner and shall not be above the specified sub-grade.

H. SOILS ANALYSIS. The City Engineer may require a soil analysis and design for projects in any area.

1.20.040 Fill Material

A. APWA. Unless otherwise specified in the City Construction and Design Standards, fill material work shall meet the requirements and specifications of the following APWA sections and related sections:

1. APWA 31 05 13 (Common Fill)
2. APWA 31 05 13 2.3 (Granular Backfill Borrow)
3. APWA 31 05 13 2.7 (Sand)APWA 31 05 13 2.8 (Gravel)
4. APWA 31 05 15 (Cement Treated Fill)
5. APWA 31 05 15 2.1 (Cement Treated Flowable Fill)
6. APWA 31 05 15 2.3 (Lime Treated Fill)
7. APWA 31 05 15 2.4 (Asphalt Treated Fill)
8. APWA 31 23 26 (Compaction)
9. APWA 31 25 00 (Erosion and Sedimentation Control)
10. APWA 32 11 23 (Aggregate Base Courses)

11. APWA 32 11 23 2.1 (Untreated Base Courses)

12. APWA 32 11 24 (Pulverized Pavement Base Course)

B. CITY CONSTRUCTION AND DESIGN STANDARDS. See the following City Construction and Design Standards for additional specifications related to fill material:

1. Section 1.24.060 (Installation and Compaction of Earth Materials)
2. Drawing 1 (Standard Street Intersection and Utility Locations)
3. Drawing 2 (Standard Utility Locations in Knuckle)
4. Drawing 3 (Standard Street Intersection and Utility Locations)
5. Drawing 17 (Typical Trench Section)
6. Chapter 1.20 (Earthwork and Trenches)

C. GENERAL. Only bedding material, engineered fill, untreated base course, or cement treated fill as specified in this section may be used as fill material under and within a foot of streets, future street areas, driveways, and concrete unless otherwise specified.

In other areas native excavated material may normally be used unless such material cannot be properly compacted according to specifications in this chapter, 1.20 (Earthwork and Trenches). All fill material, including native fill material, must be free from debris, organic material, and rocks larger than 6 inches in diameter and have a liquid limit not to exceed 35 and plastic limit not to exceed 15.

D. CONTRACTOR RESPONSIBILITY. The Contractor will be responsible for ensuring backfill and compaction are properly and adequately done according to APWA 31 23 26 (Compaction). Settlement of trenches within a period of two- (2) years after final acceptance of the project shall be considered incontrovertible evidence of inadequate compaction, and the Contractor shall be responsible for correcting the condition in accordance with the provisions of these Specifications. This includes the replacement of sidewalk, curb and gutter, and other surface improvements.

E. BEDDING MATERIAL. Use APWA 31 05 13 2.8 (Gravel) No. 54 Sewer Rock for gravity pipe bedding material. Use APWA 31 05 13 2.7 (Sand) sand as a bedding material for pressure pipe and conduit. Bedding sand must compact sufficiently to support the pipe.

F. ENGINEERED FILL. Use APWA 31 05 13 2.3 (Granular Backfill Borrow) granular backfill borrow for Engineered Fill.

G. UNTREATED BASE COURSE. Use APWA 32 11 23 2.1 (Untreated Base Courses) Aggregate Class A for untreated base course. The use of slag as an untreated base course shall not be permitted.

H. CEMENT TREATED FILL. Cement treated fill may only be used when approved by the City Engineer and shall meet the requirements and specifications of APWA 31 05 15 (Cement Treated Fill). Cement treated fill does not include treated/stabilized base materials that are part of the pavement design. Cement treated fill includes following fill materials:

    1. Controlled Low-Strength Material (CLSM) (Flowable Fill) APWA 31 05 15 2.1 (Cement Treated Flowable Fill)

    2. Lime Treated Fill, APWA 31 05 15 2.3 (Lime Treated Fill)

    3. Asphalt Treated Fill, APWA 31 05 15 2.4 (Asphalt Treated Fill)

I. DEFECTIVE FILL. Fill not conforming to the requirements of this specification shall be reworked to the requirements or removed and replaced with acceptable fill.

1.20.050 Slopes, Embankments, Fills, and Open Channels

A. APWA. Unless otherwise specified in the City Construction and Design Standards, slopes, embankments, fills, and open channels work shall meet the requirements and specifications of the following APWA sections and related sections:

    1. APWA 31 25 00 (Erosion and Sedimentation Control)

    2. APWA 31 36 00 (Gabions)

    3. APWA 31 37 00 (Riprap or Rock Lining)

    4. APWA 31 41 00 (Shoring)

B. CITY CONSTRUCTION AND DESIGN STANDARDS. See the following City Construction and Design Standards for additional specifications related to slopes, embankments, fills, and open channels:

    1. Section 1.04.050 (Erosion and Sedimentation Control)

C. PREPARATION. Unsuitable materials that occur in the foundation for slopes, embankments, and fills shall be removed by clearing, stripping, and/or grubbing. Where suitable materials occur, after stripping, the foundation shall be scarified to a depth of not less than 8 inches. All materials in slopes, embankments, and fills, including the scarified foundation layer, shall be placed, moistened, and compacted according to the compaction standards in this chapter.

D. MATERIAL. When the slope, embankment, or fill exceeds the amount of excavation, sufficient additional material shall be obtained from borrow pits provided by the Contractor. All material proposed to be imported shall be subject to the review and approval of the City Engineer prior any hauling operations.

   The materials used for slope, embankment and fill construction shall be free from sod, grass, trash, rocks larger than 6 inches in diameter and all other material unsuitable for construction of compacted fills.

E. GRADING. Grading of completed slope, embankment, or fill shall bring the surfaces to a smooth, uniform condition with final grades being within 0.1 foot of the design grade. All grading shall be done to an engineered red-head.

F. SLOPE SAFETY. All slope construction shall be in accordance with all City, State and Federal regulations. Plans and Specifications for structures must be approved by the City if the excavation is greater than five (5) feet. No permanent slopes steeper that 3:1 shall be allowed without a retaining structure unless otherwise approved in writing by the City Engineer. The width of the excavation shall be increased if necessary to provide space for sheeting, bracing, shoring and/or other supporting installations. Unsafe slopes will be the cause for immediate shutdown of the project.

G. SHORING. Conduct work according to APWA 31 41 00 (Shoring). Excavations shall be shored as required to support the walls of the excavations. These measures shall be taken to protect the workers, the work in progress, existing utilities, structures, and improvements, from damage due to sliding and settling of trench walls.

   The Contractor shall be fully responsible for the adequacy of methods and materials used in trench sheeting, bracing, shoring, and other systems provided to protect workers. Injury to or death of workers resulting from inadequate trench safety measures shall be the full and complete responsibility of the Contractor. All damages resulting from lack shoring shall be the responsibility of the Contractor, and the Contractor shall affect all necessary repairs or reconstruction at its own expense resulting from such damage.

   Shoring that does not extend below the centerline of the pipe may be removed at the discretion and responsibility of the Contractor after the pipe embedment has been placed and compacted to a level twelve (12) inches above the top of the pipe. Following removal of the sheeting or bracing, the trench shall be immediately backfilled and compacted or consolidated.

H. SEDIMENT AND EROSION CONTROL. See Section 1.04.050 (Erosion and Sedimentation Control).

I. GABIONS. Gabions shall meet the requirements and specifications of APWA 31 36 00 (Gabions)

J. RIP RAP AND ROCK LINING. Rip rap and rock lining work shall meet the requirements and specifications of APWA 31 37 00 (Riprap or Rock Lining).

1.20.060 Installation and Compaction of Earth Materials

A. APWA. Unless otherwise specified in the City Construction and Design Standards, installation and compaction of earth materials work shall meet the requirements and specifications of the following APWA sections and related sections:

1. APWA 33 05 20 (Backfilling Trenches)
2. APWA 31 23 23 (Backfilling Structures)
3. APWA 32 05 10 (Backfilling Roadways)
4. APWA 31 23 26 (Compaction)

B. CITY CONSTRUCTION AND DESIGN STANDARDS. See the following City Construction and Design Standards for additional specifications related to installation and compaction of earth materials:

1. Article 1.20.030 D (Fill Material)
2. Section 1.20.040 (Fill Material)
3. Drawing 17 (Typical Trench Section)

C. GENERAL. Fill material outside of pavement areas, as defined by APWA 32 05 10 (Backfilling Roadways), and more than 24 inches from any utility box shall be compacted to not less than 90% of the maximum dry density.

D. STREETS. Sub-base and road-base shall be graded to an engineered red head. Loose rock, roots, brush, and other materials that may be encountered in shaping the sub-base must be removed. Any soft and yielding area in the fill which do not compact to the specified density shall be removed and replaced with engineered fill installed and compacted to City standards or as directed by a Geotechnical Engineer.

E. BACKFILL IN TRENCHES. Backfill shall be carefully placed around and over pipes and shall not be permitted to fall directly on a pipe from such a height or in such a manner as to cause damage according to APWA 32 05 20 (Backfilling Trenches) and City Standard Drawing 17 (Typical Trench Section)

F. PIPE ZONE. The pipe zone includes the full width of trench from 3 inches below the pipe to 12 inches above the pipe for all pipes except for large reinforced concrete pipe (RCP). Large RCP includes RCP with internal diameters larger than 24 inches. The pipe zone for large RCP shall include the full width of trench from 6 inches below the pipe to 12 inches above the pipe.

The pipe zone for all pipes shall be filled with compacted bedding material as specified in Article 1.20.030 D (Fill Material). Pipe zone materials shall be placed and compacted under and around the pipe in horizontal layers not to exceed 8 inches and tamped by hand or pneumatic tampers.

1.20.070 Geotextiles, Geogrids, and Geocomposites

A. APWA. Unless otherwise specified in the City Construction and Design Standards, geotextiles, geogrids, and geocomposites work shall meet the requirements and specifications of the following APWA sections and related sections:

    1. APWA 31 05 19 (Geotextiles)
    2. APWA 31 05 21 (Geogrids and Geocomposites)

B. GENERAL. All geotextile work shall meet the requirements and specifications of APWA 31 05 19 (Geotextiles). Geogrid and geocomposite work shall meet the requirements and specifications of APWA 31 05 21 (Geogrids/Geocomposites). Geotextile, geogrid and geocomposite work includes but is not limited to the following geotextile applications:

    1. Stabilization-Separation
    2. Silt Fence
    3. Erosion Control
    4. Roadway Pavements
    5. Drainage
    6. Weed Barrier
    7. Granular Base Reinforcement
    8. Asphalt Concrete Reinforcement
    9. Soil Reinforcement

1.20.080 Subsurface Pipe Installation

A. APWA. Unless otherwise specified in the City Construction and Design Standards, subsurface pipe installation work shall meet the requirements and specifications of the following APWA sections and related sections:

    1. APWA 33 05 23.35 (Trenchless Utility Installation)
    2. APWA 33 05 23.40 (Cured-in-Place Pipe)

B. GENERAL. Pipes, conduits, or casings, six (6) inches in diameter or less, may be bored, jacked, augured or jetted under sidewalk, curb, gutter if authorized by the City Engineer. The resulting hole diameter shall not exceed 1 inch plus the outside diameter of the pipe or sleeve installed.

C. BORING OR JACKING. Boring or jacking work shall meet the requirements and specifications of APWA 33 05 23.35 (Trenchless Utility Installation).

D. TUNNELING. Where sidewalk, curb, and gutter exists, excavation may be made by tunneling provided the following requirements are met:

1. Excavation. Excavation shall be vertical and as near to the curb or sidewalk as possible;

2. Tunnel Length. The length of the tunnel shall not exceed the width of the sidewalk, curb, and gutter;

3. Separate Sidewalk and Curb. Where a separate sidewalk and curb exist, an excavation shall be made between the sidewalk and the curb;

4. Undisturbed Earth. At least three feet of undisturbed earth shall be left under the sidewalk or curb; and

5. Tunnel Backfill. Where the sidewalk has been tunneled, the hole shall be filled from each end with flowable fill. Where the excavation cannot meet these requirements, a section of sidewalk, curb, or gutter, from joint to joint shall be removed and replaced.

1.24 Drinking Water

1.24.010 General

A. APWA. Unless otherwise specified in the City Construction and Design Standards, drinking water work shall meet the requirements and specifications of the following APWA sections and related sections:

1. APWA DIVISION 33 (UTILITIES)
2. APWA 33 08 00 (Commissioning of Water Utilities)
3. APWA 33 11 00 (Water Distribution and Transmission)

B. CITY CONSTRUCTION AND DESIGN STANDARDS. See the following City Construction and Design Standards for additional specifications related to drinking water:

1. Chapter 1.08 (Improvement and Design Requirements)
2. Chapter 1.12 (Inspection and Testing)
3. Chapter 1.16 (Contractor Requirements)
4. Chapter 1.20 (Earthwork and Trenches)
5. Drawing 1 (Standard Street Intersection and Utility Locations)
6. Drawing 2 (Standard Utility Locations in Knuckle)
7. Drawing 3 (Standard Street Cross Sections and Utility Locations)
8. Drawing 22 (Fire Hydrant and Water Valve Detail)
9. Drawing 23 (Thrust Block Details)
10. Drawing 24 (Typical Culinary Water Connection)
11. Drawing 25 (Large Meter Assembly)
12. Drawing 26 (Backflow Prevention Assembly)

C. LOCATION. Drinking water mains shall be located on either the north or east sides of a street according to the following Standard Drawings unless otherwise authorized by the City Engineer. Drinking water distribution and transmission lines shall not be installed within 10’ of any footing, foundation or pad of a structure.

D. CROSS CONNECTION. There shall be no physical cross connections between the drinking water system and pipe, pumps, hydrants, or tanks that may be contaminated from any source, including pressurized irrigation. See Article

1.24.030 I (Backflow Devices) for service connections to sprinkler systems or other hazardous connection points.

Valve boxes, meter boxes, and other vaults or manholes containing valves, blow-offs, meters, or other such appurtenances to a distribution system, shall not be connected directly to a storm drain or sanitary sewer, and shall be provided with a drain to daylight if possible. Where this is not possible gravel sumps may be used if the site is not subject to flooding and conditions will ensure adequate drainage. Sump pumps may also be considered if a drain to daylight or sump is not feasible.

E. IDENTIFICATION TAPE. All drinking water mains shall be installed with identification tape that meets the requirements and specifications of APWA 33 05 20 (Backfilling Trenches). Tape shall be buried 12 inches below grade.

F. TRACER WIRE. ~~All pipe shall include a 12 gauge solid THHN tracer wire installed according to NESC standards. The tracer wire shall be installed in the pipeline trench approximately 6-inches above the top of pipe. The tracer wire shall be brought up in the valve boxes to permit connecting to when doing line location.~~All water line pipes shall include a 14 AWG solid direct bury red or blue wire. Tracer wire shall be installed and secured to the top of all main line pipe and service laterals. Use poly tape to secure wire at all joints and 5-foot intervals.

Tracer wire is to extend 24 inches above the finished grade at the base of fire hydrants. It shall be housed in a 1-1/2" x 24" PVC pipe located 6 inches in front of the fire hydrant. The 1-1/2" PVC will extend 2 inches above grade (concrete apron) and shall have a slip cap according to Drawing 22 (Fire Hydrant and Water Valve Detail). DO NOT GLUE THE CAP ON.

Tape service lateral tracer wire to corporation stop. If mainline has tracer wire, splice and connect service wire with 3M Direct Bury Splice Kit to main line tracer wire. Wires are to be run into each meter box with enough wire to extend 24" above grade.

DO NOT run tracer wire up inside valve boxes. Install along outside of valve boxes until near the top as required by Drawing 22 (Fire Hydrant and Water Valve Detail). Any splicing of tracer wire shall use a 3M Direct Bury Splice Kit and be tested for continuity. Tie tracer wire in a knot before splices.

G. CONNECTIONS TO EXISTING DRINKING WATER LINES. Information in the plans may be based on inaccurate record drawings. The Contractor is responsible for verifying the actual size, material type, and location of existing water lines in the field before starting any connection work. ~~All connections shall comply with AWWA C600 (for ductile iron), AWWA C605 (for PVC), and AWWA C651 (for disinfection)~~. Not all required installation materials needed for installation are depicted in the plans. Contractor shall be responsible for acquiring and installing these materials.

Tapping tees may only be installed with City Engineer approval and when the existing main is at least one size larger than the new intersecting line. All tapping operations must follow AWWA C600/C605 standards, and disinfection must meet AWWA C651 requirements, including swabbing, flushing, and bacteriological testing.

All connections must be properly restrained, pressure tested and disinfected before being placed into service.

~~H. SURFACE WATER CROSSINGS. When a surface water crossing is proposed, the design and installation shall comply with the following:~~

~~1. Utah Administrative Code R309-550-8~~

~~2. APWA 33 08 00 (Commissioning of Water Utilities)~~

~~3. APWA 33 11 00 (Water Distribution and Transmission)~~

~~The water main must be adequately supported and anchored to prevent movement, protected from damage and freezing, and made accessible for future repair or replacement. For underwater crossings, the pipe shall have a minimum of 2 feet of cover, or more if local conditions require, to provide adequate protection against erosion and external forces.~~

~~For watercourse crossings that span greater than 15 feet in width, the pipeline shall utilize the following special construction methods:~~

~~1. Restrained Joints. The pipe must have restrained joints throughout the section within the watercourse to prevent joint separation and flexible restrained joints at both edges of the crossing to accommodate potential ground movement.~~

~~2. Isolating Valves. Isolating valves shall be provided on both sides of the water crossing at locations not subject to high ground water or flooding, so that the section can be isolated for testing or repair.~~

~~3. Sampling Tap. A sampling tap must be installed between the isolating valves for representative water quality testing. These taps shall be located in areas not subject to flooding.~~

~~4. Pressure Test. A means shall be provided to pressure test the underground water crossing pipe in between the isolating valves.~~

~~I.~~H. UNUSUAL PIPING AND PLUMBING. Special and unusual piping and plumbing for equipment or structures are treated as separate items and are not included in these standards. Their design shall be approved by the City Engineer.

1.24.020 Pipe and Fittings

A. APWA. Unless otherwise specified in the City Construction and Design Standards, drinking water pipe and fitting work shall meet the requirements and specifications of the following APWA sections and related sections:

1. APWA 33 05 05 (Ductile Iron Pipe)
2. APWA 33 05 07 (Polyvinyl Chloride Pipe)
3. APWA 33 05 09 (Steel Pipe - Lined and Coated)

B. CITY CONSTRUCTION AND DESIGN STANDARDS. See the following City Construction and Design Standards for additional specifications related to drinking water pipe and fittings:

1. Drawing 1 (Standard Street Intersection and Utility Locations)
2. Drawing 2 (Standard Utility Locations in Knuckle)
3. Drawing 23 (Thrust Block Details)
4. Section 1.24.050 (Meters and Services)

C. PIPE. Polyvinyl chloride (PVC) pipe shall be used for all drinking water mains 24 inches in diameter and smaller unless otherwise authorized by the City Engineer. Pipe type for main lines larger than 24 inches in diameter and pipe material shall be designed. No used materials may be reused. The minimum main line pipe size for new installations is 8 inches in diameter.

Under no circumstances shall the pipe or accessories be dropped into the trench. All foreign matter or dirt shall be removed from the inside of the pipe before it is placed, and it shall be kept clean during and after laying. No debris, tools, or other materials shall be placed in the pipe during laying operations. When laying of pipe is not in progress, the pipe shall be closed by a water-tight plug.

D. TRANSMISSION LINES. Transmission lines shall be designed to minimize unpressurized flows. Unpressurized transmission lines shall not be installed less than 20 feet from a concentrated source of pollution such as septic tanks, drain fields, garbage dumps, pit privies, sewer lines, and feed lots. They shall also not be placed in boggy areas or areas subject to the ponding of water.

E. POLYVINYL CHLORIDE PIPE (PVC). PVC pipe shall meet the standards and specifications of APWA 33 05 07 (Polyvinyl Chloride Pipe). Only blue or white, DR-18 pressure class 235 psi PVC pipe may be used for drinking water main lines.

PVC Pipe shall conform to AWWA C900 for 4-inch through 24-inch pipes. PVC pipes smaller than 4 inches shall be DR-21 ASTM D2241 pipe. Pipe materials for sizes larger than 24 inches in diameter shall be individually designed.

F. DUCTILE IRON PIPE. Ductile iron pipe shall meet the standards and specifications of APWA 33 05 05 (Ductile Iron Pipe). Only a pressure class of 150 psi or larger may be used. A tubular black polyethylene encasement must be installed according to AWWA C105 over all ductile iron pipe and fittings. Flanges, when required, shall meet the requirements and specifications of AWWA C115. Ductile iron pipe shall be wrapped with V-Bio Polyethylene Encasement or approved equivalent.

G. POLYETHYLENE PIPE. Polyethylene pipe shall meet the standards and specifications of AWWA C906 DR-11 pressure class 200 psi with NSF-61 certification for drinking water main lines 4 inches in diameter and greater. See Section 1.24.050 (Meters and Services) for polyethylene pipe specifications for sizes smaller than 4 inches in diameter.

H. STEEL PIPE - LINED AND COATED. Steel pipe shall meet the standards and specifications of APWA 33 05 09 (Steel Pipe - Lined and Coated).

I. FITTINGS. Use Ductile Iron fittings that conform to the provisions of ANSI/AWWA C110/A21.10 or C153/A21.53 unless otherwise recommended by the manufacturer and authorized by the City Engineer. All PVC pipe being inserted into fittings shall have the bevel end removed.

All fitting bolts and nuts shall be greased. Only NSF-certified, food-grade, non-aerosol lubricants compliant with ANSI/NSF Standard 61 shall be used. All fittings shall have an 8 mil vinyl wrap plastic cover. Minimum pressure Class will be 250 for pipes larger than 12-inch diameter. Pipes of 12-inch diameter and smaller shall be pressure Class 350. Pipe cutting for closure pieces or other purposes shall be cut cleanly and in a workmanlike manner, following manufacturer recommendations. All cut pipe ends must be beveled and filed to prevent damage to gaskets during joint assembly.

Couplings shall be equal to the product of Smith-Blair or Dresser with cast iron couplings being used on all cast iron and PVC pipe. All steel fittings and bolts shall be coated with a non-oxide coating and wrapped with polyethylene.

J. RESTRAINING. Thrust blocks shall be installed according to Standard Drawing 23. Mechanical restraint shall also be installed at each fitting requiring a thrust block.~~Either thrust blocks or mechanical restraining devices shall be used for all tees, valves, plugs, caps and bends. Restraining shall be accomplished according to the standard drawings.Thrust Blocks: Concrete thrust blocks shall be installed at all fittings subject to unbalanced thrust forces, including tees, valves, plugs, caps, and at bends deflecting 11 1/4 degrees or more. Thrust blocking shall be designed and installed as per AWWA C600/C605, taking into account pipe size, system operating pressure, and the soil's bearing capacity. Thrust blocks shall be poured against undisturbed soil. The concrete used for thrust blocks shall have a minimum compressive strength of 3000 psi at 28 days. All fittings shall be encased in a 12-mil protective plastic wrap (as per~~

~~AWWA C105) before the thrust block is poured. The area of bearing on both the pipe and the surrounding soil shall be as shown in the standard drawMechanical Restraints: In areas where thrust blocks are impractical (e.g., limited space or unsuitable soils), approved mechanical restraining devices, such as mechanical joint restraining glands or restrained joint systems, shall be installed following AWWA C600/C605 standards. These devices must be capable of withstanding the anticipated thrust forces based on system pressures and soil conditions.Design Considerations: The selection between thrust blocks and mechanical restraints shall be based on site-specific conditions, including available space, soil stability, and system pressures. All restraint systems must be designed to ensure that pipe and fittings remain securely in place under maximum operating pressures and transient surges.~~

K. MAIN LINE DEAD ENDS. Dead-end mains must be equipped with a fire hydrant if flow and pressure are sufficient. If not, an approved flushing hydrant or blow-off valve shall be installed. All flushing devices shall be sized to provide a minimum velocity of 2.5 feet per second (fps) within the main being flushed. Under no circumstances shall a flushing device be directly connected to a sanitary sewer.

1.24.030 Valves and Couplings

A. APWA. Unless otherwise specified in the City Construction and Design Standards, drinking water valves and couplings work shall meet the requirements and specifications of the following APWA sections and related sections:

1. APWA 33 12 16 (Water Valves)
2. APWA 33 12 16 2.2 (Gate Valves)
3. APWA 33 12 16 2.3 (Butterfly Valves)

B. CITY CONSTRUCTION AND DESIGN STANDARDS. See the following City Construction and Design Standards for additional specifications related to drinking water valves and couplings:

1. Drawing 2 (Standard Utility Locations in Knuckle)
2. Drawing 22 (Fire Hydrant and Water Valve Detail)
3. Drawing 23 (Thrust Block Detail)
4. Drawing 26 (Backflow Prevention Assembly)

C. GENERAL. Only the City may open or close drinking water valves. A sufficient number of valves shall be provided on water mains so that inconvenience and sanitary hazards will be minimized during repairs. Valves shall be located at not more than 500-foot intervals in commercial districts and at not more than

one block or 800-foot intervals in other districts. Valves shall be bolted to all extensions of tee and cross fittings.

D. RESILIENT SEATED GATE VALVE. All valves on 4-inch to 10-inch drinking water mains shall be resilient seated gate valves that meet the standards and specifications of APWA 33 12 16 2.2 (Gate Valves).

D. BUTTERFLY VALVE. All valves 12-inch and larger valves shall be butterfly valves that meet the standards and specifications of APWA 33 12 16 2.3 (Butterfly Valves).

F. VALVE BOXES. All top of valve boxes located in streets shall be installed 1/4 inch below grade centered in a 30 inch fiber reinforced concrete collar. Valve boxes in off-road areas shall extend 6 inches above grade. Lid detail shall be similar to Comco C-6517.

G. RESSURE REGULATION VALVES (PRVs). PRVs which are required in a development shall be designed by the Developer's engineer and the design shall be submitted to the City Engineer for review and approval prior to starting construction. All PRV's shall be Cla-Val with a 4" bypass or unless otherwise required by the City Engineer. PRVs shall be placed in a concrete vault and have telemetry included.

H. TAPPING VALVES. Tapping valves may only be used when approved by the City Engineer. Tapping saddles with an "O" ring may be used if the drinking water main line to be tapped is larger than the new drinking water main line. Where the tap is the same size as the existing main, cast iron or stainless-steel tapping sleeves shall be used, which encase the full perimeter of the pipe. The valve shall be a tapping valve with a guide lip on the flanged side. The opposite side of the valve shall have a mechanical joint connection.

I. AIR, VACUUM AND RELEASE VALVES. Combination air, vacuum and release valves shall be installed according to the standard drawings at high points in the system as required by the City Engineer.

J. BACKFLOW DEVICES. Installation of backflow devices shall conform to the state-adopted plumbing code and City Standard Drawing

1.24.040 Fire Hydrants

A. APWA. Unless otherwise specified in the City Construction and Design Standards, fire hydrants work shall meet the requirements and specifications of the following APWA sections and related sections:

1. APWA 33 11 11 (Relocate Water Meters and Fire Hydrants)
2. APWA 33 12 19 (Hydrants)
3. AWWA C651 (Disinfecting Water Mains)

B. CITY CONSTRUCTION AND DESIGN STANDARDS. See the following City Construction and Design Standards for additional specifications related to fire hydrants:

1. Drawing 22 (Fire Hydrant and Water Valve Detail)

C. GENERAL. Only the City may open or close fire hydrants. Fire hydrants shall meet the requirements and specifications of APWA 33 12 19 (Hydrants) and the City standard drawing for fire hydrants. ~~Only r~~Red Mueller Super Centurion 250 fire hydrants or approved equivalent ~~may~~ shall be installed. A red Waterous WB-67 may be used when the Mueller hydrant is unavailable or if approved by the City Engineer. They shall have a 5 ¼ inch barrel diameter and 6-inch mechanical joint connection. The 6-inch gate valve will be mechanical joint by flange connected to the main line tee. The valve box lid shall read "FIRE".

Hydrants shall have one 4 ½ inch streamer nozzle and two 2 ½ inch hose nozzles. Hydrants shall be frost proof. The threads shall be National Standard Fire Hose Thread. Hydrants shall be set at a height that will allow approximately 2 inches exposed between the finished ground and the sidewalk flange. Fire hydrants shall be set vertically and held in place by adequate concrete blocking which shall be left in the trench. A gravel filled drip area shall be provided. See standard drawing for fire hydrants.

D. PLACEMENT AND LOCATION. Spacing of fire hydrants shall be according to the International Fire Code and the local fire code official Fire hydrants shall be capable of providing fire flow amount determined by the local fire code official. An adequate number of hydrants or blow-offs shall be provided to allow periodic flushing and cleaning of water lines in compliance with AWWA C651 (Disinfecting Water Mains).

The relocation of fire hydrants shall meet the requirements and specifications of APWA 33 11 11 (Relocate Water Meters and Fire Hydrants) and related sections.

1.24.050 Meters and Services

A. APWA. Unless otherwise specified in the City Construction and Design Standards, drinking water meters and services work shall meet the requirements and specifications of the following APWA sections and related sections:

1. APWA 33 05 06 (Polyethylene Pipe)
2. APWA 33 11 11 (Relocate Water Meters and Fire Hydrants)
3. APWA 33 12 33 (Water Meters)
4. AWWA C901 (Polyethylene Pressure Pipe and Tubing)

B. CITY CONSTRUCTION AND DESIGN STANDARDS. See the following City Construction and Design Standards for additional specifications related to drinking water meters and services:

1. Drawing 24 (Typical Culinary Water Connection)
2. Drawing 25 (Large Meter Assembly)
3. Drawing 26 (Backflow Prevention Assembly)

C. GENERAL. Pipe damaged by scratches, cuts, kinks, or buckled areas shall not be installed. No used materials may be reused. Deflection in joints shall meet manufacturer's specifications and shall be approved by the City Engineer or shall be replaced with the proper fitting.

All drinking water services shall have dual check valves. The minimum size for new drinking water service lines is 1 inch. Acceptable diameters for services lines are 1", 1.5", 2", 4", 6", and 8". Services shall conforming to ASTM B88 standards. Services 1 inch or larger may be polyethylene pipe conforming to the requirements and specifications of APWA 33 05 06 (Polyethylene Pipe) and AWWA C901 (Polyethylene Pressure Pipe and Tubing) and be NSF-61 Certified. Only CTS SDR9 200 psi blue polyethylene pipe shall be used for service lines. All connections shall have stainless steel stiffeners.

D. METERS. Install meters according to City Standard Drawing 24 (Typical Culinary Water Connection) and Drawing 25 (Large Meter Assembly). All meters shall be paid for by the Contractor and supplied by the City. Meter boxes shall be in good repair. They shall not be set at an angle, crushed, or dented. The inside of boxes must be free from obstructions such as dirt, rocks or debris.

E. PLACEMENT AND LOCATION. All meter boxes shall have their location and grade staked prior to installation. Service taps shall be a minimum of 24 inches apart along main line and extend perpendicular from the main to meter. No taps will be allowed within 24 inches of the end of pipe. Drinking water service lines shall meet the separation from sanitary sewer requirements in this chapter.

F. METER RELOCATION. Relocate meters according to APWA 33 11 11 (Relocate Water Meters and Fire Hydrants). If a meter must be moved it may only be displaced a maximum of 24 inches to either side. If it must be moved more than 24 inches, a new service line must be installed. Whenever a new service line is installed the old corporation stop shall be shut off at the main and the old service line cut two feet from the main. City must verify disconnection before buried.

1.28 Sanitary Sewer

1.28.010 General

A. APWA. Unless otherwise specified in the City Construction and Design Standards, sanitary sewer work shall meet the requirements and specifications of the following APWA sections and related Divisions:

1. APWA DIVISION 33 (UTILITIES)
2. APWA 33 31 00 (Sanitary Sewerage System)

B. CITY CONSTRUCTION AND DESIGN STANDARDS. See the following City Construction and Design Standards for additional specifications related to sanitary sewer:

1. Chapter 1.08 (Design Requirements)
2. Chapter 1.12 (Contractor Requirements)
3. Chapter 1.16 (Inspection and Testing)
4. Chapter 1.20 (Earthwork and Trench Requirements)
5. Drawing 1 (Standard Street Intersection and Utility Locations)
6. Drawing 2 (Standard Utility Locations in Knuckle)
7. Drawing 3 (Standard Street Cross Sections and Utility Locations)
8. Drawing 18 (Typical Sewer Manhole Detail)
9. Drawing 19 (Typical Manhole on Existing Pipe)
10. Drawing 20 (Typical Sampling Manhole)
11. Drawing 21 (Typical Sewer Drop Manhole)
12. Drawing 27 (Typical Sewer Lateral)
13. Drawing 28 (Typical Grease Trap)

C. LOCATION. Sanitary Sewer main lines shall be located on either the south or west sides of a street according to the following Standard Drawings unless otherwise authorized by the City Engineer:

1. Drawing 1 (Standard Street Intersection and Utility Locations)
2. Drawing 2 (Standard Utility Locations in Knuckle)
3. Drawing 3 (Standard Street Cross Sections and Utility Locations)

Sanitary Sewer mains shall not be installed within 10' of any footing, foundation or pad of any structure. A maximum of 500 feet of pipe shall be allowed between manholes.

D. PIPE SLOPES. See Article 1.08.060 (Pipe Slopes).

E. SANITARY SEWER LIFT STATIONS. Sanitary sewer lift stations which are required in a development shall be designed by the Developer's engineer and the design shall be submitted to the City Engineer and wastewater division for review and approval prior to starting construction. City owned lift stations will be the wet well/dry well type, will have standby power, proper ventilation, telemetry, a flow meter, and will be designed for large areas, not individual subdivisions unless approved otherwise by the City Engineer. Building permit and inspections shall be required.

F. UNUSUAL PIPING AND PLUMBING. Special and unusual piping and plumbing for equipment or structures are treated as separate items and are not included in these standards.

1.28.020 Manholes

A. APWA. Unless otherwise specified in the City Construction and Design Standards, sanitary sewer manhole work shall meet the requirements and specifications of the following APWA sections and related sections:

1. APWA 33 31 00 2.3 (Manholes)

B. CITY CONSTRUCTION AND DESIGN STANDARDS. See the following City Construction and Design Standards for additional specifications related to sanitary sewer manholes:

1. Drawing 18 (Typical Sewer Manhole Detail)
2. Drawing 19 (Typical Manhole on Existing Pipe)
3. Drawing 20 (Typical Sampling Manhole)
4. Drawing 21 (Typical Sewer Drop Manhole)

C. GENERAL. Manholes shall be furnished complete with cast-iron rings and covers.

D. SIZE. Generally use ~~4~~5-foot inside diameter (ID) manholes for main lines ~~less than 15~~ 30 inches in diameter and smaller, ~~5-foot ID manholes for main lines 15 to 30 inches in diameter~~, and 6-foot ID manholes for main lines greater than 30 inches in diameter. ~~5-foot ID manholes are required in the following situations:At all intersections of 3 or more 8-inch or larger pipelines.All change-in-direction manholes.In manholes deeper than 15 feet.In manholes with a grades greater than 20% through the manhole.~~

E. LARGE DIAMETER PIPE MANHOLES. Manholes on sanitary sewer trunk lines 152 inch in diameter or greater shall be monolithic, precast "Perfect Lined Manhole System, as manufactured by NWPX, HDPE/FRP Lined Precast Concrete Manholes for Sewers" or an approved equivalent installed to manufacturer's specifications.~~be HDPE lined manholes, precast polymer manholes, epoxy coated, or polyurea coated.~~

1.28.030 Pipe and Fittings

A. APWA. Unless otherwise specified in the City Construction and Design Standards, all sanitary sewer pipe and fittings work shall meet the requirements and specifications of the following APWA sections and related sections:

1. Division 33 (UTILITIES)
2. APWA 33 05 07 (Polyvinyl Chloride Pipe)
3. APWA 33 05 11 (Polypropylene Pipe)

B. GENERAL. All sanitary sewer lines 8 inches to 18 inches in diameter shall be constructed with polyvinyl chloride (PVC) pipe. All sanitary sewer lines larger than 18 inches in diameter shall be constructed with the following:

1. Polyvinyl chloride (PVC) pipe
2. Corrugated Polypropylene Pipe
3. HDPE-Lined Reinforced Concrete Pipe
4. Or approved equivalent.

The minimum main line pipe size for new installations is 8 inches in diameter. Pipe material for main lines larger than 24 inches or buried more than 12 feet deep shall be designed and require manufacturing and engineering specifications to be submitted to the City Engineer for written approval. No used materials may be reused.

C. POLYVINYL CHLORIDE PIPE (PVC). PVC pipe shall meet the requirements and specifications of APWA 33 05 07 (Polyvinyl Chloride Pipe) and shall have a minimum rating of SDR-35.

D. CORRUGATED POLYPROPYLENE. Triple Wall Corrugated Polypropylene per APWA 33 05 11 (Polypropylene Pipe). Diameters up to 30 inches shall meet the requirements and specifications of ASTM F2736. Diameters over 30 inches shall meet the requirements and specifications of ASTM F2764.

E. HDPE-LINED REINFORCED CONCRETE PIPE. Reinforced concrete pipe (RCP) lined with High-Density Polyethylene, which shall meet the minimum design requirements of Class III RCP as defined in ASTM C76. Pipe joints shall be

weldless for diameters up to 60 inches. For diameters greater than 60 inches, field welding is permitted.

F. CURED-IN-PLACE PIPE. Cured-in-Place pipe shall meet the requirements and specifications of APWA 33 05 23.40 (Cured-in-Place Pipe).

G. FITTINGS. Fittings shall meet the requirements and specifications of APWA Division 33 (UTILITIES), manufacturer, and City standard drawings.

1.28.040 Services

A. APWA. Unless otherwise specified in the City Construction and Design Standards, sanitary sewer services work shall meet the requirements and specifications of the following APWA sections and related sections:

1. APWA 33 31 00 (Sanitary Sewerage Systems)

B. CITY CONSTRUCTION AND DESIGN STANDARDS. See the following City Construction and Design Standards for additional specifications related to sanitary sewer services:

1. Section 1.08.060 (Sanitary Sewer Design Requirements)
2. Section 1.16.060 (Sanitary Sewer Inspection and Testing)
3. Drawing 27 (Typical Sewer Lateral)
4. Drawing 28 (Typical Grease Trap)

C. PIPE. Pipe used for new service laterals shall be PVC Plastic Pipe conforming to ASTM D3034 SDR 35. The minimum sewer service pipe size is 4 inches in diameter. ~~New sewer laterals installed to lots shall be located ten feet (10') uphill of the lowest front property corner.~~

Deflection in joints shall meet manufacturer's specifications and shall be approved by the City Engineer or shall be replaced with the proper fitting. New service laterals shall be constructed with materials and procedures as specified herein and in the standard drawings. Existing service laterals shall be constructed with materials compatible with the existing laterals with appropriate connections for joining the ends of existing laterals.

Pipe damaged by scratches, cuts, kinks, or buckled areas shall not be installed. No used materials may be reused.

D. CLEAN-OUTS. There shall be no combination of bends of combined angle greater 90 degrees or greater in a service line between the main line and the building~~property line~~ without a clean-out. A clean-out shall be installed 2 feet behind~~at the~~ property line~~, at every bend~~ and within 5 feet of the foundation ~~wall on all service lines~~. The maximum distance between clean-outs on a

service line is one hundred (100) feet for 6 inch service lines and fifty (50) feet for 4 inch lines.

E. CONNECTIONS TO MAIN LINE. All sewer lateral connections onto new sewer mains shall be made through preformed inline Y or approved equivalent ~~Insert-a-Tee type connection installed in the main line at the time of main line installation.~~

Connections onto existing sewer mains shall be made with field installed service saddles (gasketed and clamped). All connections by field installed service saddles on existing sewer mains shall be done with a sewer tapping machine and all required fittings and materials. Connections shall be made as shown in the standard drawing for sewer laterals.

When an existing sewer lateral is encountered along the line and grade of a new main line it shall be relocated using appropriate pipe and fittings and graded to insure adequate slope to drain properly. Minimum slope shall be one-quarter inch (1/4") per foot.

1.32 Storm, Land, and Groundwater Drains

1.32.010 General

A. APWA. Unless otherwise specified in the City Construction and Design Standards, storm, land, and groundwater drain work shall meet the requirements and specifications of the following APWA sections and related Divisions:

1. APWA DIVISION 33 (Utilities)
2. APWA 33 41 00 (Drainage Systems)
3. APWA 33 47 00 (Ponds)

B. CITY CONSTRUCTION AND DESIGN STANDARDS. See the following City Construction and Design Standards for additional specifications related to storm, land, and groundwater drains:

1. Chapter 1.08 (Design Requirements)
2. Chapter 1.12 (Contractor Requirements)
3. Chapter 1.16 (Inspection and Testing)
4. Chapter 1.20 (Earthwork and Trenches)
5. Drawing 1 (Standard Street Intersection and Utility Locations)
6. Drawing 2 (Standard Utility Locations in Knuckle)

7. Drawing 3 (Standard Street Cross Sections and Utility Locations)
8. Drawing 10 (Standard Curb Face Inlet Detail)
9. Drawing 11 (Mountable Curb Face Inlet Detail
10. Drawing 12 (Manhole Access Curb Inlet Box (Combo Box) Detail)
11. Drawing 13 (Storm Drain Junction Box Detail)
12. Drawing 14 (Typical Land Drain Manhole Detail)

C. SIZE. The City Engineer must approve the sizes of all proposed drain lines. The minimum size of pipe is 15 inches in diameter for main lines and 12 inches in diameter for laterals.

D. LOCATION. Drain lines shall be located on either the north and east sides of the street 4 feet from the lip of gutter centerline according to the following Standard Drawings unless otherwise authorized by the City Engineer:

1. Drawing 1 (Standard Street Intersection and Utility Locations)
2. Drawing 2 (Standard Utility Locations in Knuckle)
3. Drawing 3 (Standard Street Cross Sections and Utility Locations)

E. MINIMUM SLOPES. Slopes shall be designed to have a 2 foot per second velocity unless otherwise approved by the City Engineer. The following table lists minimum slopes for drain lines for each size of pipe:

Minimum Drain Line Slopes

Pipe Diameter (inches)	Minimum Slope (%)
12	0.194
14	0.158
15	0.144
16	0.132
18	0.113
21	0.092
24	0.077
27	0.066
30	0.057
36	0.045
48	0.031
54	0.027
60	0.023

F. UNUSUAL PIPING AND PLUMBING. Special and unusual piping and plumbing for equipment or structures are treated as separate items and are not included in these standards.

G. LAND AND GROUNDWATER DRAINS. All plans for groundwater drains must be designed and stamped by a licensed professional civil engineer in the State of Utah. Only rigid pipe may be used.

G. MANHOLES AND CLEANOUT STRUCTURES. A manhole or cleanout structure shall be located at the upstream end of the storm drain pipe and at all changes in pipe size, horizontal alignment, slope and material of the storm sewer. Maximum horizontal distance between manholes is 500 feet.

H. ROADWAY DRAINAGE. Roads must provide for routing of the 100-year flood discharge to adequate downstream conveyance facilities. The 100-year flood flows in streets should be contained within street right-of-way. Provision shall be made to allow runoff within the street to enter any downstream detention basins or other such facilities.

   Downhill cul-de-sacs will not be allowed unless specifically approved by the City Engineer. Special consideration shall be given to downhill "T' intersections to ensure that flooding will not occur outside of the right-of-way.

I. INLETS AND OUTLETS. Outlets for storm drain pipe that discharge to an earth-lined channel or basin shall be stabilized to mitigate erosion potential. A concrete apron shall be constructed around curb inlets to allow sediment to be easily cleaned up.

J. STORM WATER TREATMENT. Storm water treatment for oil, grease and other pollutants shall be provided at all sites with more than 6 parking spaces. Engineer design and calculations shall be submitted showing the effectiveness of the treatment. Provide a maintenance plan for the storm water treatment facility.

K. CULVERTS. The minimum culvert size is 24 inches. Culverts shall be designed to convey the 100-year flood event without overtopping the road. A culvert blockage factor of 50 percent shall be used for culverts placed in drainages with upstream debris producing potential as determined by the City. Backwater surface computations shall be completed upstream of culverts and shall be shown to be non-damaging to upstream properties. Improvements must be installed at entrance and exit structures to minimize erosion and accommodate maintenance.

L. BRIDGES. Bridges must pass the 100-year flood event with a minimum of 2 feet of freeboard.

   Local and regional scour analyses shall be performed on the structure, upstream and downstream. All potential scour shall be properly mitigated.

M. OPEN CHANNELS. Open channels shall be designed to meet the following criteria:

1. Convey the 100-year flood event with a minimum freeboard of 1 foot.
2. Have low maintenance requirements.
3. Provide maintenance access through easements the entire channel length
4. Side slope of 2H:1V or flatter.
5. Bank stabilization shall be designed to minimize erosion and maintenance.
6. Irrigation ditches located in areas of new development shall be enclosed (pipe or culvert).

N. FLOODPLAINS. Development near water bodies shall be in accordance with the National Flood Insurance Program and the City's Flood Damage Prevention ordinance (See Chapter 20 of Municipal Code Title 15).

The Flood Damage Ordinance requires, among other things:

1. Bank Stabilization/Erosion Hazard Analysis. A bank stability/erosion hazard analysis shall be performed by a licensed professional engineer (15.4.20.030 C.5).
2. Geotechnical Report. A geotechnical report shall be prepared that includes (15.4.20.040 A.2.b):

a. AMBIENT GROUNDWATER SURFACE ELEVATION: At least one measurement of the ambient groundwater surface elevation on the site of proposed development collected between May 1 and May 31.

b. ESTIMATED MAXIMUM ANTICIPATED GROUNDWATER: An engineer's estimate of the maximum anticipated groundwater elevation anticipated on the site during periods of flooding, referencing nearby base flood elevations on the current FIRM and all other available sources.

c. RECOMMENDED LOWEST FLOOR ELEVATION: An engineer's recommendations with regard to the lowest elevation(s) that the lowest floor(s) (including basements) of all new and substantially improved structures should be constructed to be protected from flooding from groundwater and groundwater that could be influenced by surface water during periods of flooding.

3. Lowest Floor Elevation. The lowest floor (including basement), shall be elevated a minimum of two feet above the base flood elevation (15.4.20.040 B.1)

4. Bank Setbacks. All permanent structures shall be set back a minimum of 60 feet from the top of bank of the nearest water body or open channel that conveys runoff water.

O. CONNECTING TO EXISTING DRAIN LINES. Manholes and sumps used to connect proposed storm drain to existing storm drain shall be plumb and centered on the existing storm drain. The new pipe shall be placed against the existing pipe at the elevation designated by the project engineer and the base poured as specified above. Care shall be taken not to disturb the alignment of the existing storm drain during the excavation procedure. Any damage to the existing storm drain shall be repaired.

P. SUMPS. Sumps may only be constructed of reinforced concrete, precast sections and shall meet the requirements of ASTM C478-73. Sumps shall have eccentric lids to ensure adjustments in alignment.

Q. INLET AND CLEAN OUT STRUCTURES. Surface water must enter the City storm drain system through standard City inlet boxes. In no case may water inlet directly into storm manholes, clean-outs, or sumps. Inlets and clean out structures shall not exceed 500 ft spacing.

R. HEADWALLS. A headwall shall be installed at all ditch to pipe transitions. Headwall designs must be stamped by a licensed professional civil engineer in the State of Utah and approved by the City Engineer.

1.32.020 Drainage Plan and Report

A. GENERAL. A final Drainage Plan and Report is required for all proposed developments and shall be prepared by a professional civil engineer registered in the State of Utah.

B. REPORT. The report portion of the Drainage Plan and Report shall contain the following:

1. Title Page. Title page showing project name, date, preparer's name, seal and signature.

2. Development Description. Description of the development, including location (township, range, section, subdivision and lot).

3. Property Description. Description of property, area, existing site conditions including all existing drainage facilities such as ditches, canals, washes, swales structures, storm drains, springs, detention and retention basins.

4. Off-Site Drainage. Description of off-site drainage features and characteristics upstream and downstream of the site and any known drainage problems.

5. Proposed Facilities. A description of proposed facilities that will be used to manage on-site and off-site storm water runoff associated with the development, including calculations used to estimate runoff and size storm water facilities. See Section 4.78.12 for design criteria and Section 4.78.16 for approved rainfall-runoff computation methods.

6. On-Site Drainage. Description of existing and proposed on-site drainage features, characteristics, and facilities.

7. Master Planned Drainage Facilities. Description of master planned drainage facilities and how the development and proposed drainage facilities conform to the storm drain master plan.

8. Downstream Receiving Facilities. Description of downstream receiving facilities for storm water discharges and the capacities of those facilities. Include calculations.

9. FEMA Floodplain. Description of existing FEMA floodplain, if applicable.

10. Other Drainage Studies. Description of other drainage studies that affect the site.

11. Preliminary Drawings. Preliminary drawings of proposed drainage facilities that also show existing storm drain facilities on or adjacent to the site.

12. Flood Control Requirements. Description of compliance with applicable flood control requirements and FEMA requirements, if applicable.

13. Runoff Computations. Description of design runoff computations.

14. Design Calculations. Design calculations to support inlet spacing and sizing of facilities. Include a description of drainage facility design computations.

15. Easements. Description of any needed drainage easements or rights-of-way.

16. FEMA Calculations. Description of FEMA floodway and floodplain calculations, if applicable.

17. Groundwater Depth Estimate. Description of field work performed to estimate minimum depth to groundwater at the site.

18. Geotechnical Report. Commentary on geotechnical engineer's findings of percolation rates, soil structure, groundwater depth, and

recommendation on low impact development (LID) infrastructure implementation effectiveness. If not recommended, submit a proposal for alternative controls to meet the City's LID requirement. If recommended, provide details of how the LID infrastructure will meet our requirements.

19. Conclusion. Conclusions stating compliance with drainage requirements and opinion of effectiveness of proposed drainage facilities and accuracy of calculations.

20. Appendices. Appendices showing all applicable reference information.

C. DRAWINGS. Drawings shall be submitted with the Drainage Plan and Report and shall include the following information, if applicable.

1. Property Lines. Existing and proposed property lines.

2. Topography. Existing and proposed topography (2-foot maximum contour interval) extending at least 100 feet beyond the site.

3. Streets, Easements, and Rights-of-Way. Existing and proposed streets, easements, and rights-of-way.

4. Drainage and Irrigation Facilities. Existing drainage and irrigation facilities.

5. FEMA Floodplain. FEMA floodplain and floodway.

6. Water Body and River Setbacks. Required setbacks for structures from the nearest top bank of the City if applicable.

7. Basin Boundaries. Drainage basin boundaries and subbasin boundaries on a topographical map.

8. Existing Flow Patterns. Existing flow patterns and paths.

9. Proposed Flow Patterns. Proposed flow patterns and paths.

10. Proposed Drainage Facilities. Location and size of proposed drainage facilities including: storm drain pipes, inlets, manholes, cleanouts, swales, channels, and retention and detention basins. Include spot elevations of proposed grade, flowline and top, back curb.

11. Proposed Drainage Facility Details. Details of proposed storm drain facilities, including storm drain inlets. Include maintenance and monitoring plan for storage facilities.

12. Proposed Irrigation Facility Details. Details of proposed improvements to existing irrigation facilities and any facilities to be used to manage high groundwater conditions on the site.

13. Drainage Easements. Location of drainage easements required.

14. Other Drainage Features. Other relevant drainage features.

15. Drawing Sheet Elements. Scale, north arrow, legend, title block showing project name, date, preparers name, seal and signature.

1.32.030 Pipe and Fittings

A. APWA. Unless otherwise specified in the City Construction and Design Standards, all storm drain pipe and fittings shall meet the requirements and specifications of the following APWA sections and related sections:

1. APWA 33 05 02 (Concrete Pipe and Culvert)

2. APWA 33 05 04 (Corrugated Metal Pipe)

3. APWA 33 05 06 (Polyethylene Pipe)

4. APWA 33 05 11 (Polypropylene Pipe)

B. GENERAL. Reinforced concrete or polypropylene pipe shall be used for all main drain lines 15" or larger in diameter and for all drain lines of smaller size with less than 2 feet of cover or more than 8 feet of cover. Corrugated metal pipe (CMP) may only be used when authorized by the City Engineer.

C. CONCRETE PIPE. Concrete pipe shall meet the requirements and specifications of APWA 33 05 02 (Concrete Pipe and Culvert). Reinforced concrete pipe (RCP) shall be Class III. Only new pipe may be used unless otherwise authorized by the City Engineer.

D. CORRUGATED METAL PIPE (CMP). CMP shall meet the requirements and specifications of APWA 33 05 04 (Corrugated Metal Pipe).

E. POLYPROPYLENE PIPE. Polypropylene pipe shall meet the requirements and specifications of APWA 33 05 11 (Polypropylene Pipe). Use HP Storm, SaniTite, or equivalent depending on bury depth, groundwater, and other factors. Diameters up to 30 inches shall meet the requirements and specifications of ASTM F2736. Diameters over 30 inches shall meet the requirements and specifications of ASTM F2764.

F. HIGH DENSITY POLYETHYLENE PIPE (HDPE). HDPE pipe shall meet the requirements and specifications of APWA 33 05 06 (Polyethylene Pipe). Three (3) feet or less bury depths require triple wall HDPE pipe approved by the City Engineer.

1.32.040 Retention/Detention Basins

A. CITY CONSTRUCTION AND DESIGN STANDARDS. See the following City Construction and Design Standards for additional specifications related to retention/detention basins:

1. Article 1.08.030 F (Storm, Land, and Groundwater Drains)

H. GENERAL. Basins shall be designed to meet the requirements of Article 1.08.030 F (Storm, Land, and Groundwater Drains) and the following criteria:

1. Freeboard. A minimum of 1 foot of freeboard shall be provided.

2. Side Slope. (See table below)

Depth	Slope
18"	2:1
3'	3:1
Above 3'	4:1

3. Maintenance and Monitoring Plan. Provide a plan to maintain and monitor the facility.

4. Vehicular Access. Provide vehicular access to the facility.

5. Landscaping. All facilities shall be landscaped in accordance with City Standards.

6. Emergency Overflow Spillway. Design an emergency overflow spillway to safely discharge runoff from the facility assuming the outlet is inoperable, or the inflow exceeds the outlet capacity.

7. Maximum Depth. Maximum depth shall be 3 feet of detained water or as approved by the City Engineer.

B. RETENTION BASINS. Design of retention basins shall be according to the Storm Water Drainage Design Manual. All retention basins shall have a series of interconnected sumps connected to curb inlet boxes or storm drain main lines. All retention basins shall be landscaped in accordance with City Standards.

All retention basins shall be constructed for drainage areas designated in the Storm Drain Master Plan. Basins for smaller areas may be allowed only with prior written approval of the City Engineer.

C. DETENTION BASINS. Design of detention basins shall be according to the Storm Water Drainage Design Manual. Detention basins may be constructed in landscape or parking areas. Each detention basin shall incorporate LID storm drain principles and have an overflow to the City storm drain system. Pipes shall not be used as storage in storm water calculations.

Each detention basin shall have an outlet to the City storm drain system. A trash rack shall be installed at the outlet(s) to prevent debris from entering the storm drain system.

1.36 Streets and Pavements

1.36.010 General

A. APWA. Unless otherwise specified in the City Construction and Design Standards, streets and pavement work shall meet the requirements and specifications of the following APWA sections and related Divisions:

1. APWA DIVISION 34 (TRANSPORTATION)
2. APWA 31 05 19 (Geotextiles)
3. APWA 31 05 21 (Geogrids/Geocomposites)
4. APWA 32 12 16 (Plant-Mix Asphalt Paving)
5. APWA 32 12 16.13 (Plant-Mix Bituminous Paving)
6. APWA 32 14 13 (Precast Concrete Unit Paving)
7. APWA 32 14 16 (Brick Unit Paving)
8. APWA 32 17 23 (Pavement Markings)
9. APWA 34 71 13 (Vehicle Barriers)
10. APWA 34 71 19 (Vehicle Delineators)
11. APWA Plan 205.1 (Type A Curb and Gutter)

B. CITY CONSTRUCTION AND DESIGN STANDARDS. See the following City Construction and Design Standards for additional specifications related to streets and pavements.

1. Chapter 1.08 (Improvement and Design Requirements)
2. Chapter 1.12 (Inspection and Testing)
3. Chapter 1.16 (Contractor Requirements)
4. Drawing 1 (Standard Street Intersection and Utility Locations)
5. Drawing 2 (Standard Utility Locations in Knuckle)
6. Drawing 3 (Standard Street Cross Sections and Utility Locations)
7. Drawing 4 (Standard Street Cross Sections and Utility Locations)
8. Drawing 5 (Curb, Gutter, and Sidewalk)
9. Drawing 6 (Typical Curb Approach)

10. Drawing 7 (Standard Curb Return at Intersection)
11. Drawing 8 (Pedestrian Access)
12. Drawing 9 (Pedestrian Access Mid Block)
13. Drawing 15 (Standard Cul-De-Sac)
14. Drawing 16 (Standard Knuckle)
15. Drawing 31 (110-Foot Roundabout for Local Street Intersection)
16. Drawing 32 (Typical Street/Stop Sign Installation Detail)
17. Drawing 33 (Typical Street Light 1)
18. Drawing 34 (Typical Street Light 2)
19. Drawing 35 (Typical Street Light 3)
20. Drawing 36 (Concrete Pole Base (Street Light))

C. TIME LIMITATION AFTER CURB AND GUTTER IS PLACED. Pavement shall be placed at least 7 days after and before 45 days after the placement of curb and gutter unless ~~an extension is granted by~~otherwise authorized by the City Engineer.

D. GEOTEXTILES, GEOGRIDS AND GEOCOMPOSITES. All geotextile work shall meet the requirements and specifications of APWA 31 05 19 (Geotextiles) and APWA 32 12 16 (Plant-Mix Asphalt Paving). Geogrid and geocomposite work shall meet the requirements and specifications of APWA 31 05 21 (Geogrids/Geocomposites) and APWA 32 12 16.13 (Plant-Mix Bituminous Paving).

E. PAVERS. Pavers and installation shall meet the requirements and specifications of APWA 32 14 13 (Precast Concrete Unit Paving) and APWA 32 14 16 (Brick Unit Paving).

F. PAINTED TRAFFIC LINES AND MARKINGS. Painted traffic lines and markings shall meet the requirements and specifications of APWA 32 17 23 (Pavement Markings) and the MUTCD. If striping is to be removed it shall be removed by water blasting. ~~B~~Temporary black paint over existing paint ~~and grinding will~~ not be allowed unless otherwise authorized by the City Engineer.

G. TRAFFIC BARRIERS. Vehicle barriers shall meet the requirements and specifications of APWA 34 71 13 (Vehicle Barriers) and the MUTCD.

H. VEHICLE DELINEATORS. Vehicle delineators shall meet the requirements and specifications of APWA 34 71 19 (Vehicle Delineators) and the MUTCD.

1.36.020 Street Section

A. CITY CONSTRUCTION AND DESIGN STANDARDS. See the following City Construction and Design Standards for additional specifications related to street sections.

1. See Section 1.08.040 (Street Design Requirements)
2. See Section 1.016.080 (Street Inspection and Testing)
3. See Section 1.20.030 (Subgrade)
4. See Section 1.20.040 (Fill Material)
5. Article 1.20.040 F (Engineered Fill)
6. Article 1.20.040 G (Untreated Base Course)
7. Drawing 3 (Standard Street Cross Sections and Utility Locations)
8. Drawing 4 (Standard Street Cross Sections and Utility Locations)

B. CURBS AND GUTTERS. Use APWA Plan 205.1 (Type A Curb and Gutter) 30 inch Curb and Gutter unless otherwise authorized by the City Engineer to match existing curb and gutter.

C. GRADING. The sub-grade, sub-base, and road base shall all be graded to an engineered red head and accepted by the City. Red heads shall be placed every 50 feet at the crown of the road. If the distance between red-heads and edge of pavement exceeds 25 feet additional redheads shall be installed halfway between the crown and edge of pavement. See Section 1.20.030 (Subgrade).

1.36.030 Trail Section

A. APWA. Unless otherwise specified in the City Construction and Design Standards, trail section work shall meet the requirements and specifications of the following APWA sections and related sections:

1. APWA 31 05 19 (Geotextiles)
2. APWA 32 12 05 (Bituminous Concrete)
3. APWA 32 17 23 (Pavement Markings)

B. CITY CONSTRUCTION AND DESIGN STANDARDS. See the following City Construction and Design Standards for additional specifications related to trail sections.

1. Section 1.20.030 (Subgrade)
2. Article 1.20.040 F (Engineered Fill)

3. Article 1.20.040 G (Untreated Base Course)

C. GENERAL. A pavement and soils investigation shall be performed for all new trails. The results of this investigation and a design of the trail section shall be submitted to and accepted by the City Engineer.

The following guidelines shall be used as a minimum requirement for trail cross sections. They should be used unless the soils investigation indicates they are not adequate. Any variations from these standards must be approved by the City Engineer. All trail materials shall be placed according to City standards.

1. Engineered Fill. Compacted engineered fill shall be placed in all areas where fills are required to meet grade or the requirements of the soils investigation. See Article 1.20.040 F (Engineered Fill).

2. Untreated Base Course. 6 inches of compacted untreated base course shall be placed under the surface course of all trails. See Article 1.20.040 G (Untreated Base Course).

3. Bituminous Surface Course. A minimum of 3 inches of asphalt pavement (bituminous concrete) shall be installed according to Section 1.36.040 (Bituminous Surface Course) and more specifically Article 1.36.040 C1 (Trails and Parking Lots).

4. Limestone Crusher Fines. When required, 2 1/2 inches of limestone crusher fines shall be placed along the edges of the trails to the top of the bituminous surface course. The compacted limestone crusher fines shall meet the following gradation:

Limestone Crusher Fines Gradation

Sieve	Passing
3/8 inch	100%
No. 4	70 to 90%
No. 10	30 to 70%
No. 40	5 to 30%
No. 200	5 to 15%

D. SURVEY. Both sides of a trail shall be laid out by a survey and approved by the City before construction. Lath shall be placed at 100 foot intervals and at bends and obstacles the trail comes near.

E. WEED ABATEMENT. All weeds shall be sprayed and killed with Roundup or an approved equivalent one week before any work may be performed, and within 3 weeks of the placement of untreated base course.

F. GEOTEXTILE FENCE. An APWA 31 05 19 (Geotextiles) silt fence shall be installed along the limits of the trail construction at hillsides and river embankments.

G. SUB-GRADE. The sub-grade shall be grubbed of all trees, bushes and other organic matter. See Section 1.20.030 (Subgrade). Sub-grade shall be graded to meet the following ADA requirements for walkways:

1. Maximum Slope. Sub-grade shall not have a slope greater than 8.33%.

2. Maximum Run for Steep Slopes. For slopes between 5.00% and 6.25% the maximum run shall be 40 feet. For slopes between 6.25% and 8.33% the maximum run shall be 30 feet.

F. WEED BARRIER. Weed barrier geotextile shall meet the requirements and specifications of APWA 31 05 19 (Geotextiles).

G. TRAIL MARKINGS. If required by the City Engineer, trail lanes shall be delineated by a center single dashed yellow line. Painted traffic lines and markings shall meet the requirements and specifications of APWA 32 17 23 (Pavement Markings) and the MUTCD.

H. CLEAN-UP. Upon completion of the trail section all windrows, survey and construction debris and geotextile fence shall be removed from along the edges of the trail.

1.36.040 Bituminous Surface Course

A. APWA. Unless otherwise specified in the City Construction and Design Standards, bituminous surface course work shall meet the requirements and specifications of the following APWA sections and related sections:

1. APWA 32 12 05 (Bituminous Concrete)
2. APWA 32 12 13.19 (Prime Coat)
3. APWA 32 12 16.13 (Plant-Mix Asphalt Paving)
4. APWA 32 12 16.19 (Cold-Mix Asphalt Paving)
5. APWA 32 12 16.19 (Cold-Mix Bituminous Paving)
6. APWA 32 12 13.13 (Tack Coat)
7. APWA 32 01 13 (Slurry Seal)
8. APWA 32 01 14 (Chip Seal)
9. APWA 32 01 15 (Micro-Surface Seal)

B. CITY CONSTRUCTION AND DESIGN STANDARDS. See the following City Construction and Design Standards for additional specifications related to bituminous surface course.

1. Drawing 3 (Standard Street Cross Sections and Utility Locations)

2. Drawing 4 (Standard Street Cross Section and Utility Locations)

C. ASPHALT PAVEMENT *(ALSO REFERENCED AS BITUMINOUS CONCRETE).* Asphalt concrete shall meet the specifications and requirements of APWA 32 12 05 (Bituminous Concrete), APWA 32 12 16.13 (Plant-Mix Asphalt Paving) and APWA 32 12 16.19 (Cold-Mix Bituminous Paving). Asphalt Binder (RAB) content may not exceed 15% in any mix design.

1. Trails and Parking Lots. Use an APWA 32 12 05 (Bituminous Concrete) Class I asphalt pavement (bituminous concrete).

2. Local Residential Streets. Use an APWA 32 12 05 (Bituminous Concrete) Class II asphalt pavement (bituminous concrete).

3. Local Non-Residential Streets, Parkways, and Boulevards. Use an APWA 32 12 05 (Bituminous Concrete) Class III asphalt pavement (bituminous concrete).

D. Cold-Mix Pavement (Bituminous Concrete). Cold-mix pavement (bituminous concrete) shall only be installed when allowed by the City Engineer. All cold-mix asphalt concrete shall be replaced with hot-mix within 30 days of when it becomes available. Cold mix concrete shall meet the requirements of APWA 32 12 16.19 (Cold-Mix Bituminous Paving).

E. PRIME COAT. Prime coat only as required by the plans or the City. Prime coat shall meet the requirements and specifications of APWA 32 12 13.19 (Prime Coat).

F. TACK COAT. Install tack coat as required and according to APWA 32 12 13.13 (Tack Coat). Use CSS-1 or CSS-1h tack emulsion diluted 2:1 (concentrate to water) at the following application rates. Apply tack coat to all horizontal and vertical surfaces sufficient to achieve minimum 95% coverage prior to placement of overlay or patch.

Application	*Rate (Gal/SY - Diluted)*
New Pavement (<1 year Old)	*0.06*
Existing Pavement	*0.08*
Rotomilled Surface	*0.12*

G. THIN OVERLAYS AND PATCHES. Use binder and asphalt concrete as defined in Article A and Article B based on paver or hand applications.

H. CRACK SEAL. Crack Seal material shall be ~~Deery 103 Sealant~~ Utah spec and or an approved equivalent. New roads should receive crack seal around all

manhole collars, water valve collars, repair patches, cold joints, and along the edge of the road at the lip of gutter.

I. SLURRY SEAL. Slurry seals shall meet the requirements and specifications of APWA 32 01 13 (Slurry Seal). The type of slurry seal applied to a City street shall be approved and specified by the City Engineer. Use a Type II slurry seal with a CQS-1H emulsion, unless otherwise defined.

J. CHIP SEAL. Chip seals shall meet the requirements and specifications of APWA 32 01 14 (Chip Seal). Use a Type A or C ceramic chip seal with an LMCRS-2 or CRS-2P chip emulsion.

K. MICRO-SURFACING. Micro-surfacing shall meet the requirements and specifications of APWA 32 01 15 (Micro-Surface Seal). Use a Type II or type III microsurfacing with a CQS-1H emulsion, unless otherwise defined.

1.40 Portland Cement Concrete and Masonry Work

1.40.010 General

A. APWA. Unless otherwise specified in the City Construction and Design Standards, Portland cement concrete and masonry work shall meet the requirements and specifications of the following APWA sections and related Divisions:

1. APWA DIVISION 03 (Concrete)
2. APWA 03 30 04 (Concrete)
3. APWA 32 16 13 (Driveway, Sidewalk, Curb, Gutter)

B. CITY CONSTRUCTION AND DESIGN STANDARDS. See the following City Construction and Design Standards for additional specifications related to Portland cement concrete and masonry work.

1. Chapter 1.08 (Improvement and Design Requirements)
2. Chapter 1.12 (Inspection and Testing)
3. Chapter 1.20 (Earthwork and Trenches)
4. Drawing 5 (Curb, Gutter, and Sidewalk)
5. Drawing 6 (Typical Curb Approach)
6. Drawing 8 (Pedestrian Access)
7. Drawing 9 (Pedestrian Access Mid Block)

C. SPECIFICATIONS. These specifications cover the installation of concrete work including but not limited to curbs, gutters, sidewalks, boxes, and thrust blocks. All concrete work shall meet the requirements and specifications of APWA Division 03 (Concrete) and related sections. Concrete driveway, sidewalk, curb and gutter work shall meet the requirements and specifications of APWA 32 16 13 (Driveway, Sidewalk, Curb, Gutter). See Chapter 1.08 (Improvement and Design Requirements) for improvement and design requirements, Chapter 1.12 (Inspection and Testing) for inspection and testing requirements, and Chapter 1.20 (Earthwork and Trenches) for earthwork and trench requirements. Also, see standard drawings related to concrete work.

D. GENERAL. Supply and Install concrete according to APWA 03 30 04 (Concrete). All concrete work shall be constructed where indicated on the plans or as directed by the project engineer and shall conform in all respects to the specified lines, grades, and dimensions and City standards.

E. AMERICAN DISABILITIES ACT (ADA) REQUIREMENTS. All pedestrian facilities will conform to the current federal ADA standards.

F. ~~SLIP FORMING. In each known drive approach and at each pedestrian ramp, 12 inch #4 rebar shall be place at 24 inches on center with 4 inches extending into the curb, 2 ½ inches below the top back of curb.~~

G. COMBINATION CURB, GUTTER, AND SIDEWALK. Combination curb, gutter, and sidewalk will not be allowed unless authorized by the City Engineer.

H. COLD WEATHER. shall not be placed when a descending air temperature in the shade and away from artificial heat falls below 35°F. Concrete shall not be poured on frozen ground. Where temperatures are projected to descend below 32°F within 72 hours after placement, concrete shall be covered or otherwise protected against freezing. Calcium chloride may be used only upon City Engineer approval. No more than 1.5% (by weight) of calcium chloride can be used. No calcium chloride shall be used when metal is to be embedded into or in constant contact with the concrete, including but not limited to the following situations:

1. cross gutters
2. sidewalks reinforced with rebar
3. light post footings with embedded anchor bolts
4. slabs with mesh
5. openings in walls with angle iron headers
6. steel base plates mounted or embedded in the concrete surface
7. or any other concrete improvement with non-coated reinforcing steel

Any other admixtures must be approved by the City Engineer.

If concrete is not protected by insulation blankets for 72 hours following installation and the temperature drops below 45 degrees a pay factor of 0.50 shall apply.

I. DEBRIS IN GUTTERS. Once curb and gutter and surface course is in place they shall be kept as clean as possible. Dirt and gravel shall not be placed in gutter or on street. Gutter shall flow freely at all times.

J. SIDEWALK. When equipment is required to cross over sidewalk, bridging will be provided to protect concrete.

K. DRIVE APPROACHES. All concrete for a drive approach shall be 6~~5~~ inches thick in the public right-of-way for residential and 8 inches for non-residential and multi-family driveways. ~~——~~

L. PROTECTION OF WET CONCRETE. The Contractor shall be responsible to protect wet concrete. Any concrete that is vandalized before setting up shall be replaced at the contractor's expense.

M. REPAIR. When authorized by the City Engineer, Contractor may repair concrete damage with Concrete Solution's Ultra Surface Concrete Polymer installed to manufacturer's specifications or an equivalent that is approved by the City Engineer.

1.40.020 Installation

A. APWA. Unless otherwise specified in the City Construction and Design Standards, installation work shall meet the requirements and specifications of the following APWA sections and related sections:

1. APWA 03 39 00 (Concrete Curing)

B. CITY CONSTRUCTION AND DESIGN STANDARDS. See the following City Construction and Design Standards for additional specifications related to installation.

1. Chapter 1.24 (Earthwork and Trenches)

C. CUTTING PAVEMENT FOR CURB AND GUTTER INSTALLATION. When replacing gutter, the pavement shall be cut along the entire excavation to provide a vertical joint in the surface. Cut shall be a minimum of 12 inches from lip of gutter. A pavement saw shall be used for all pavement cutting. If excavation damages the cut pavement, pavement shall be cut again before patching. All road cuts shall be repaired within 2 working days.

D. FORMS AND JOINTS. When pouring concrete along a curve, flexible forms with enough stakes to hold the forms at an even curve shall be used. Straight forms shall not be used on curved sidewalk or curb or gutters.

Curb and gutter contraction joints shall be constructed every 10 feet by using steel templates 1/8 inch in thickness. Sidewalk contraction joints shall meet APWA requirements with the minimum distance between joints being 5 feet.

E. BASE MATERIAL. A minimum of 4 inches of untreated base course shall be installed under all concrete and shall extend out 1 foot in all directions from concrete unless otherwise specified. Untreated base course shall be compacted and installed according to City standards. See Chapter 1.24 (Earthwork and Trenches).

F. MIXING AND CONVEYING. Concrete transported in a truck mixer, agitator, or other transportation device shall be discharged at the job and placed in its final position in the forms within 1 hour after the introduction of the mixing water to the cement and the aggregate, or the cement to the aggregate, except that in hot weather or under other conditions contributing to quick

stiffening of the concrete, the maximum allowable time may be reduced by the City Engineer. The maximum volume of mixed concrete transported in an agitator shall be in accordance with the specified rating. During adverse weather conditions the City Engineer may deem it necessary for the use of a concrete pump truck.

G. FINISHING. As soon as the concrete has set sufficiently to retain its shape without support of the face form, the clamps, spreaders and face forms shall be removed. While the concrete is still green, the surface shall be thoroughly floated with a magnesium or moist wooden float to provide an even smooth surface, then broomed lightly.

H. CURING. As soon as possible after final finishing, the finished surface shall be coated with a curing compound. The compound shall be an ASTM C-1315 Type 2 curing compound that meets the APWA 03 39 00 (Concrete Curing) specifications. The compound shall be applied in accordance with the manufacturer's recommendations.

During the months of October through February exposed concrete shall be covered with an insulated curing blanket that meets the ACI 306 specification for 3 days when temperatures remain at 15 degrees Fahrenheit or higher and for 7 days for temperatures below 15 degrees Fahrenheit. Insulated curing blankets shall only be removed during the warmest parts of the day. The curing compound shall then be applied within 24 hours of the blankets being removed.

1.40.030 Materials and Mixes

A. APWA. Unless otherwise specified in the City Construction and Design Standards, all materials and mixes work shall meet the requirements and specifications of APWA DIVISION 03 (Concrete).

~~PROPORTIONING. The supplier shall determine proportions by weight of aggregates, cement, additives, and water required to comply with strength, workability, and other requirements detailed herein. Such proportions shall be submitted to the City Engineer in three copies annually along with the following tests on materials and shall be subject to his/her approval.~~

~~Coarse aggregate~~

~~Source~~

~~Deleterious substances~~

~~Los Angeles Abrasion Test~~

~~Sodium Sulfate Soundness Test~~

~~Sieve~~

~~Fine aggregate~~

~~Source~~

~~Deleterious substances~~

~~Calorimetric Test for Organics~~

~~Sodium Sulfate Soundness Test~~

~~Sieve and fineness modulus~~

~~Cement~~

~~Type~~

~~Supplier~~

~~Analysis~~

~~Upon approval, all concrete shall be prepared in terms of the proportions so approved unless variation becomes necessary by reason of materials or conditions to achieve the requirements of these specifications, in which case such variation shall be approved in writing by the City Engineer. Approval by the engineer of mix proportions shall not relieve the supplier from the responsibility for obtaining the concrete strengths specified or complying will all other provisions of this specification.~~

~~CONTROL. Measurements of materials except water shall be by weight. Equipment used shall be capable of controlling weight within 1% of each ingredient. Water may be measured either by volume or weight provided that an accuracy of 1% is maintained. Cement may be assumed to weigh 94 pounds per sack but proportioning aggregates for fractional sacks of cement will not be permitted unless the fractional amount is weighed for each batchWATER ADJUSTMENTS. Compensation for the water contained in the aggregates shall be made at least once daily or as often as inspection of the concrete may indicate that variation from this cause has occurred. The Pycnometer Method of assessing water in aggregate may be used for its determination for the purposes of this paragraph.~~

1.40.040 Masonry

A. APWA. Unless otherwise specified in the City Construction and Design Standards, masonry work shall meet the requirements and specifications of the following APWA sections and related sections:

1. APWA Division 04 (Masonry)

B. CITY CONSTRUCTION AND DESIGN STANDARDS. See the following City Construction and Design Standards for additional specifications related to masonry.

1. Drawing 3 (Standard Street Cross Sections and Utility Locations)
2. Drawing 4 (Standard Street Cross Section and Utility Locations)

C. GENERAL. All masonry work shall meet the requirements and specifications of APWA Division 04 (Masonry) and related sections.

D. GRAFFITI PROTECTION. Apply Prosoco Sure Klean Weather Seal Blok-Guard & Graffiti Control WB 6 Weather Seal or approved equivalent to unpainted masonry surfaces at risk to graffiti with installation.

1.44 Landscaping

1.44.010 General

A. APWA. Unless otherwise specified in the City Construction and Design Standards, landscaping work shall meet the requirements and specifications of the following APWA sections and related Divisions:

1. APWA 31 05 19 2.7 (Weed Barrier Geotextile)
2. APWA 31 31 19 (Vegetation Control)
3. APWA 32 01 10 (Relocate Fences and Gates)
4. APWA 32 31 13 (Chain Link Fences and Gates)
5. APWA 32 31 16 (Welded Wire Fences and Gates)

B. CITY CONSTRUCTION AND DESIGN STANDARDS. See the following City Construction and Design Standards for additional specifications related to landscaping.

1. Article 1.04.070 C (Record Drawings)

C. GENERAL. These specifications are for landscape work completed on public property or private property that will become public property or be owned by an HOA.

D. APPURTENANCES. Any minor items of labor or materials not specifically noted on the drawings or specifications, but obviously necessary for the proper completion of the work, are to be considered as incidental to and are to be included in the given contract payment schedule items.

E. AS-BUILT OR RECORD DRAWINGS. The contractor must furnish as-built or Record Drawings according to Article 1.04.070 C (Record Drawings). drawings to the City.

F. GOVERNMENT REGULATIONS. Ship landscape materials with certificates of inspection as required by governmental authorities. Comply with governing regulations applicable to landscape materials.

G. SOURCE. Provide trees and shrubs, and other plants grown in a recognized nursery in accordance with good horticultural practice. Provide healthy, vigorous stock grown under climatic conditions similar to the locality of the project and free of disease, insects, eggs, larvae, and defects such as knots, sun-scale, injuries, abrasions, or disagreement.

Plant Materials and other landscape items will be evaluated according to compliance with drawings, schedules, and specifications; as well as overall aesthetic quality, grower or supplier reputation, physical inspection, and

American Association of Nurseryman Standards (AANS). Select plants that will not be adversely affected by the existing soil chemistry at the planting location.

The source or supplier for all plant materials shall be furnished to the City prior to the delivery of any plant materials on site or stored elsewhere.

H. FENCES AND WALLS. All fences and walls except those for individual single family lots must be approved by the City. Chain link and field wire fencing shall meet the requirements and specifications of APWA 32 31 13 (Chain Link Fences and Gates) and APWA 32 31 16 (Welded Wire Fences and Gates) respectively. The relocation of fences and gates shall meet the requirements and specifications of APWA 32 01 10 (Relocate Fences and Gates) and related sections.

I. VEGETATION CONTROL. Vegetation control shall meet the requirements and specifications of APWA 31 31 19 (Vegetation Control). APWA 31 05 19 2.7 (Weed Barrier Geotextile) fabric shall be installed in all planter beds under rock mulch. Cover fabric with 3" minimum ~~of bark mulch or~~ rock mulch.

1.44.020 Lawns and Grasses

A. APWA. Unless otherwise specified in the City Construction and Design Standards, lawns and grasses shall meet the requirements and specifications of the following APWA sections and related sections:

1. APWA 32 01 90 (Plant Maintenance)
2. APWA 32 92 00 (Turf and Grasses)
3. APWA 32 93 13 (Ground Cover)

B. GENERAL. Lawns and grasses shall meet the requirements and specifications of APWA 32 92 00 (Turf and Grasses) and APWA 32 93 13 (Ground Cover).

C. GRADING. Till soil to a depth of 4 inches and remove rocks and debris over 1 inch in diameter. The elevation of topsoil relative to walks, hard surfaces or edges shall be:

1. Seeded Areas. 1/2 inches below.
2. Sodded Areas. 1 1/2 inches below.

1.44.030 Trees

A. APWA. Unless otherwise specified in the City Construction and Design Standards, trees shall meet the requirements and specifications of the following APWA sections and related sections:

1. APWA 32 93 43 (Tree)

2. APWA 32 01 91 (Tree Root Cutting)
3. APWA 32 01 93 (Pruning Trees)
4. APWA 32 01 90 (Plant Maintenance)
5. APWA 31 05 13 (Common Fill)

B. GENERAL. Tree and work relating to trees shall meet the requirements and specifications of the City Tree and Landscape Manual, APWA 32 93 43 (Tree), APWA 32 01 91 (Tree Root Cutting), APWA 32 01 93 (Pruning Trees) and 32 01 90 (Plant Maintenance). Install per standard G-112. Trees may be planted without a certified arborist when authorized by the City Engineer.

C. TREE SIZES. City ordinance specifies deciduous trees to be at least 2 inch caliper and evergreen trees to be at least 8 to 10 feet in height. Plants of a larger size may be used pending approval by the City Engineer. Sizes of root balls or containers shall be increased proportionately.

D. IRRIGATION. All trees shall have an independent isolated irrigation zone with in-line drip (3 rings of drip).

E. LABELS. Label at least one plant of each variety with a securely attached waterproof tag bearing legible designation of botanical and common name.

F. TOPSOIL. Topsoil shall meet APWA 31 05 13 (Common Fill). A minimum of 4" of topsoil shall be placed in grass areas and 12" in planters. Native soil shall be scarified 6" deep and graded before topsoil is placed.

G. CITY ARBORIST. City Arborist must be onsite at the beginning of the planting of any trees.

H. TREE GRATES. Only 4 foot square D&L O-8644 or approved equivalent grates shall be used. Grates shall be set to grade with the top back of curb and sidewalk. Grates shall be set in metal frame manufactured specifically for grate. Frame shall be set in concrete extending a minimum of 6 inches from sides of frame. Concrete shall be installed to City standards for Portland Cement Concrete.

1.48 Irrigation Sprinkler Systems

1.48.010 General

A. APWA. Unless otherwise specified in the City Construction and Design Standards, irrigation sprinkler systems shall meet the requirements and specifications of the following APWA sections and related Divisions:

1. APWA 32 84 23 (Underground Irrigation Systems)

B. GENERAL. These specifications are for landscape work completed on private property that will become public property. All underground irrigation systems shall meet the requirements and specifications of APWA 32 84 23 (Underground Irrigation Systems).

C. APPURTENANCES. Any minor items of labor or materials not specifically noted on the drawings or specifications; but obviously necessary for the proper completion of the work, are to be considered as incidental to and are to be included in the contract.

D. PRESSURE VERIFICATION. The Contractor, prior to installing the system, must verify existing water pressure. If there is a failure to obtain the needed pressure or if an excess of pressure exists for normal operation, the Contractor shall contact the City for any adjustments to the system. Failure to report any discrepancies in pressure due to whatever reason, and installation done prior to notification of City Parks Department shall be done at the expense of the Contractor.

E. PLAN MODIFICATIONS. The plans show the general arrangement of all piping. Should local conditions necessitate the rearrangement of some, or if piping can be run to better advantage, the contractor, before proceeding with the work, shall prepare and submit drawings of such to the office of the City Parks Department Representative and obtain written approval before commencing work shown by these drawings.

F. ~~AS-BUILT SURVEY. The Contractor shall notify the City to survey all underground utilities such as sprinkler pipes, wires and valves either installed or uncovered in the course of construction. Contractor shall give the City 24-hour notice to survey utilities.~~

1.48.020 Pipe and Fittings

A. PIPE. Use solvent weld schedule 40 PVC for main line pipe 3 inches in diameter and smaller. Use Class 200 PVC for main line pipe larger than 3 inches in diameter.

B. MAIN LINE FITTINGS. Use solvent weld schedule 40 PVC fittings for pipe smaller than 3 inches in diameter. All fittings for pipe 3 inch and larger pipe shall be ductile iron, grade 65-45-12 in accordance with ASTM A-536.

Fittings shall have deep bell push on joints with gaskets meeting ASTM F977. Fittings shall be Harco Deep Bell as manufactured by the Hanington Corporation of Lynchburg, VA or approved equivalent. Transition gaskets are not allowed.

C. CIRCUIT PIPE FITTINGS. Use solvent weld schedule 40 PVC fittings.

D. SLEEVES. Pipe and control wire conduit~~ing and tubing~~ under walks, roads and other hard surfaces shall be installed in solvent weld Class 40 PVC sleeves of

adequate size. Sleeves shall be a minimum of 3 inches in diameter or one and a half times the size of the pipes or conduit whichever is greater. Sleeves shall be straight and level or less than 2% grade.

All wiring shall be placed in its own conduit according to Article 1.48.040 M (Control Wire). There shall be one sleeve for each sprinkler pipe or control wire conduit pipe. A spare sleeve capped on both ends shall be installed at each crossing unless waived by the City Engineer. Sleeves shall extend 18 inches beyond the edge of walks, road, and other hard surfaces. Wire conduit may be ran inside of sprinkler pipe sleeves. Conduit for control wires shall have minimum inside diameters according to the following chart:

1.48.030 Sprinkler Heads

A. GENERAL. Install according to APWA plan number 621 and 622, but do not install PVC elbow and riser.

B. SPRAY HEADS. All spray type sprinkler heads shall be Rainbird "1800" series PRS 30 or approved equivalent. Minimum height of a sprinkler head in the lawn shall be 4" and 12" in shrub and flower beds. All lawn spray heads shall be installed on swing pipe with two spiral barbed ells and one street ell between the sprinkler head and the spiral barb. Hunter MP 1000 rotators, MPLCS 515, MPCS515, MPSS530, MP Corner or equivalents are not allowed. MP rotators or equivalents (that are allowed MP 2000, MP300) must be installed in a Hunter Pro-spray PRS 40 sprinkler body or equivalent.

C. ROTARY HEADS. All rotary type sprinkler heads shall be Rainbird 5000 or 6504 series or approved equivalent. All stream rotary and impact heads capable of distributing more than 6 gallons per minute or more shall be installed on a pre-assembled swing joint by Spears or an approved equivalent.

D. FILTER. Amiad T Filter with a Brushaway assembly or approved equivalent. The filter should be the same size as the mainline pipe. The Filter shall be enclosed with a lockable wire mesh enclosure. Filters 3" and larger should be the Amiad Mini Sigma automatic filter or approved equivalent. Automatic filters shall be enclosed in a stainless steel enclosure.

1.48.040 Controllers, Valves, and Flow Meters

A. APWA. Unless otherwise specified in the City Construction and Design Standards, controller valves and flow meters shall meet the requirements and specifications of the following APWA sections, plans, and related sections:

1. APWA Plan 631.1 (Backflow Preventer – Less than 3-Inch Diameter)
2. APWA Plan 631.2 (Backflow Preventer – 3-Inch and Larger)
3. APWA Plan 632 (Drain Valve)

4. APWA Plan 633 (Control Valve)

5. APWA Plan 651 (Isolation Valve)

B. CITY CONSTRUCTION AND DESIGN STANDARDS. See the following City Construction and Design Standards for additional specifications related to controller valves and flow meters.

1. Drawing 24 (Typical Culinary Water Connection)

2. Drawing 25 (Large Meter Assembly)

3. Drawing 26 (Backflow Prevention Assembly)

C. CONTROLLER. Controller and pedestal shall be ~~the same type as those used in the City central control system~~Rainbird ?? or approved equivalent. The controller shall be as described in the irrigation legend on the drawings.

D. MANUAL MAIN LINE ISOLATION VALVE. See APWA Standard Plan 635 (Isolation Valve). Install a Nibco gate valve or approved equivalent.

E. MANUAL CIRCUIT ISOLATION VALVE. Brass ball valve with handle.

F. AUTOMATIC VALVES. Automatic valves shall be Rainbird PEB electric remote control valves or an approved equivalent. A manual circuit isolation valve shall be installed on the supply side of each automatic valve. Install according to APWA Plan 633 (Control Valve), but do not install schedule 80 PVC union. For valves 1.5" and larger allow only one valve per box. 1" valves; 2 valves per standard box or 3 valves per jumbo box.

G. MASTER VALVES AND FLOW METERS. Master valves and flow meters must be installed on main supply line and/or according to design and must be compatible with the approved ~~Calsense central~~ control system or be compatible with other approved controllers.

H. AUTOMATIC DRAIN VALVES. Install according to APWA Plan 632 (Drain Valve).

I. BACK FLOW PREVENTER. Shall be required on connections to the drinking water system. Install according to APWA Plans 631.1 (Backflow Preventer – Less than 3-Inch Diameter) and 631.2 (Backflow Preventer – 3-Inch and Larger).

J. STOP AND WASTE VALVES. Stop and waste valves shall be Mueller H - 10288N Oraseal or an approved equivalent. Stop and Waste valve shall be of manual type for operation by handle key.

K. QUICK COUPLER VALVES. Quick coupler valves shall be installed with brass riser and pre-manufactured swing joint. At least 2 quick coupler valves shall be installed, one at each end of main line. Valves shall be 1 inch standard. Rain Bird model 44LRC or approved equivalent. Must provide one quick coupler key that fits the specified model.

L. VALVE BOXES. Must be Oldcastle plastic valve boxes, model numbers VB 910, VB 1419, and/or VB 1220 or approved equivalents. Valves shall be located in lawn or planted areas. Avoid locating valves in areas of high pedestrian and vehicular circulation. Valve boxes shall be at finished grade with valve stems 4 inches minimum and 12 inches maximum below top of box and with 3 inches of pea gravel or 3/4 inch minus crushed gravel under the valve. Valve boxes shall be rectangular, heavy duty and green in color. Valve boxes for automatic valves shall be large enough to enclose manual circuit isolation valve and automatic valve.

M. CONTROL WIRE. Install control wire according to APWA Plan 651 (Isolation Valve). Add two extra blue control wires per controller to the longest run for emergency use and mark it in the control box as an extra wire. Only 2 wire control systems may be installed. All splices must be in a valve box according to Article 1.48.040 L (Valve Boxes). Control wiring shall only be placed in solvent weld Class 40 PVC conduit with sweeps and sized according to the following table:

Minimum Wire Sleeve Conduit Sizes

Number of Wires	Conduit I.D.
1 to 7	1 inch
8 to 11	1 ½ inch
12 to 22	2 inch
23 to 31	2 ½ inch
32 to 36	3 inch

All control wire conduit under walks, roads, and other hard surfaces must be installed in sleeves according to Article 1.48.020 D (Sleeves).

1.48.050 Installation

A. CITY CONSTRUCTION AND DESIGN STANDARDS. See the following City Construction and Design Standards for additional specifications related to installation.

1. Article 1.16.040 D (Flushing Inspection)

B. SCHEDULE. Contractor shall submit a construction schedule of anticipated work time to facilitate timely visits for review of work. Schedule must be submitted to the City before any landscaping may ~~begin~~begin.

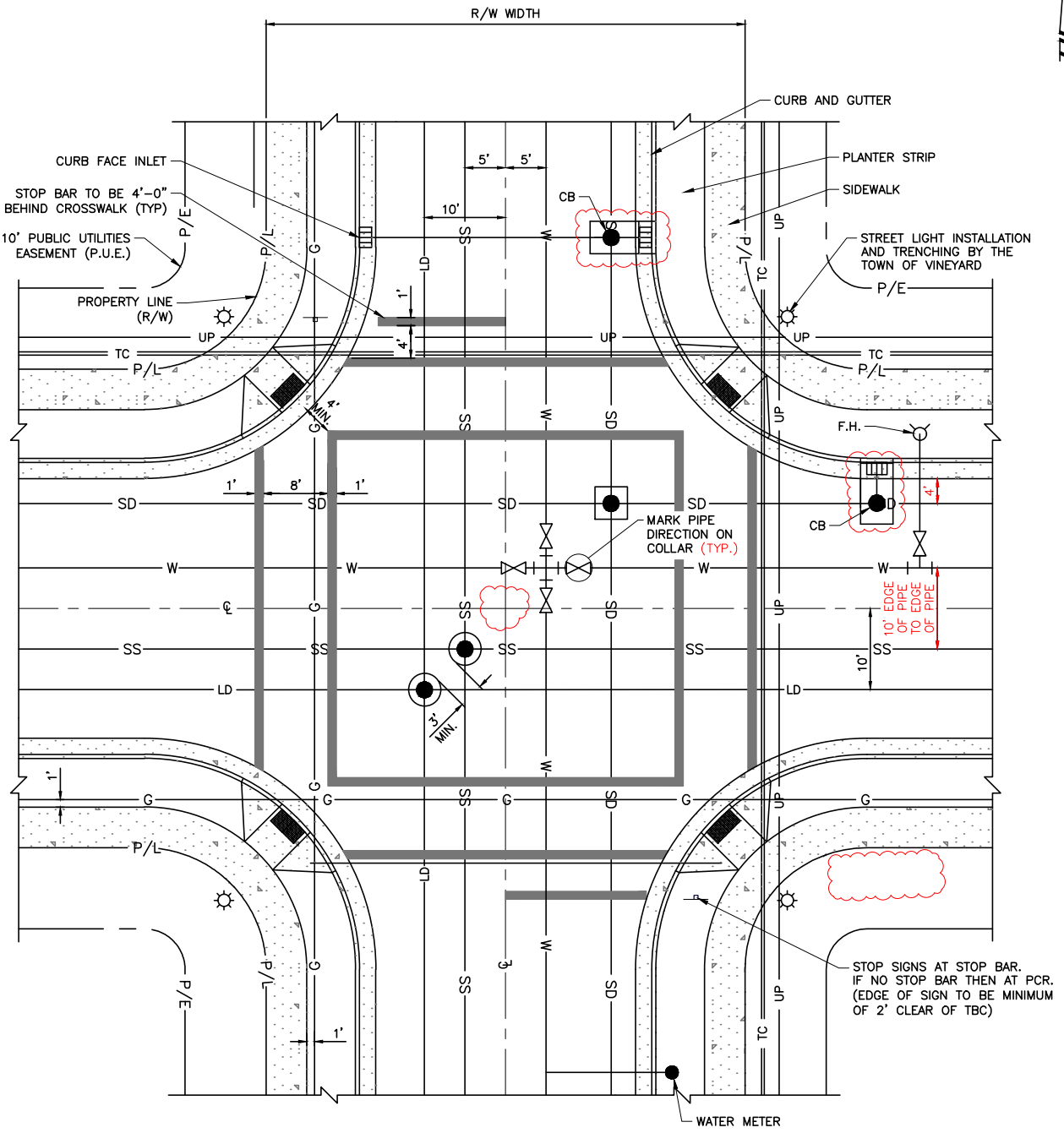
C. DEPTH AND LOCATION. Lines bordering curbs or sidewalks shall be 6 inches away to allow for maintenance and access to the lines. Control wires must be buried at least 12 inches below finished grade in conduit according to Article 1.48.020 D (Sleeves)~~and bundled with a plastic tape every 10 feet~~.

D. TRENCH BACKFILL MATERIAL. All trenches shall be backfilled in ~~12 inch~~12-inch lifts and tamped sufficiently to ~~insure~~ensure no settling of the surface. No

rocks larger than 1 inch shall be allowed within 3 inches of the pipe. The Contractor, in placing the irrigation lines, and appurtenances, may uncover material not suitable for finished grading. This material shall be removed from the site. After the installation of the lines, the finished grading shall be smoothed over and restored to its original condition, using additional topsoil where necessary.

E. THRUST BLOCKS. All mainlines greater than 2 inches in size shall be installed with thrust blocks wherever a change of direction occurs. Thrust blocks shall be installed per city standards. Mechanical joint restraint systems installed to manufacturer's specifications may be installed instead of thrust clocks if approved by city.

F. FLUSHING. See Article 1.16.040 D (Flushing Inspection).



TYPICAL STREET INTERSECTION WITH UTILITIES

LEGEND

CB= COMBO BOX
G= NATURAL GAS
SS= SANITARY SEWER
SD= STORM DRAIN
W= CULINARY WATER
UP= POWER
TC= TELECOMMUNICATIONS
LD= LAND DRAIN

NOTE:
1. EXACT UTILITY PLACEMENT TO BE DETERMINED BY TOWN AND UTILITY COMPANIES

STATEMENT OF USE

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REVISION

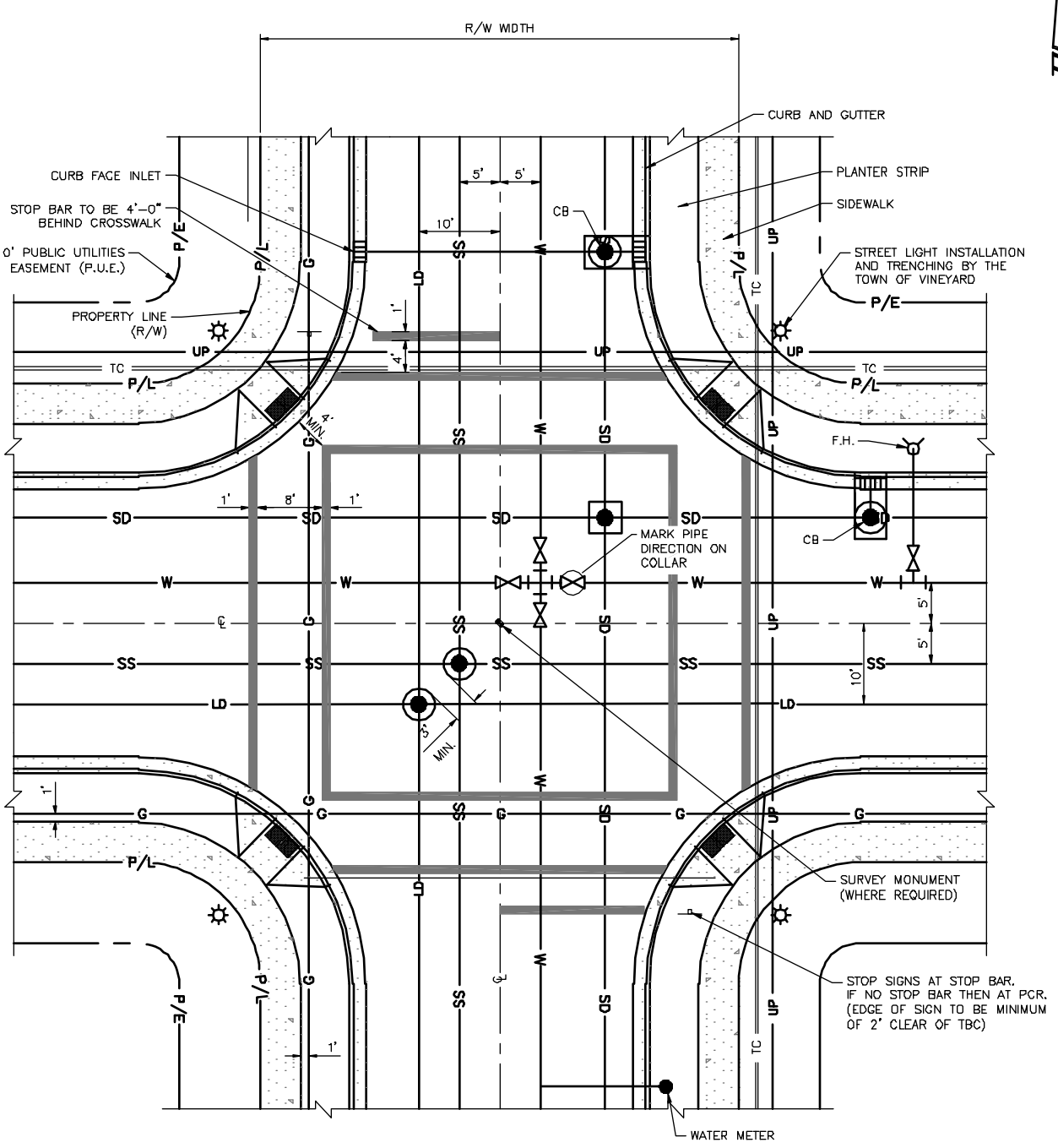
NO.	DESCRIPTION	BY	APR.	DATE
1	STANDARDS UPDATE	JMM	DEO	8/08/16
2	HANSEN, ALLEN & LUCE	DCL	CMT	9/12/25
3				
4				

VINEYARD
STAY CONNECTED

STANDARD STREET INTERSECTION AND UTILITY LOCATIONS

VINEYARD

STANDARD DRAWING NUMBER:	1
CAD DWG:	STANDARD
PLOT SCALE:	DRAWING
DRAWN BY:	JMM
DESIGN BY:	CRW
CHECKED BY:	DEO
ADOPTED DATE:	SEPTEMBER 1, 2016



TYPICAL STREET INTERSECTION WITH UTILITIES

LEGEND

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JUB

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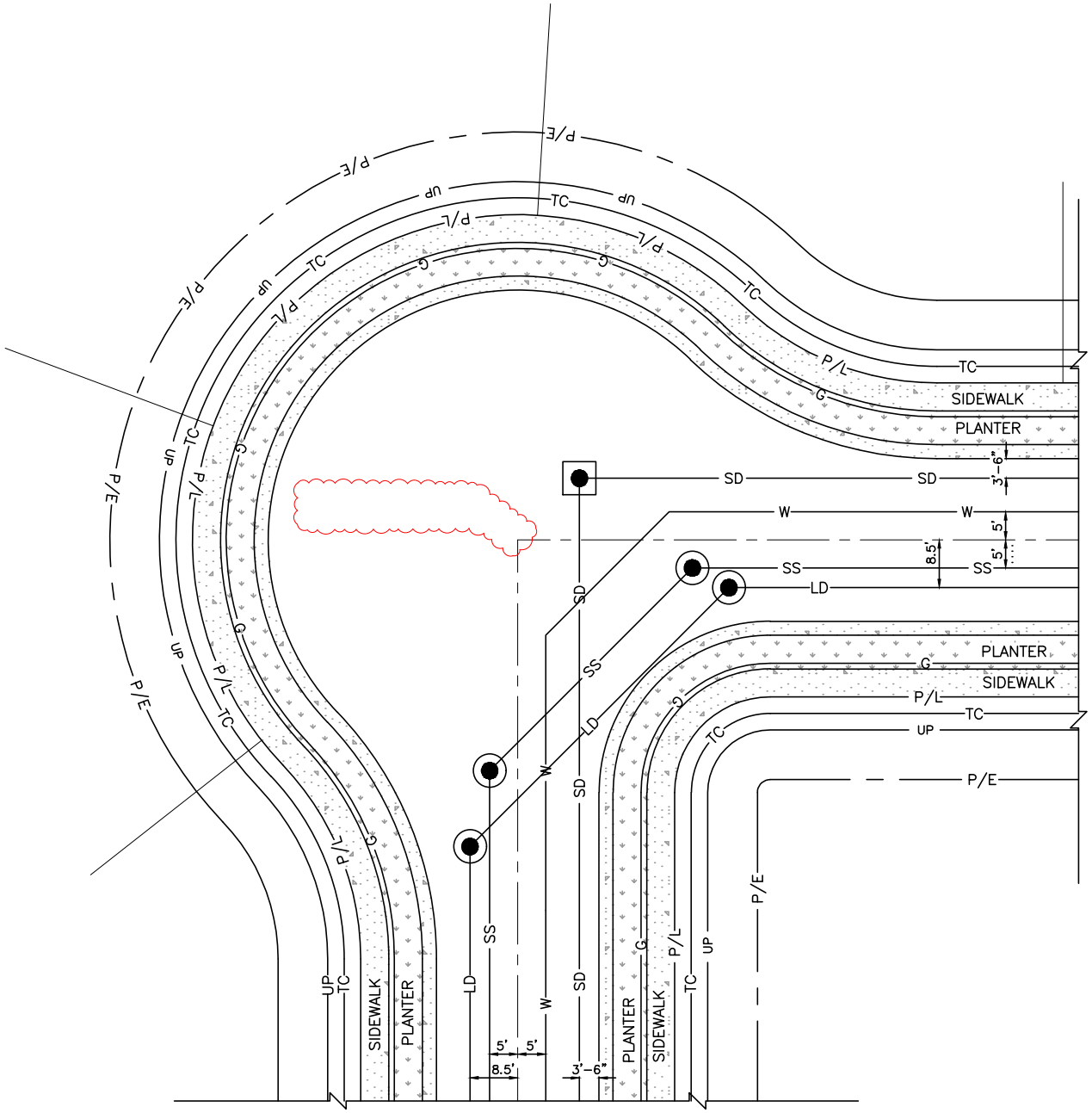
NO.	DESCRIPTION	BY	APR.	DATE
1	STANDARDS UPDATE	JMM	DEO	8/08/16
2				
3				
4				

VINEYARD
STAY CONNECTED

STANDARD STREET INTERSECTION AND UTILITY LOCATIONS

TOWN OF VINEYARD

STANDARD DRAWING NUMBER:	1
CAD DWG:	V_STD_DWGS
PLOT SCALE:	1.000
DRAWN BY:	JMM
DESIGN BY:	CRW
CHECKED BY:	DEO
ADOPTED DATE:	SEPTEMBER 1, 2016



TYPICAL STREET KNUCKLE WITH UTILITIES

LEGEND

CB= COMBO BOX
G= NATURAL GAS
SS= SANITARY SEWER
SD= STORM DRAIN
W= CULINARY WATER
UP= POWER
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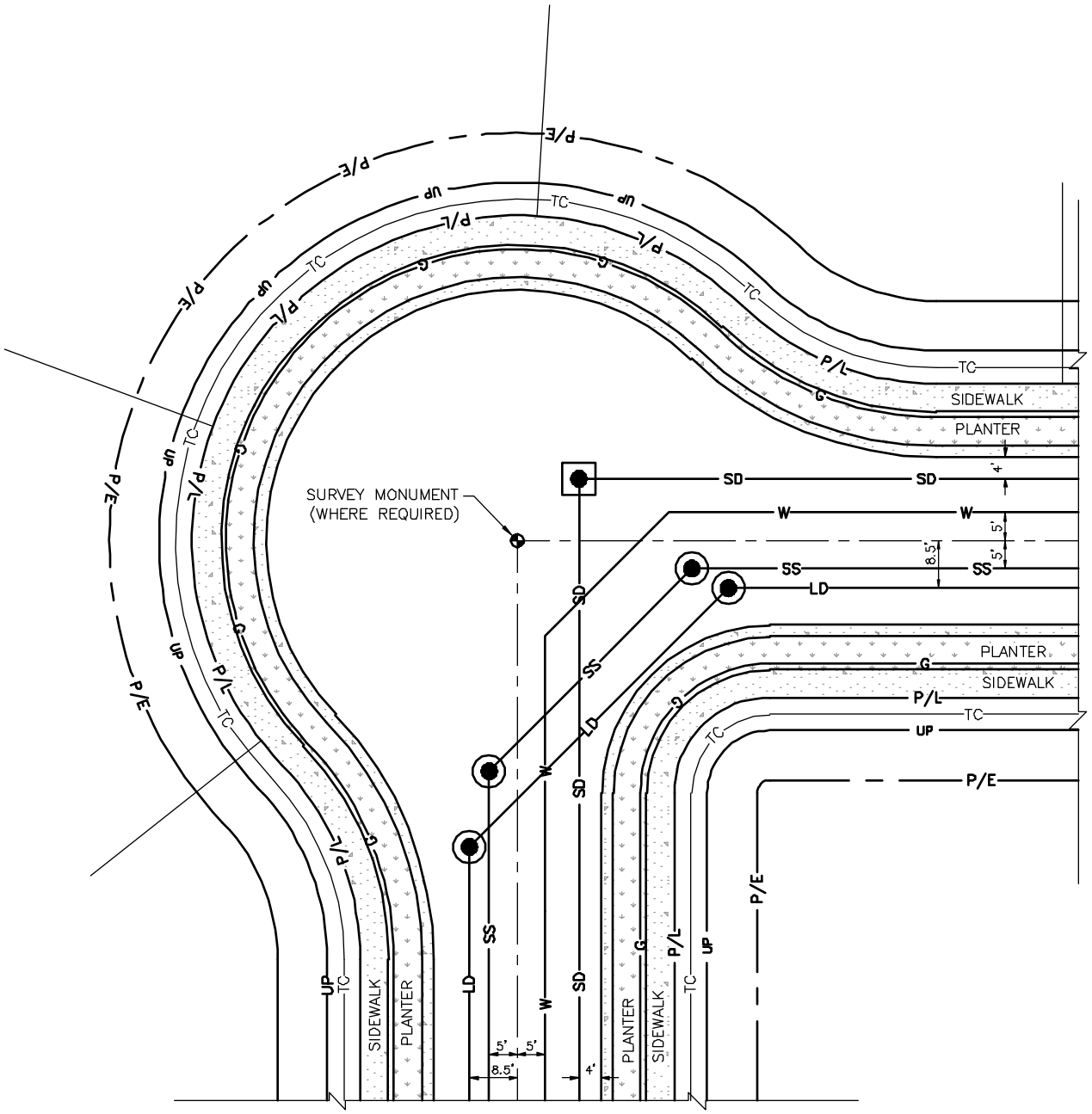
NO.	DESCRIPTION	BY	APR.	DATE
1	STANDARDS UPDATE	JMM	DEO	8/08/16
2	HANSEN, ALLEN & LUCE	DCL	CMT	9/12/25
3				
4				

VINEYARD
STAY CONNECTED

STANDARD UTILITY LOCATIONS IN KNUCKLE

VINEYARD

STANDARD DRAWING NUMBER:	2
CAD DWG:	STANDARD
PLOT SCALE:	DRAWING
DRAWN BY:	JMM
DESIGN BY:	CRW
CHECKED BY:	DEO
ADOPTED DATE:	SEPTEMBER 1, 2016



TYPICAL STREET KNUCKLE WITH UTILITIES

LEGEND

CB= COMBO BOX
G= NATURAL GAS
SS= SANITARY SEWER
SD= STORM DRAIN
W= CULINARY WATER
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NOTE:
1. EXACT UTILITY PLACEMENT TO BE DETERMINED BY TOWN AND UTILITY COMPANIES

JUB

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REVISION

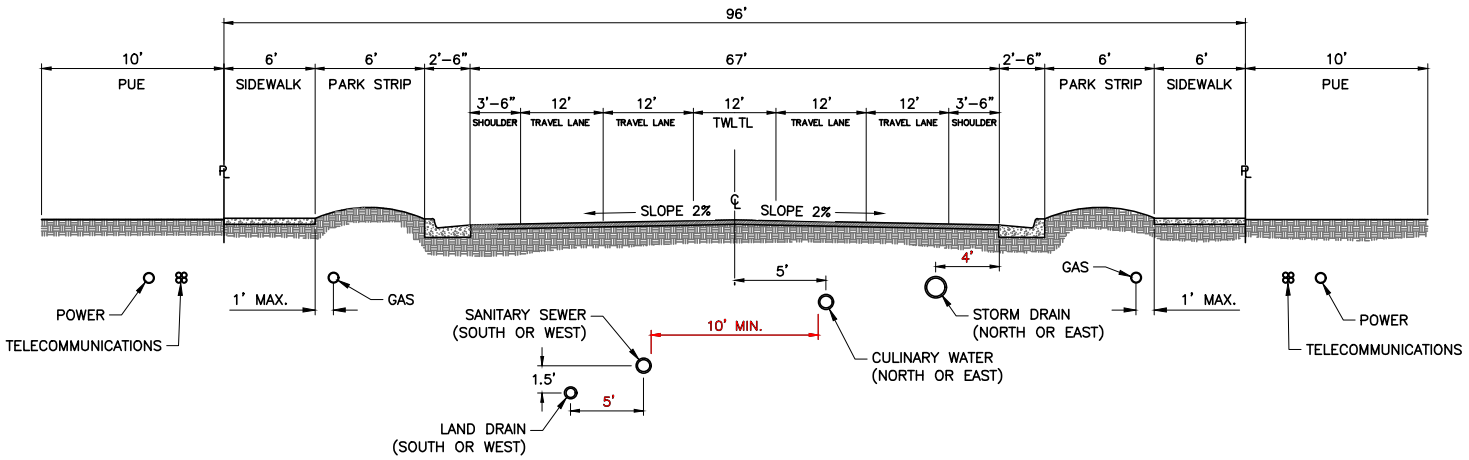
NO.	DESCRIPTION	BY	APR.	DATE
1	STANDARDS UPDATE	JMM	DEO	8/08/16
2				
3				
4				

VINEYARD
STAY CONNECTED

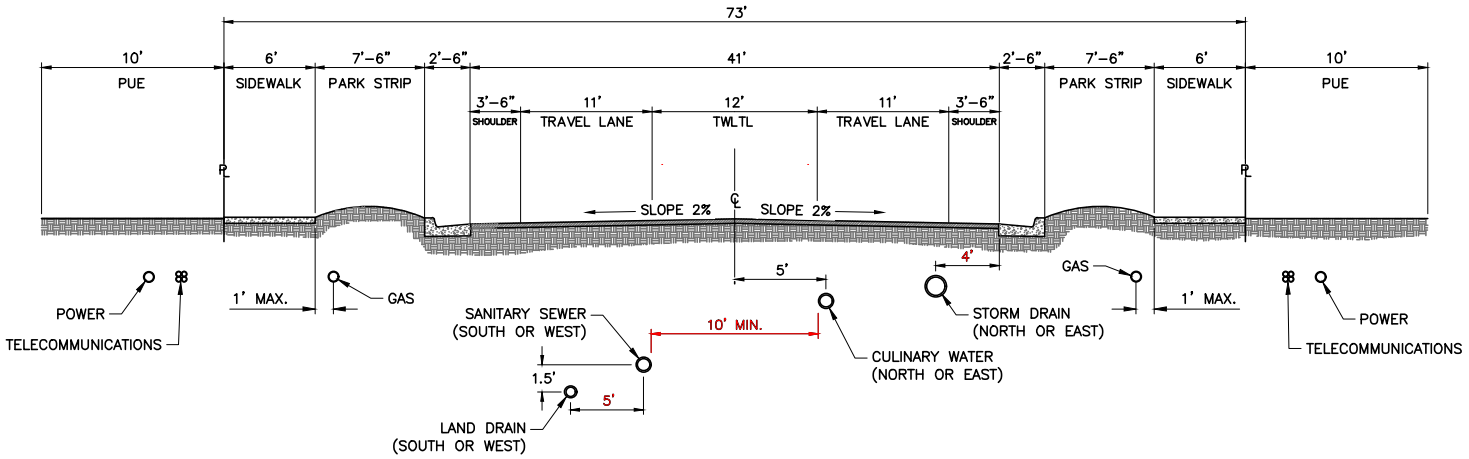
STANDARD UTILITY LOCATIONS IN KNUCKLE

TOWN OF VINEYARD

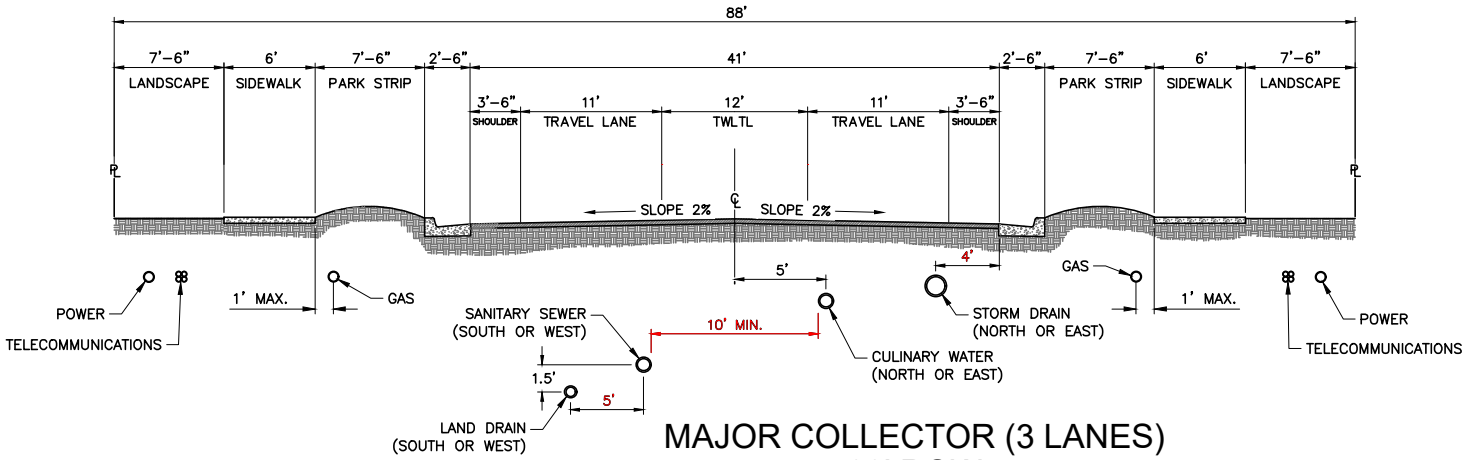
STANDARD DRAWING NUMBER:	1A
CAD DWG:	V_STD_DWGS
PLOT SCALE:	1.000
DRAWN BY:	JMM
DESIGN BY:	CRW
CHECKED BY:	DEO
ADOPTED DATE:	SEPTEMBER 1, 2016



MAJOR ARTERIAL (5 LANES)
96+' ROW



MINOR ARTERIAL (3 LANES)
73' ROW



MAJOR COLLECTOR (3 LANES)
88' ROW

NOTES:
1. WHEREVER POSSIBLE, CULINARY WATER LINES SHALL BE INSTALLED ON THE NORTH AND EAST SIDE OF THE CENTERLINE.
2. FIRE HYDRANT PLACEMENT: REFER TO DESIGN CRITERIA FOR PUBLIC IMPROVEMENTS SECTION 4.02 SUB-SECTION B.
3. NO CULINARY WATER LINE SMALLER THAN 8" DIA. SHALL BE INSTALLED WITHOUT APPROVAL OF TOWN ENGINEER.
4. IMPORTED GRANULAR MATERIAL, ROADBASE AND WHERE NECESSARY ASPHALT THICKNESS WILL BE DETERMINED BY PAVEMENT DESIGN.
5. REQUIRED COVER OVER UTILITY LINES ARE AS FOLLOWS:
   CULINARY WATER = 48" MINIMUM
   SANITARY SEWER = PER DESIGN
   STORM DRAIN = PER DESIGN
   TELECOMMUNICATIONS = 24" MINIMUM
   ALL OTHERS = PER UTILITY REQUIREMENTS

STATEMENT OF USE

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REVISION

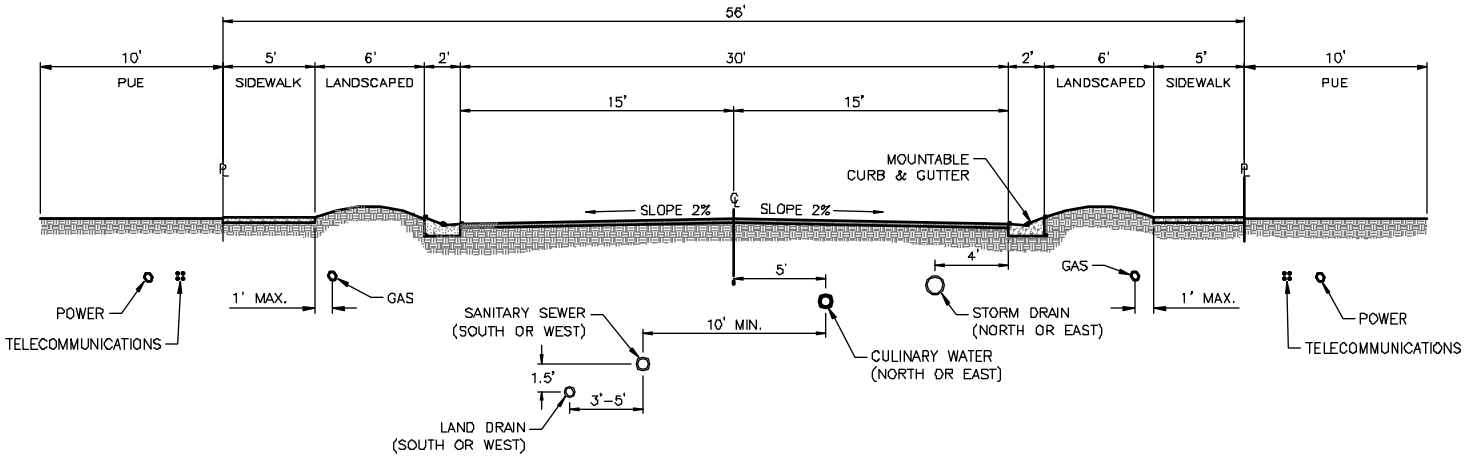
NO.	DESCRIPTION	BY	APR.	DATE
1	STANDARDS UPDATE	JMM	DEO	8/08/16
2	HANSEN, ALLEN & LUCE	DCL	CMT	9/12/25
3				
4				

VINEYARD
STAY CONNECTED

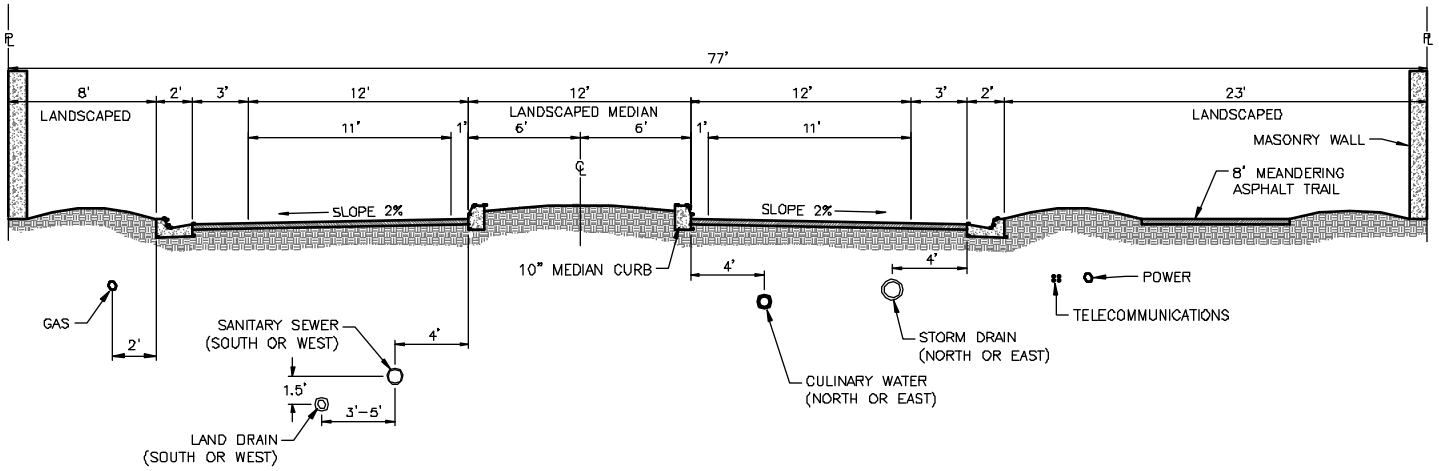
STANDARD STREET CROSS SECTIONS AND UTILITY LOCATIONS

VINEYARD

STANDARD DRAWING NUMBER:	3
CAD DWG:	STANDARD
PLOT SCALE:	DRAWING
DRAWN BY:	JMM
DESIGN BY:	CRW
CHECKED BY:	DEO
ADOPTED DATE:	SEPTEMBER 1, 2016



56' LOCAL STREET CROSS-SECTION
LOOKING NORTH OR WEST



77' PARKWAY STREET CROSS-SECTION
LOOKING NORTH OR WEST

NOTES:
1. WHEREVER POSSIBLE, CULINARY WATER LINES SHALL BE INSTALLED ON THE NORTH AND EAST SIDE OF THE CENTERLINE.
2. FIRE HYDRANT PLACEMENT: REFER TO DESIGN CRITERIA FOR PUBLIC IMPROVEMENTS SECTION 4.02 SUB-SECTION B.
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   STORM DRAIN = PER DESIGN
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JUB

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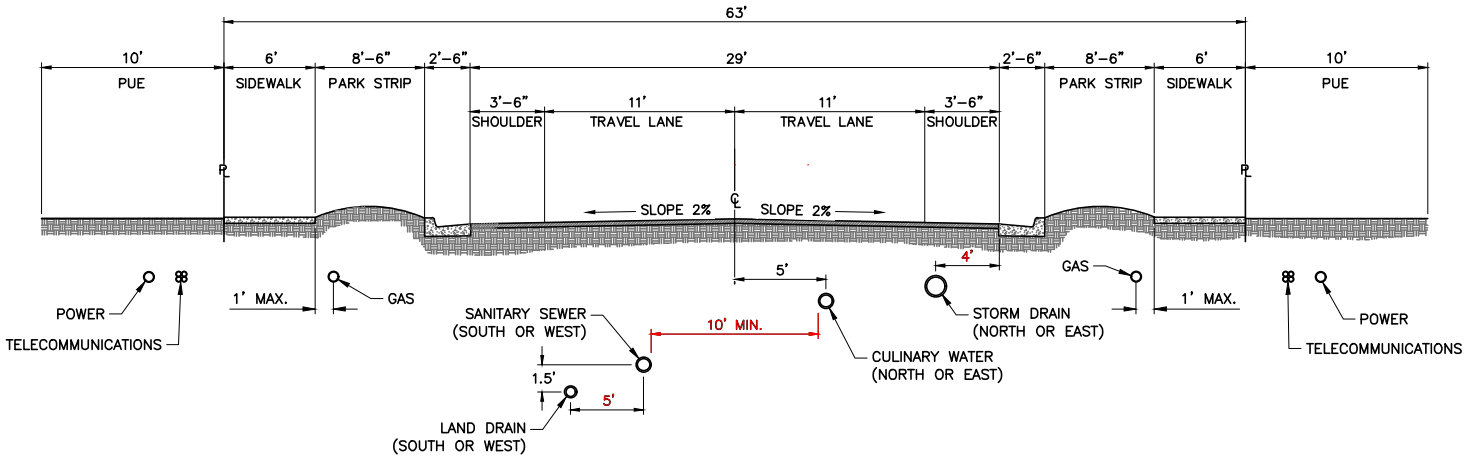
1	STANDARDS UPDATE	JMM	DEO	8/08/16
2				
3				
4				

VINEYARD
STAY CONNECTED

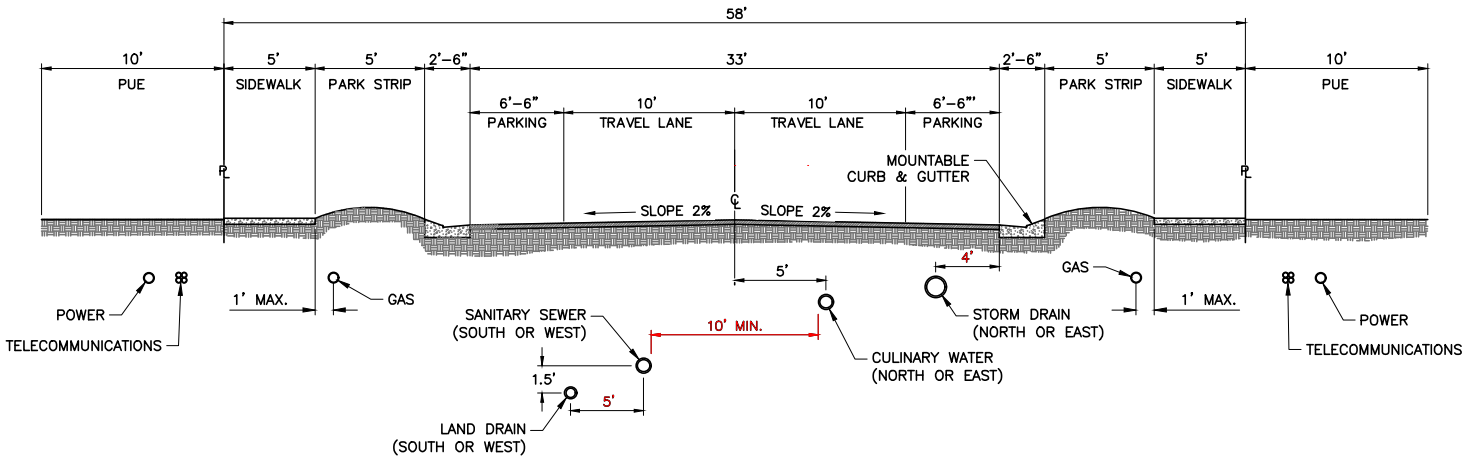
STANDARD STREET CROSS SECTIONS AND UTILITY LOCATIONS

TOWN OF VINEYARD

STANDARD DRAWING NUMBER:	2
CAD DWG:	V_STD_DWGS
PLOT SCALE:	1.000
DRAWN BY:	JMM
DESIGN BY:	CRW
CHECKED BY:	DEO
ADOPTED DATE:	SEPTEMBER 1, 2016



MINOR COLLECTOR (2 LANES)
63' ROW



LOCAL (2 LANES)
58' ROW

NOTES:
1. WHEREVER POSSIBLE, CULINARY WATER LINES SHALL BE INSTALLED ON THE NORTH AND EAST SIDE OF THE CENTERLINE.
2. FIRE HYDRANT PLACEMENT: REFER TO DESIGN CRITERIA FOR PUBLIC IMPROVEMENTS SECTION 4.02 SUB-SECTION B.
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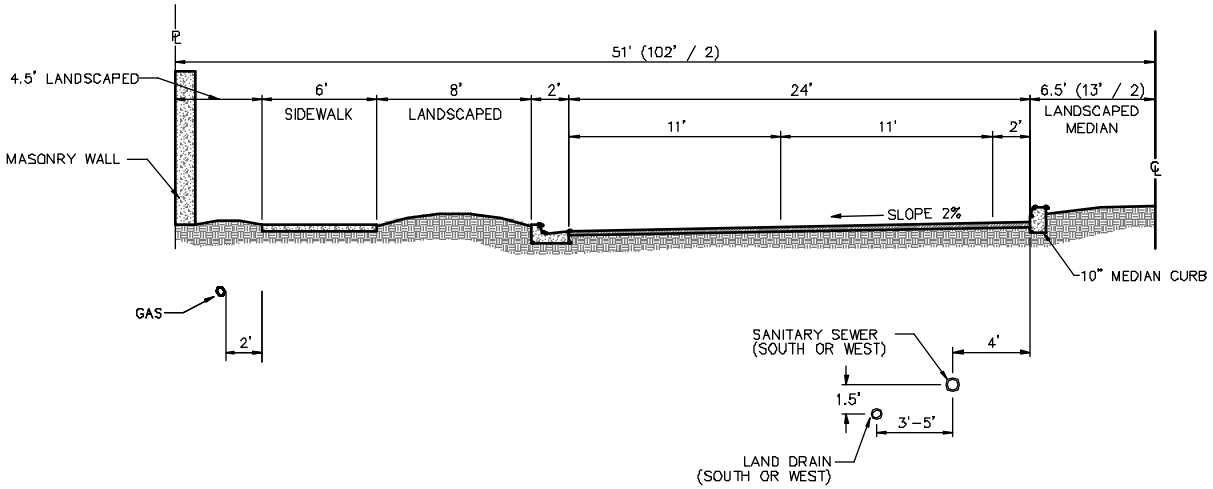
VINEYARD
STAY CONNECTED

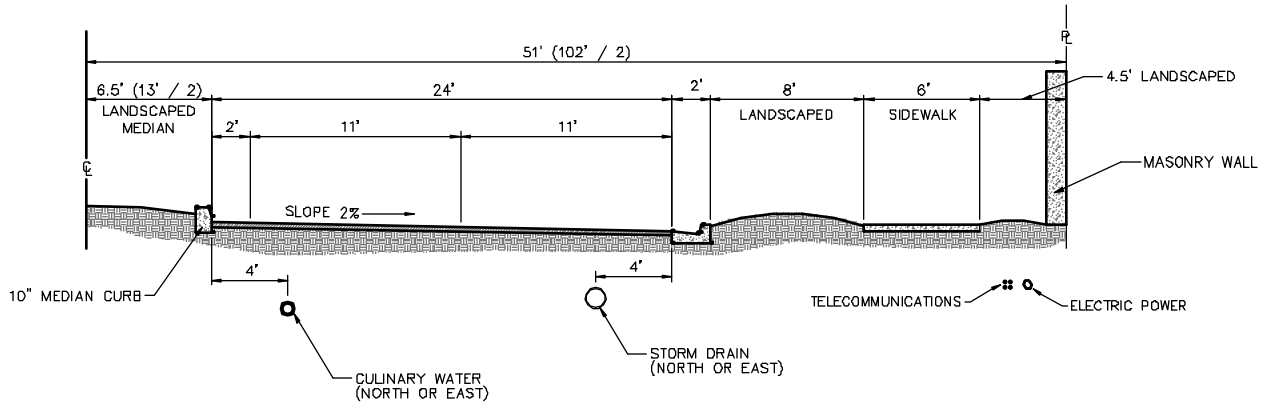
STANDARD STREET CROSS SECTIONS AND UTILITY LOCATIONS

VINEYARD

STANDARD DRAWING NUMBER:	4
CAD DWG:	STANDARD
PLOT SCALE:	DRAWING
DRAWN BY:	JMM
DESIGN BY:	CRW
CHECKED BY:	DEO
ADOPTED DATE:	SEPTEMBER 1, 2016



LEFT SIDE HALF WIDTH



RIGHT SIDE HALF WIDTH

102' BOULEVARD STREET CROSS-SECTION
LOOKING NORTH OR WEST

NOTES:
1. WHEREVER POSSIBLE, CULINARY WATER LINES SHALL BE INSTALLED ON THE NORTH AND EAST SIDE OF THE CENTERLINE.
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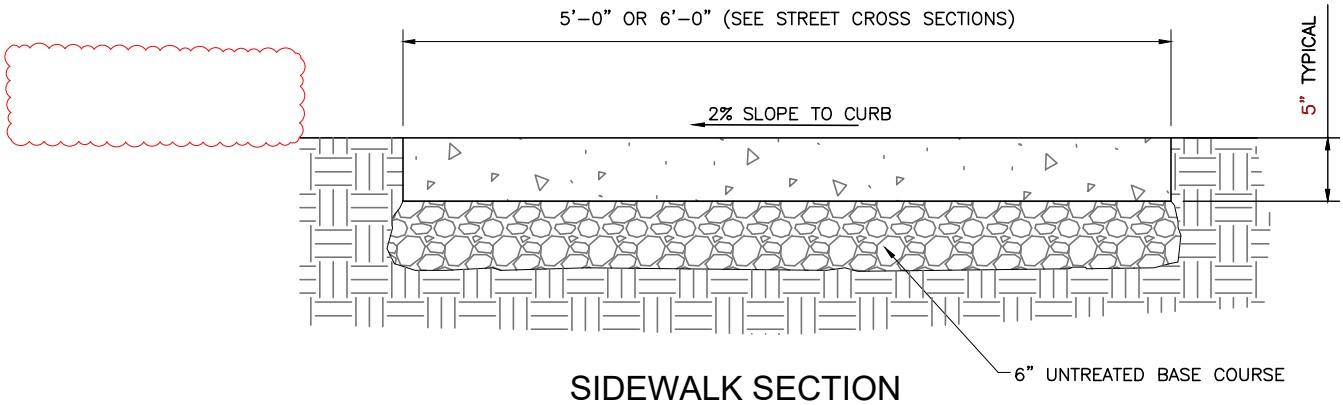
1	STANDARDS UPDATE	JMM	DEO	8/08/16
2				
3				
4				

VINEYARD
STAY CONNECTED

BOULEVARD STREET CROSS SECTION AND UTILITY LOCATIONS

TOWN OF VINEYARD

STANDARD DRAWING NUMBER:	3
CAD DWG:	V_STD_DWGS
PLOT SCALE:	1.000
DRAWN BY:	JMM
DESIGN BY:	CRW
CHECKED BY:	DEO
ADOPTED DATE:	SEPTEMBER 1, 2016



SIDEWALK SECTION

NOTES:

1. SIDEWALK: USE APWA PLAN 231 SIDEWALK. CONTRACTION JOINTS SHALL BE PLACED EVERY 5' FOR 5' WALKS AND EVERY 6' FOR 6' WALKS. EXPANSION JOINTS SHALL BE PLACED EVERY 50' MAXIMUM.
2. CURB AND GUTTER: USE APWA PLAN 205.1 TYPE A – 30" CURB AND GUTTER UNLESS OTHERWISE AUTHORIZED BY THE CITY ENGINEER TO MATCH EXISTING.
3. MOUNTABLE CURB AND GUTTER: USE APWA PLAN 205.3 TYPE H – 30" STANDARD CURB AND GUTTER UNLESS OTHERWISE AUTHORIZED BY THE CITY ENGINEER TO MATCH EXISTING.
4. CROSS GUTTER: USE APWA PLAN 211 AND 213 6' WATERWAY UNLESS OTHERWISE AUTHORIZED BY THE CITY ENGINEER TO MATCH EXISTING.

STATEMENT OF USE

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2	HANSEN, ALLEN & LUCE	DCL	CMT	9/12/25
3				
4				

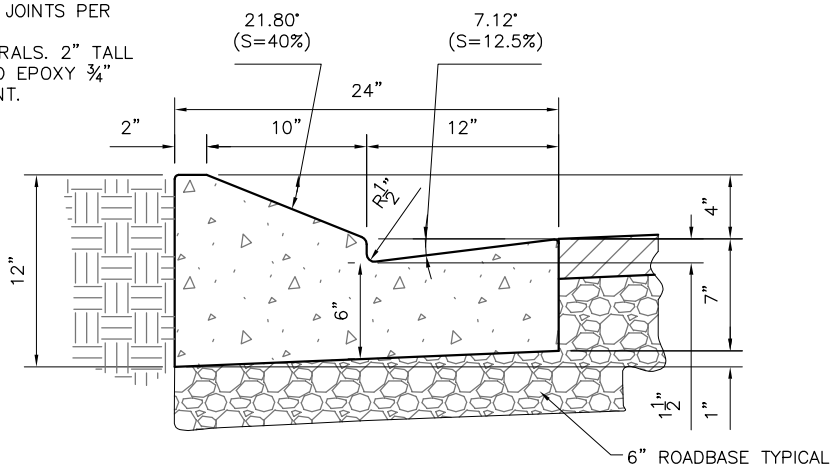
VINEYARD
STAY CONNECTED

CURB, GUTTER, AND SIDEWALK

VINEYARD

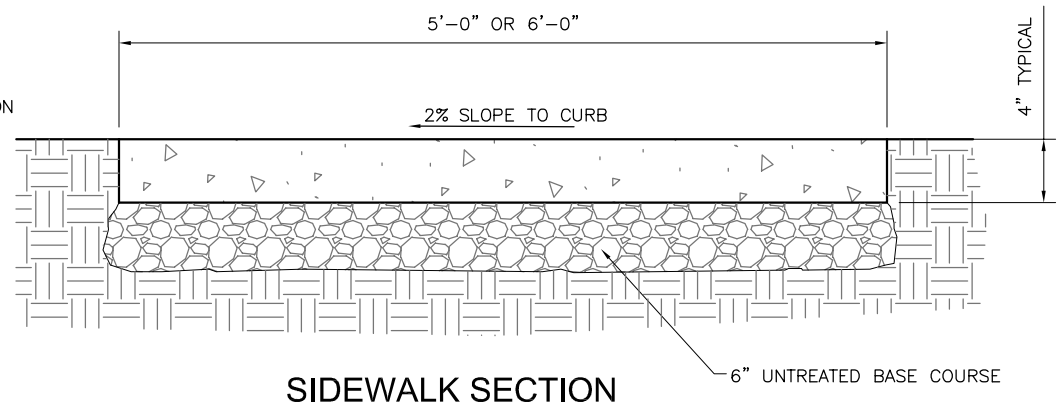
STANDARD DRAWING NUMBER:	5
CAD DWG:	STANDARD
PLOT SCALE:	DRAWING
DRAWN BY:	JMM
DESIGN BY:	CRW
CHECKED BY:	DEO
ADOPTED DATE:	SEPTEMBER 1, 2016

NOTE:
1. CONTRACTION AND EXPANSION JOINTS PER APWA STANDARDS.
2. S, W, OR L MARKER FOR LATERALS. 2" TALL WET SET LETTER OR DRILL AND EPOXY ¾" BRASS WITH 1" MIN. EMBEDMENT.



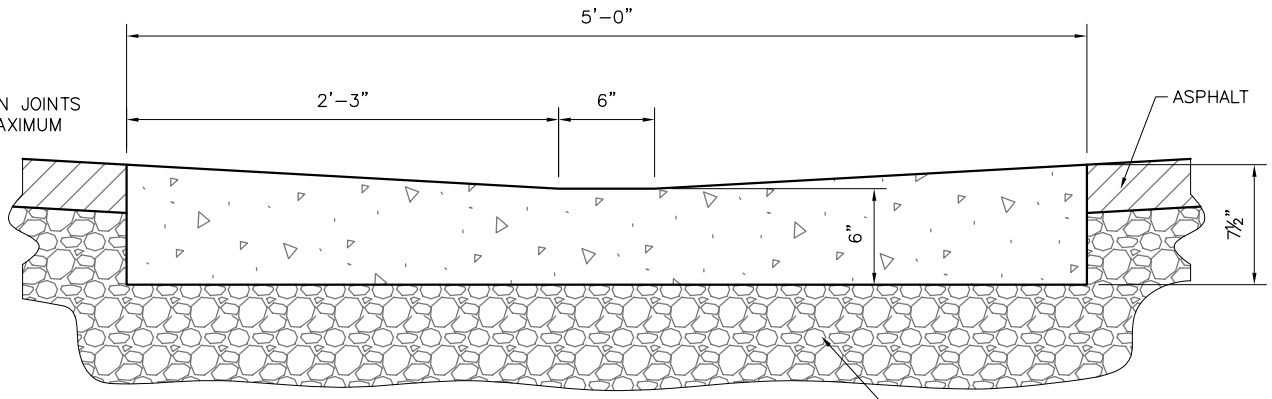
MOUNTABLE CURB

NOTE:
CONTRACTION JOINTS EVERY 10' MAXIMUM AND EXPANSION JOINTS EVERY 50' MAXIMUM



SIDEWALK SECTION

NOTE:
CONTRACTION JOINTS EVERY 5' MAXIMUM



CROSS GUTTER SECTION

NOTE:
1. CROSS GUTTERS ARE NOT PERMITTED WITHOUT TOWN ENGINEER APPROVAL.

STATEMENT OF USE

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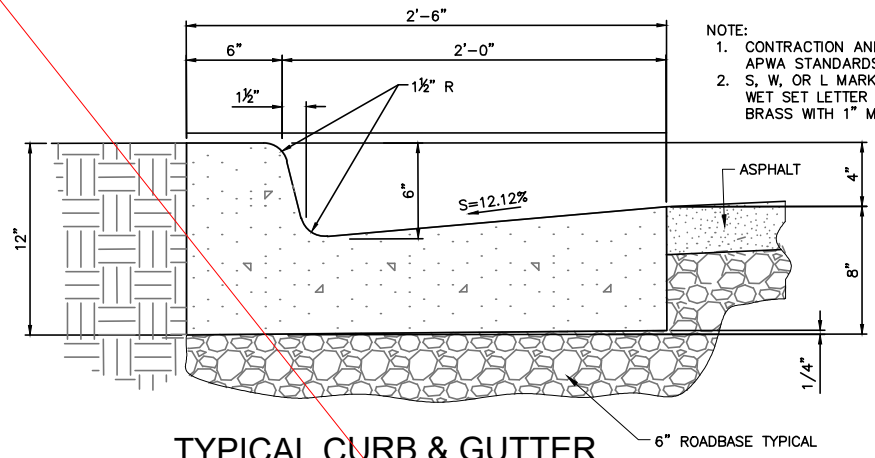
4				

VINEYARD
STAY CONNECTED

CURB, GUTTER, AND SIDEWALK DETAILS

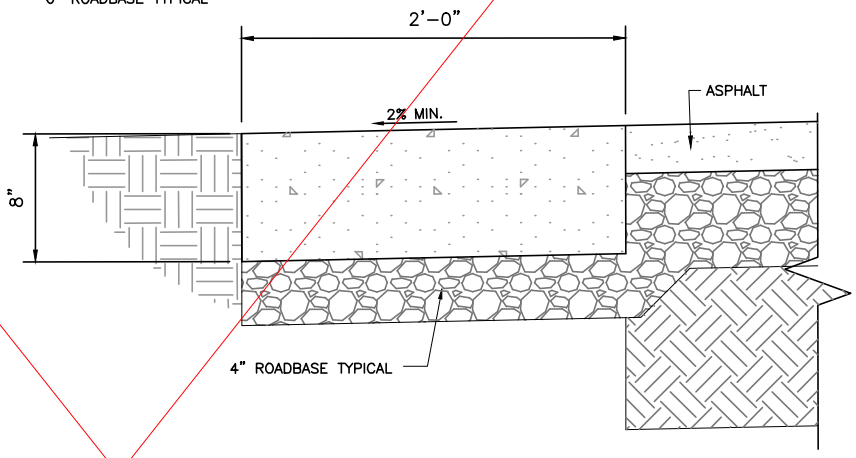
TOWN OF VINEYARD

STANDARD DRAWING NUMBER:	4
CAD DWG:	STANDARD
PLOT SCALE:	DRAWING
DRAWN BY:	JMM
DESIGN BY:	CRW
CHECKED BY:	DEO
ADOPTED DATE:	SEPTEMBER 1, 2016



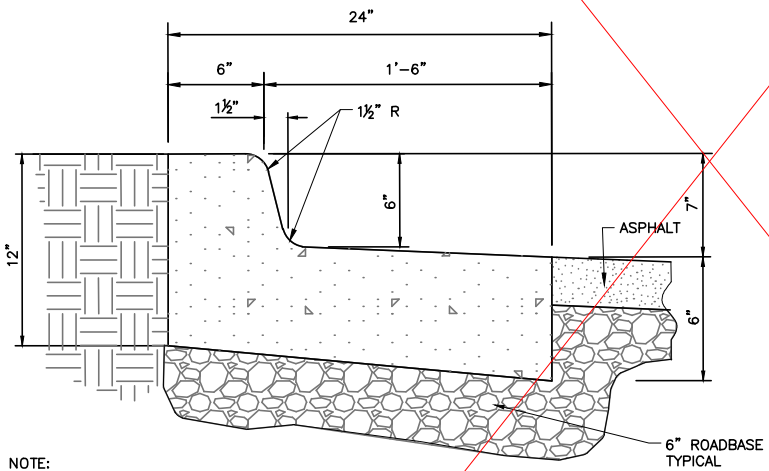
NOTE:
1. CONTRACTION AND EXPANSION JOINTS PER APWA STANDARDS.
2. S, W, OR L MARKER FOR LATERALS. 2" TALL WET SET LETTER OR DRILL AND EPOXY ¾" BRASS WITH 1" MIN. EMBEDMENT.

TYPICAL CURB & GUTTER



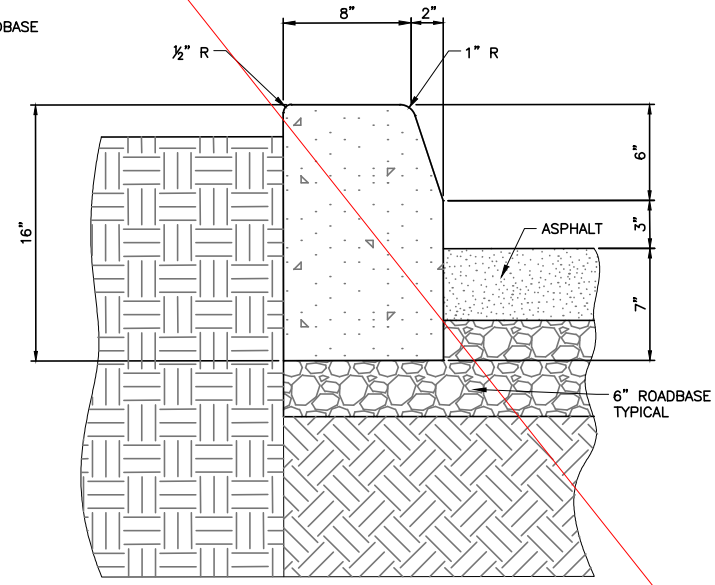
NOTE:
CONTRACTION JOINTS EVERY 10' MAXIMUM AND EXPANSION JOINTS EVERY 50' MAXIMUM.

FLAT CURB BORDER



NOTE:
CONTRACTION JOINTS EVERY 10' MAXIMUM AND EXPANSION JOINTS EVERY 50' MAXIMUM

NON-CARRY TYPE CURB & GUTTER



NOTE:
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BARRIER CURB

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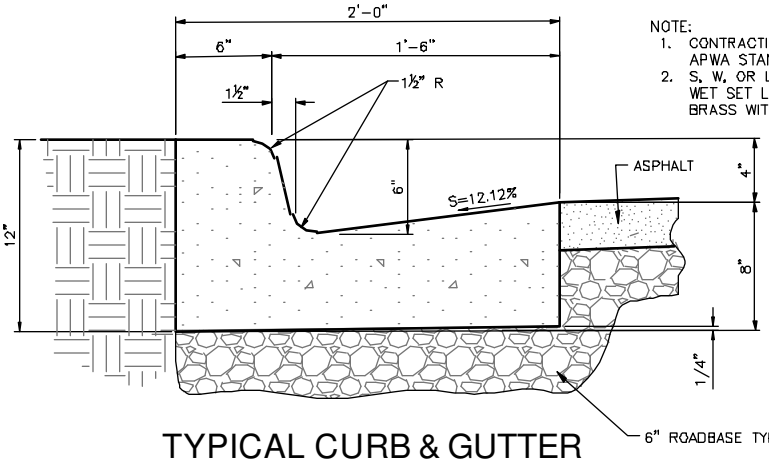
1	STANDARDS UPDATE	JMM	DEO	8/08/16
2	HANSEN, ALLEN & LUCE	DCL	CMT	9/12/25
3				
4				

VINEYARD
STAY CONNECTED

CURB DETAILS

VINEYARD

STANDARD DRAWING NUMBER:	5A
CAD DWG:	STANDARD
PLOT SCALE:	DRAWING
DRAWN BY:	JMM
DESIGN BY:	CRW
CHECKED BY:	DEO
ADOPTED DATE:	SEPTEMBER 1, 2016



NOTE:
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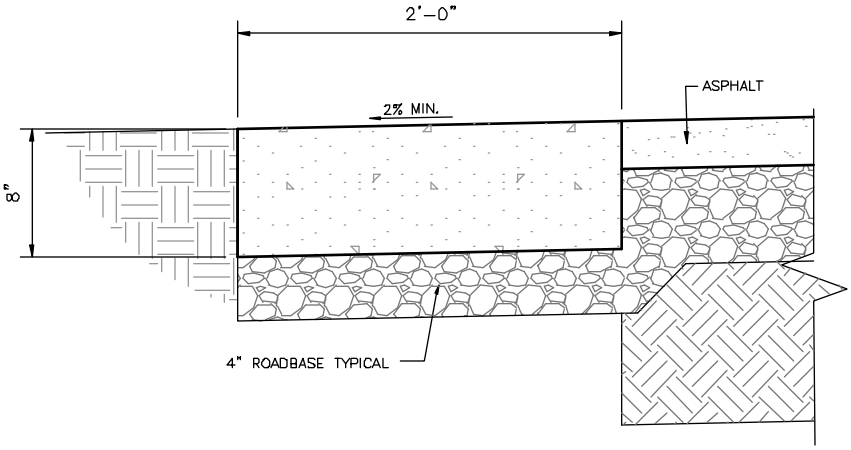
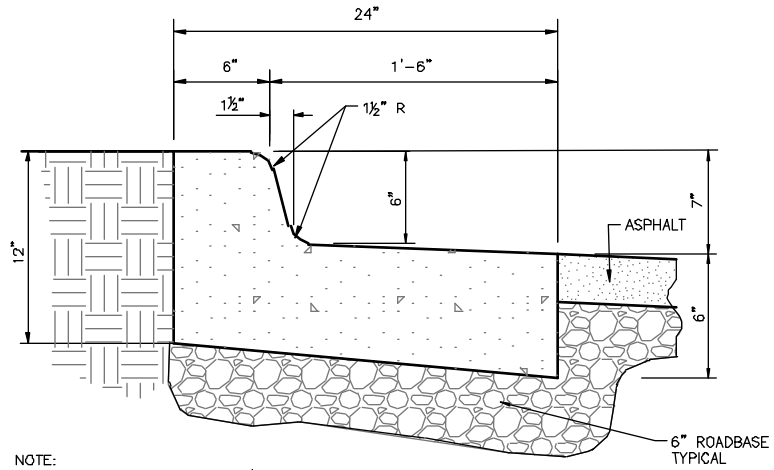
TYPICAL CURB & GUTTER



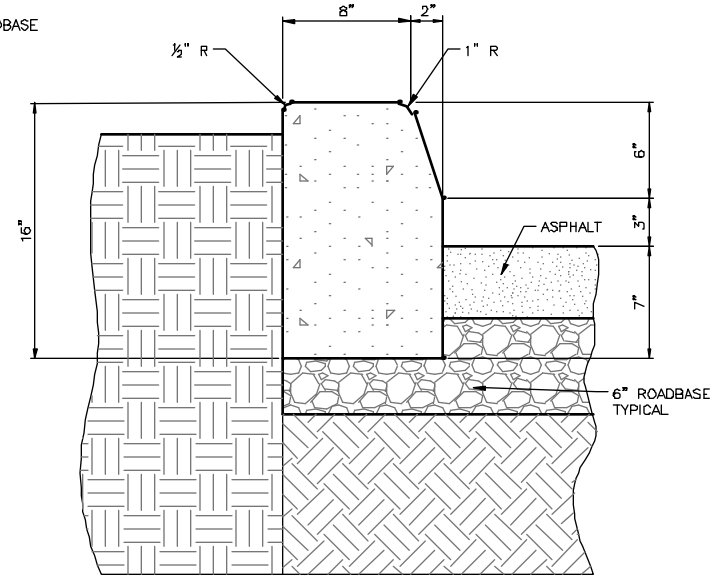
NOTE:
CONTRACTION JOINTS EVERY 10' MAXIMUM AND EXPANSION JOINTS EVERY 50' MAXIMUM.

FLAT CURB BORDER



NOTE:
CONTRACTION JOINTS EVERY 10' MAXIMUM AND EXPANSION JOINTS EVERY 50' MAXIMUM

NON-CARRY TYPE CURB & GUTTER



NOTE:
CONTRACTION JOINTS EVERY 10' MAXIMUM AND EXPANSION JOINTS EVERY 50' MAXIMUM

BARRIER CURB

JUB

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VINEYARD
STAY CONNECTED

CURB DETAILS

TOWN OF VINEYARD

STANDARD DRAWING NUMBER:	5
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PLOT SCALE:	1.000
DRAWN BY:	JMM
DESIGN BY:	CRW
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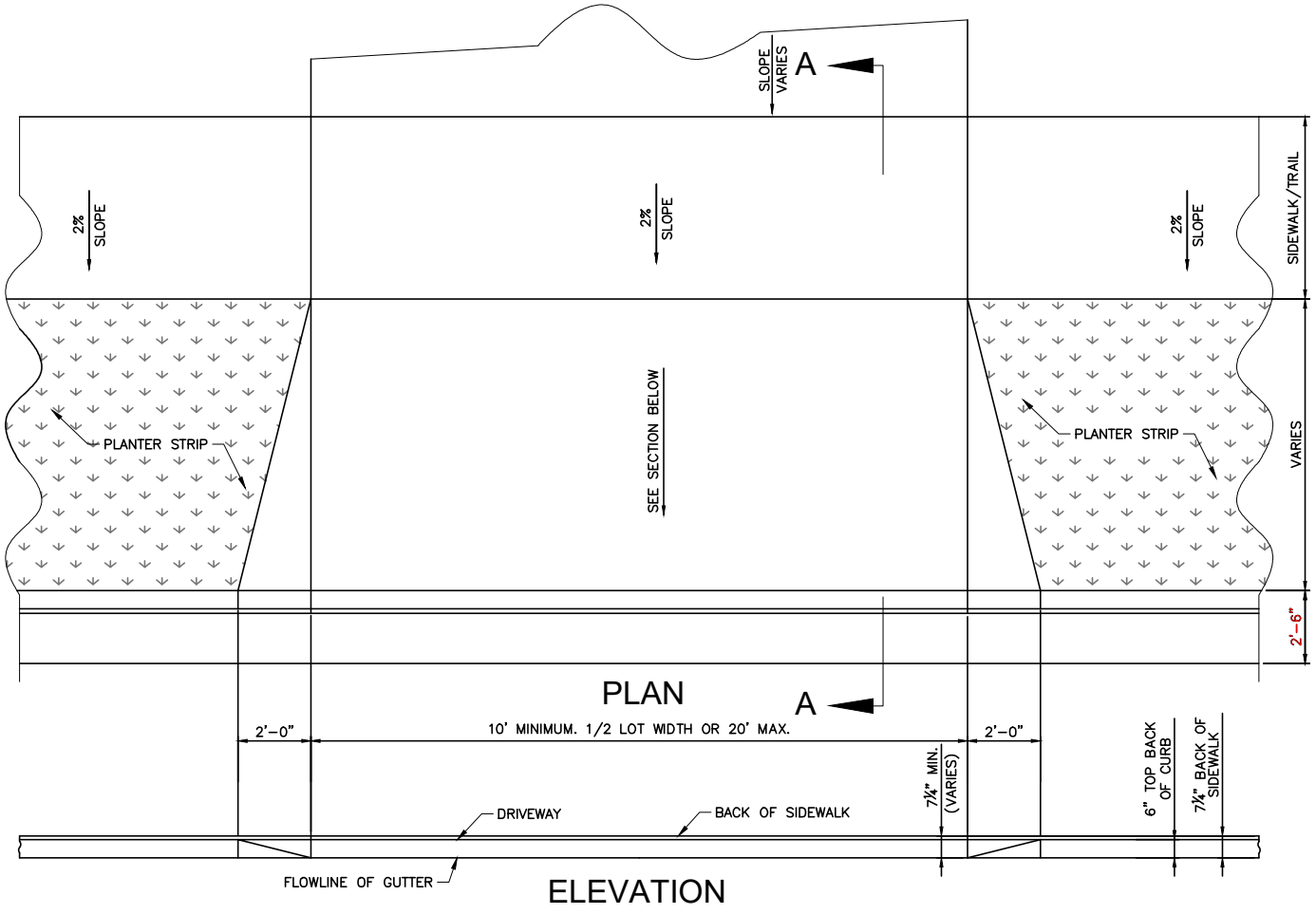
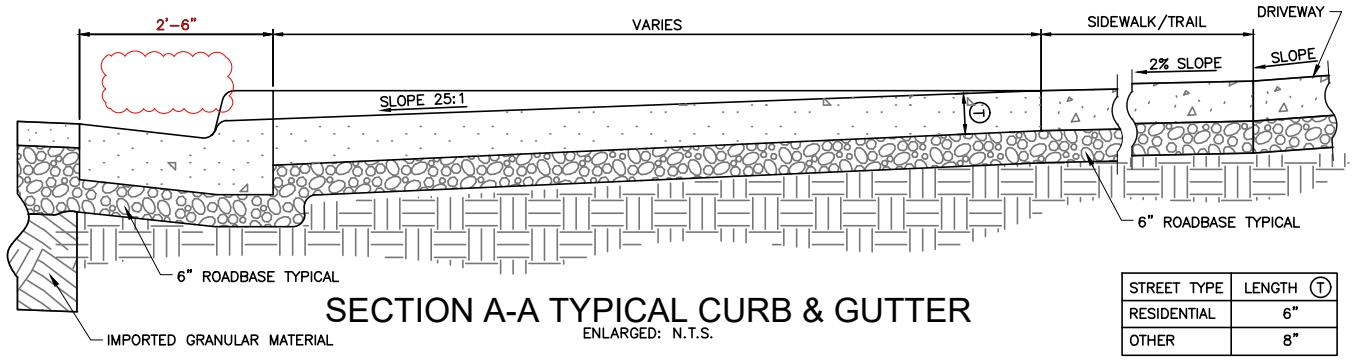
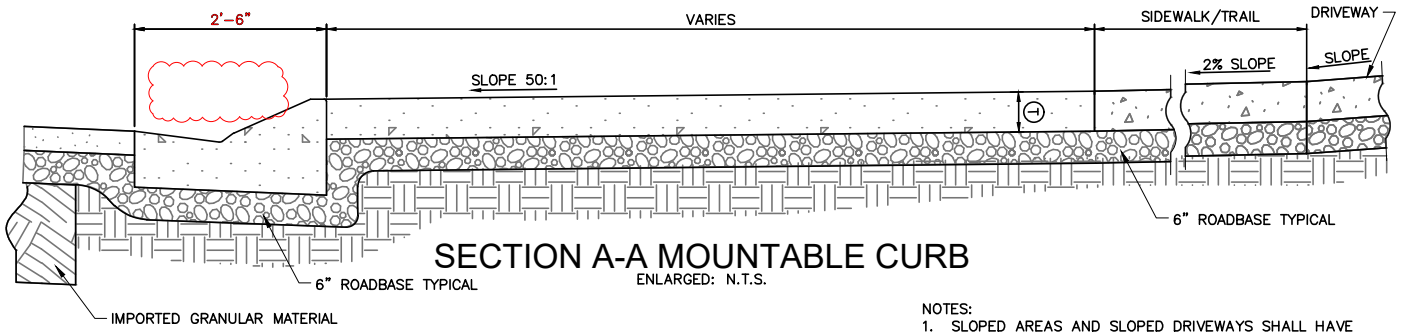




SECTION A-A TYPICAL CURB & GUTTER

ENLARGED: N.T.S.

STREET TYPE	LENGTH (T)
RESIDENTIAL	6"
OTHER	8"



SECTION A-A MOUNTABLE CURB

ENLARGED: N.T.S.

NOTES:
1. SLOPED AREAS AND SLOPED DRIVEWAYS SHALL HAVE A COARSE BROOM FINISH.

2. THE DRIVEWAY, AT A POINT 4' BEHIND THE SIDEWALK, SHALL BE AT LEAST 7" HIGHER THAN THE FLOWLINE OF THE GUTTER.

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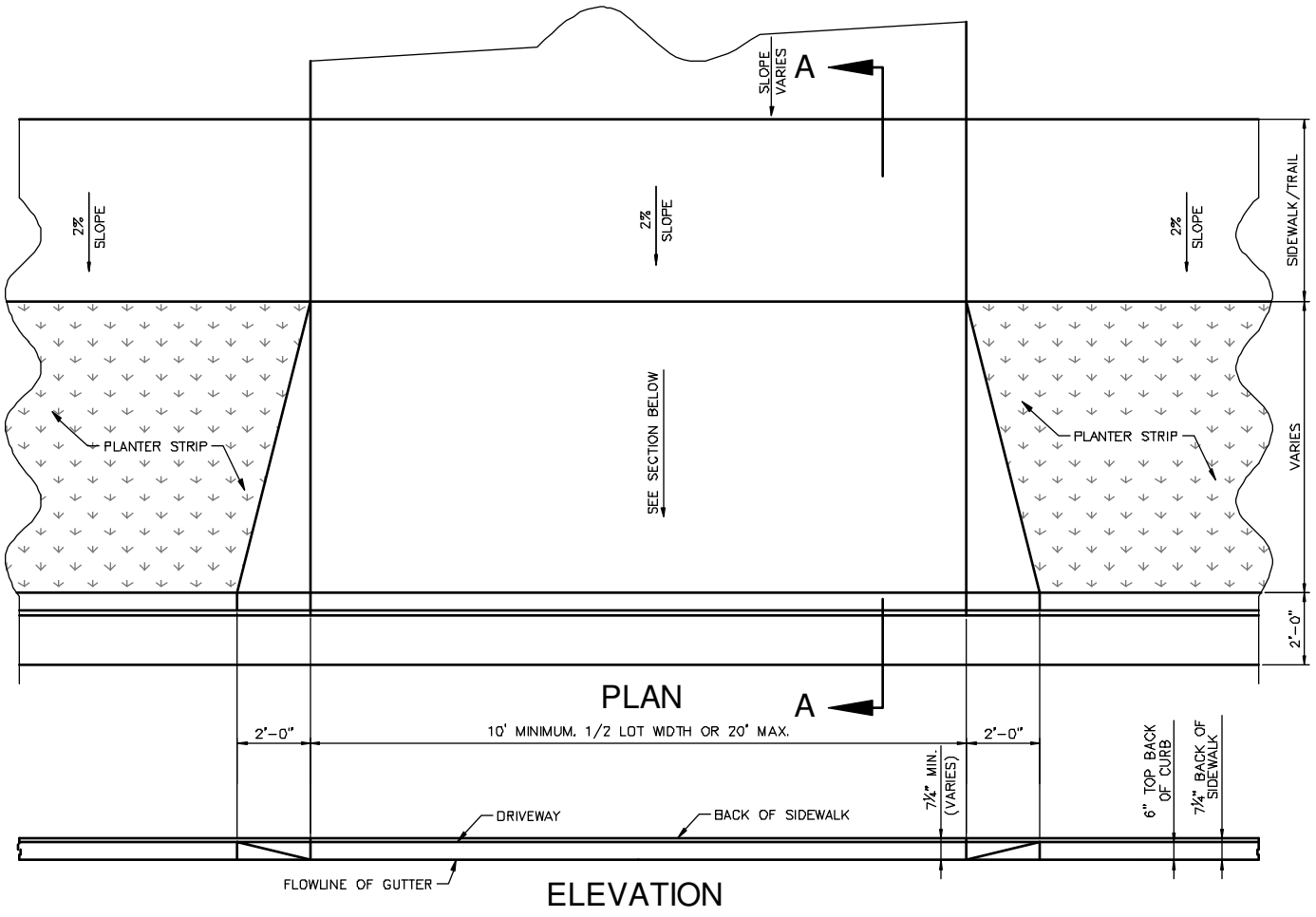
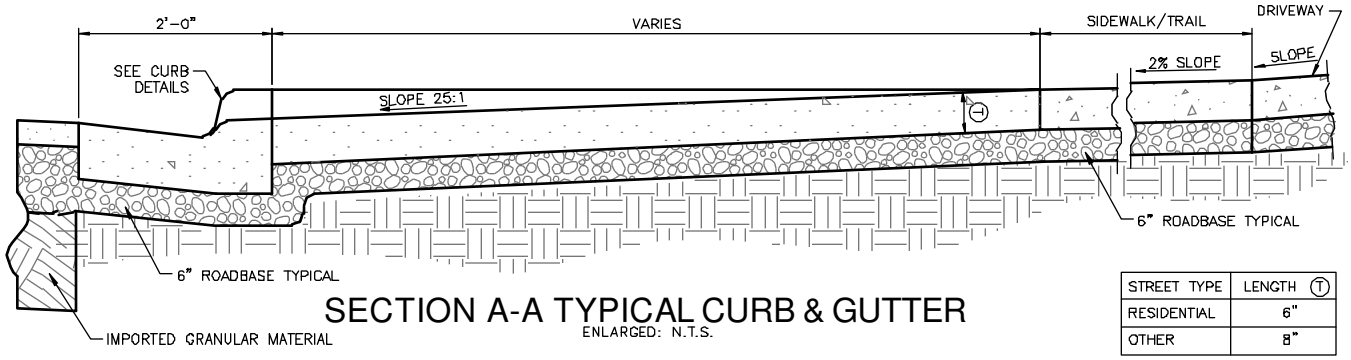
VINEYARD
STAY CONNECTED

TYPICAL CURB APPROACH

VINEYARD

STANDARD DRAWING NUMBER:	6
CAD DWG:	STANDARD
PLOT SCALE:	DRAWING
DRAWN BY:	JMM
DESIGN BY:	CRW
CHECKED BY:	DEO
ADOPTED DATE:	SEPTEMBER 1, 2016

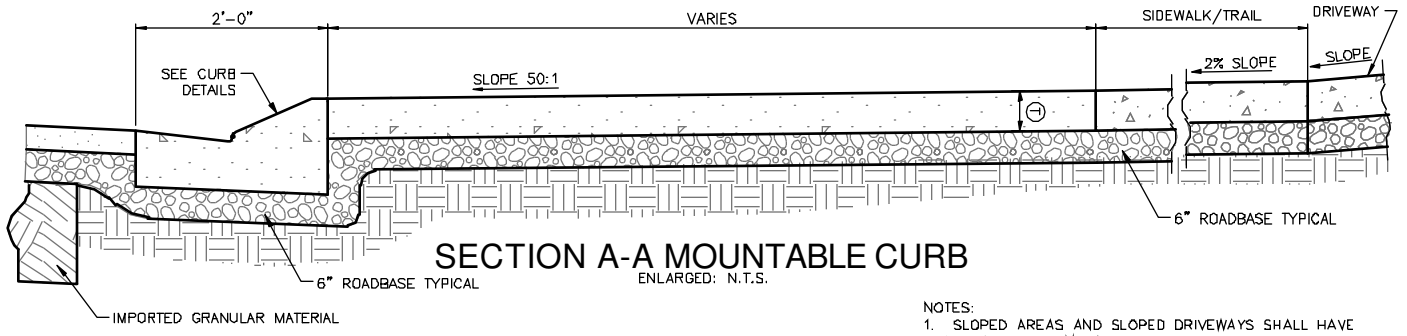




SECTION A-A TYPICAL CURB & GUTTER

ENLARGED: N.T.S.

STREET TYPE	LENGTH (T)
RESIDENTIAL	6"
OTHER	8"



SECTION A-A MOUNTABLE CURB

ENLARGED: N.T.S.

NOTES:
1. SLOPED AREAS AND SLOPED DRIVEWAYS SHALL HAVE A COARSE BROOM FINISH.
2. THE DRIVEWAY, AT A POINT 4' BEHIND THE SIDEWALK, SHALL BE AT LEAST 7" HIGHER THAN THE FLOWLINE OF THE GUTTER.

JUB

STATEMENT OF USE

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REVISION

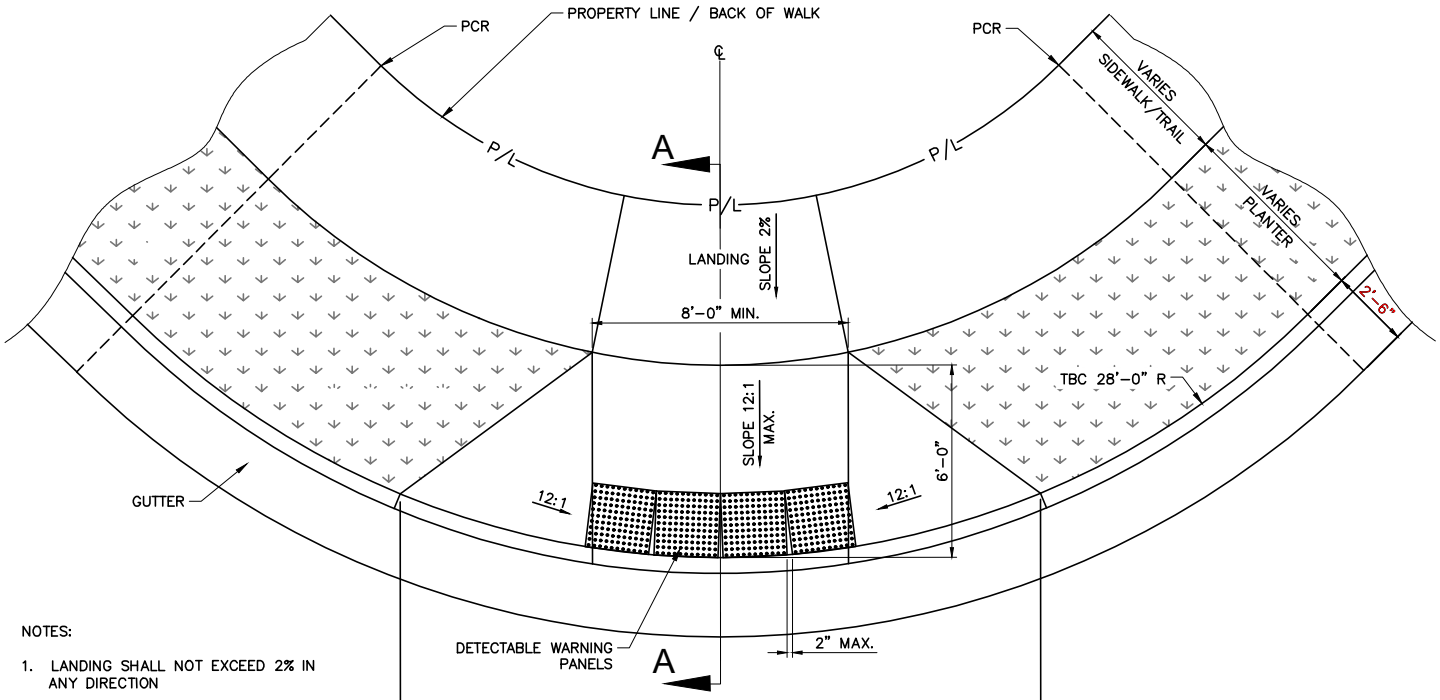
NO.	DESCRIPTION	BY	APR.	DATE
1	STANDARDS UPDATE	JMM	DEO	8/08/16
2				
3				
4				

VINEYARD
STAY CONNECTED

TYPICAL CURB APPROACH

TOWN OF VINEYARD

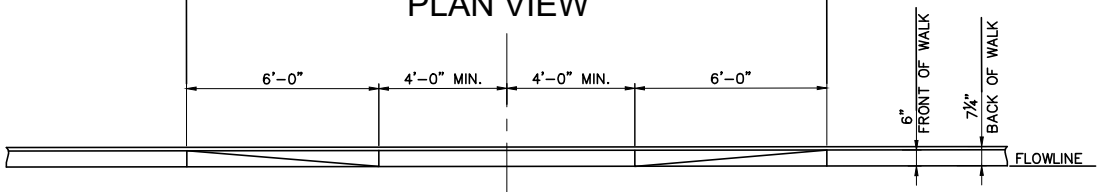
STANDARD DRAWING NUMBER:	6
CAD DWG:	V_STD_DWGS
PLOT SCALE:	1.000
DRAWN BY:	JMM
DESIGN BY:	CRW
CHECKED BY:	DEO
ADOPTED DATE:	SEPTEMBER 1, 2016



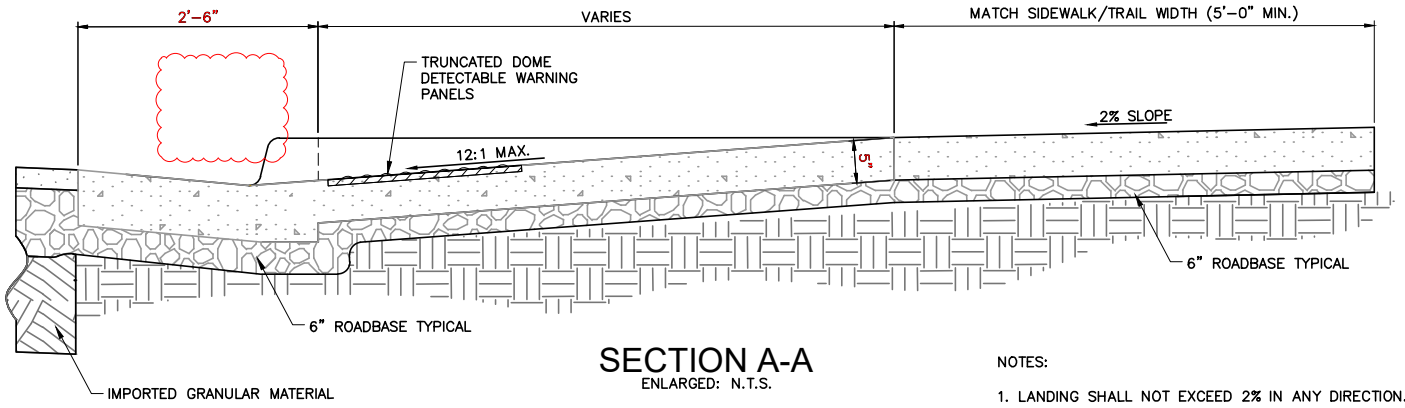
NOTES:

1. LANDING SHALL NOT EXCEED 2% IN ANY DIRECTION

PLAN VIEW



ELEVATION

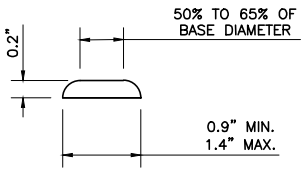


SECTION A-A

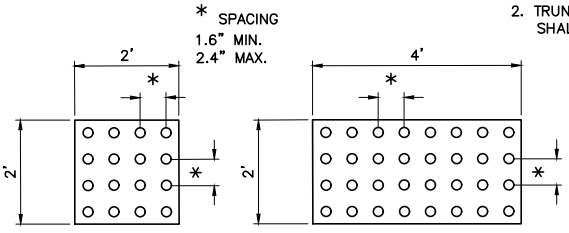
ENLARGED: N.T.S.

NOTES:

1. LANDING SHALL NOT EXCEED 2% IN ANY DIRECTION.
2. TRUNCATED DOME DETECTABLE WARNING PANEL SHALL BE CAST IRON.



DOME DETAIL



DETECTABLE WARNING PANEL

STATEMENT OF USE

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REVISION

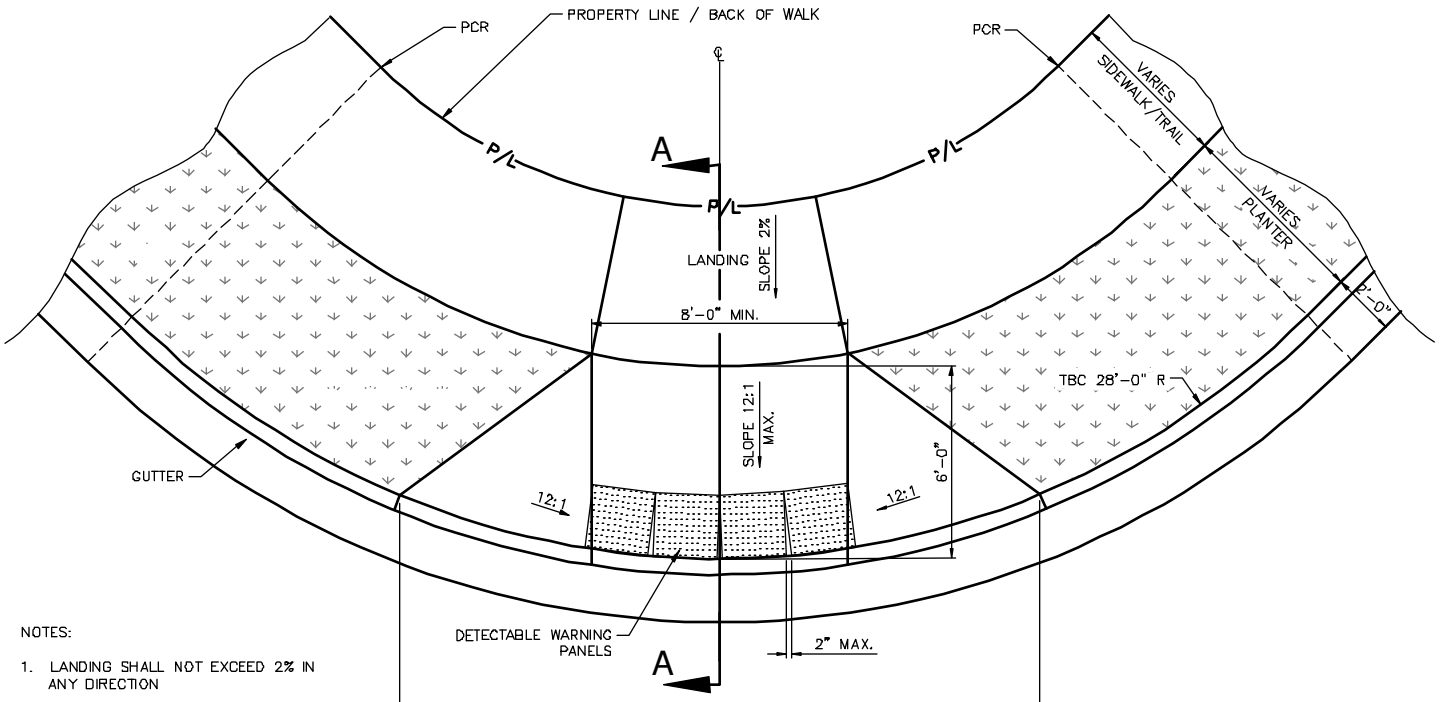
NO.	DESCRIPTION	BY	APR.	DATE
1	STANDARDS UPDATE	JMM	DEO	8/08/16
2	HANSEN, ALLEN & LUCE	DCL	CMT	9/12/25
3				
4				

VINEYARD
STAY CONNECTED

STANDARD CURB RETURN AT INTERSECTION

VINEYARD

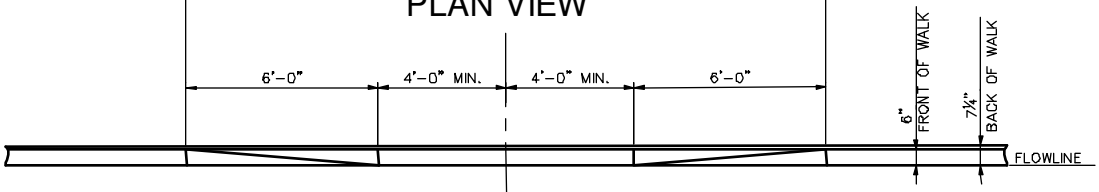
STANDARD DRAWING NUMBER:	7
CAD DWG:	STANDARD
PLOT SCALE:	DRAWING
DRAWN BY:	JMM
DESIGN BY:	CRW
CHECKED BY:	DEO
ADOPTED DATE:	SEPTEMBER 1, 2016



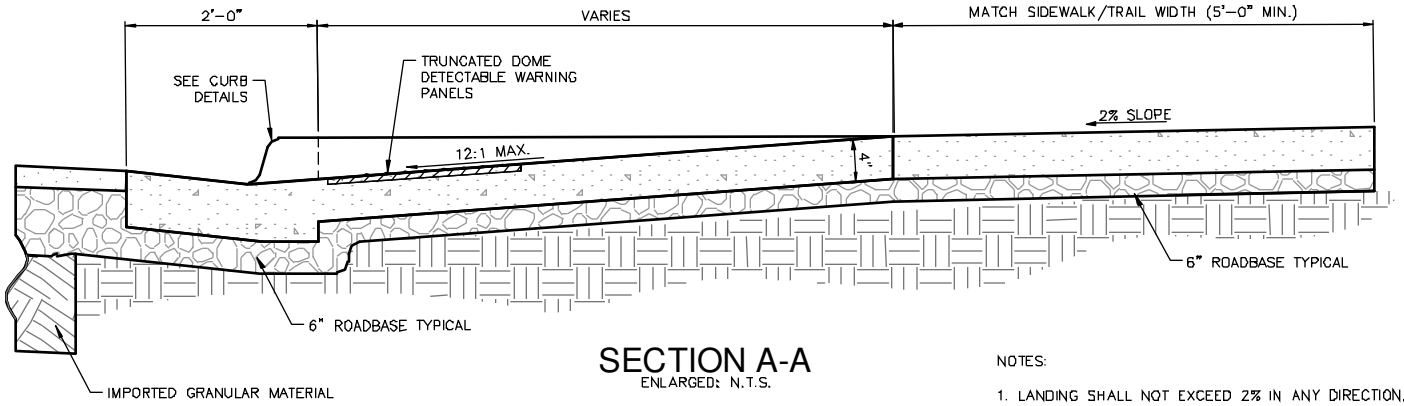
NOTES:

1. LANDING SHALL NOT EXCEED 2% IN ANY DIRECTION

PLAN VIEW



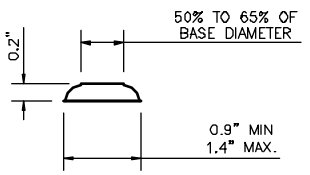
ELEVATION



SECTION A-A
ENLARGED: N.T.S.

NOTES:

1. LANDING SHALL NOT EXCEED 2% IN ANY DIRECTION.
2. TRUNCATED DOME DETECTABLE WARNING PANEL SHALL BE YELLOW POLYMER COMPOSITE/FIBERGLASS.



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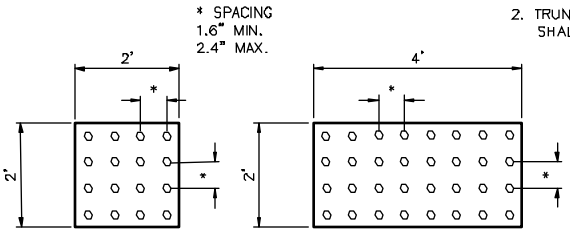

DETECTABLE WARNING PANEL

STATEMENT OF USE

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REVISION

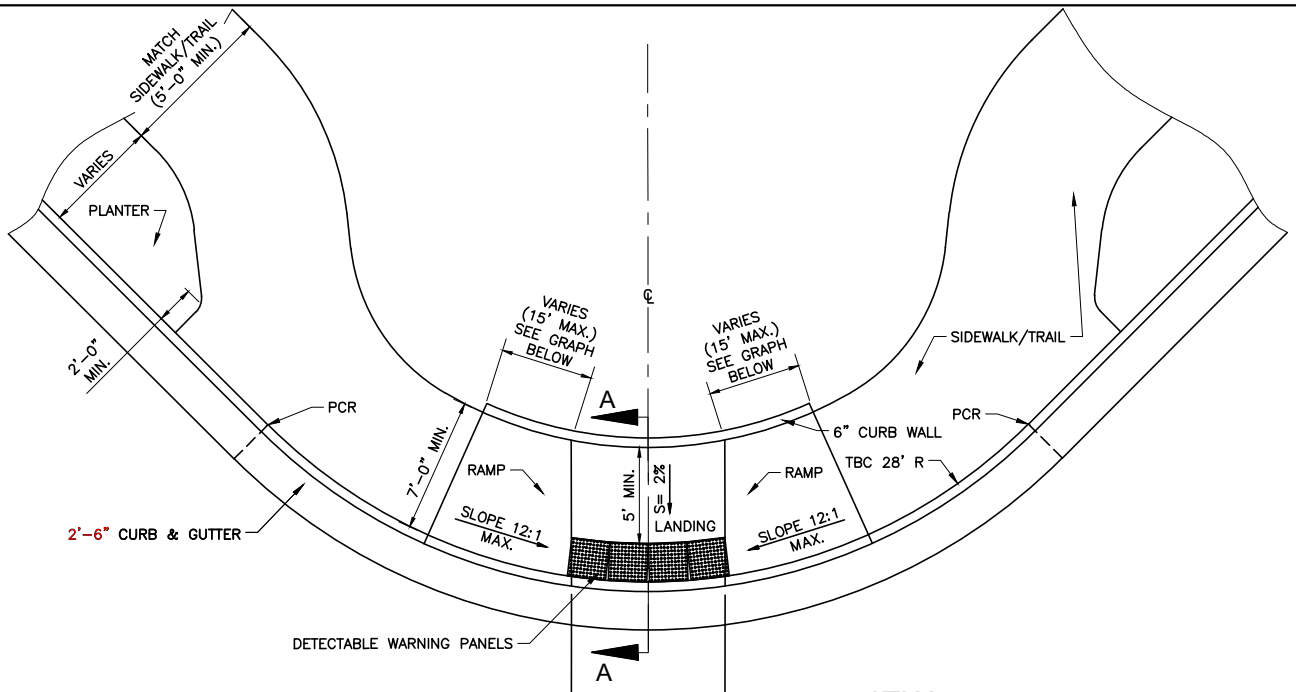
NO.	DESCRIPTION	BY	APR.	DATE
1	STANDARDS UPDATE	JMM	DEO	8/08/16
2				
3				
4				

VINEYARD
STAY CONNECTED

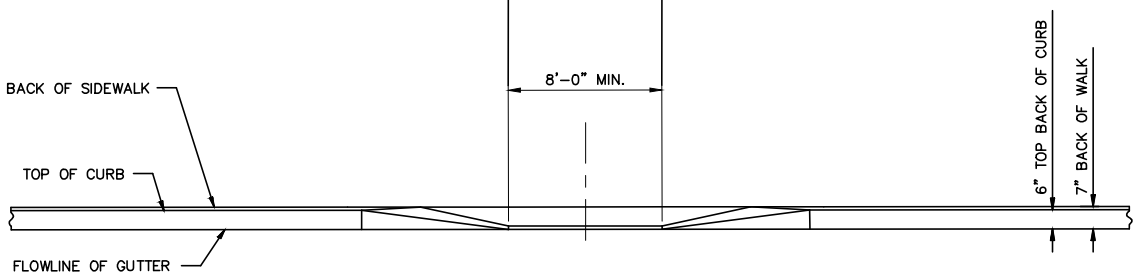
STANDARD CURB RETURN AT INTERSECTION

TOWN OF VINEYARD

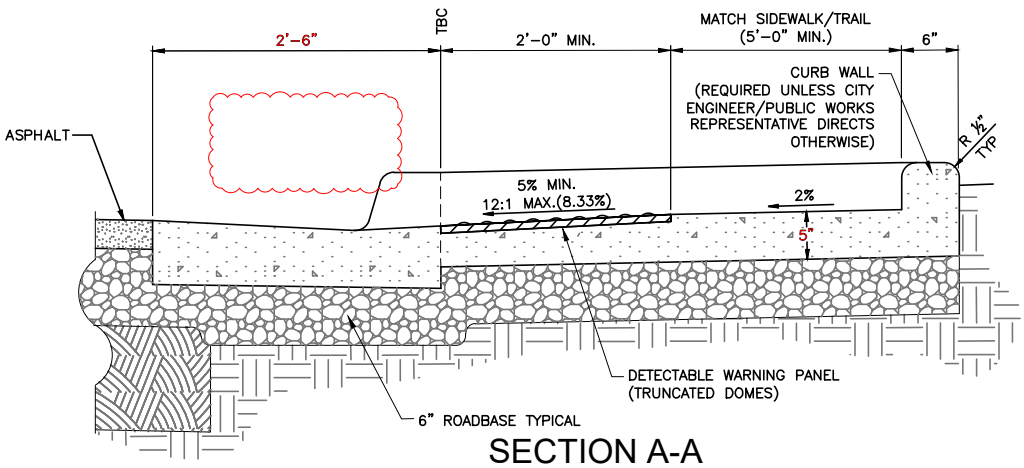
STANDARD DRAWING NUMBER:	7
CAD DWG:	V_STD_DWGS
PLOT SCALE:	1.000
DRAWN BY:	JMM
DESIGN BY:	CRW
CHECKED BY:	DEO
ADOPTED DATE:	SEPTEMBER 1, 2016



PLAN VIEW

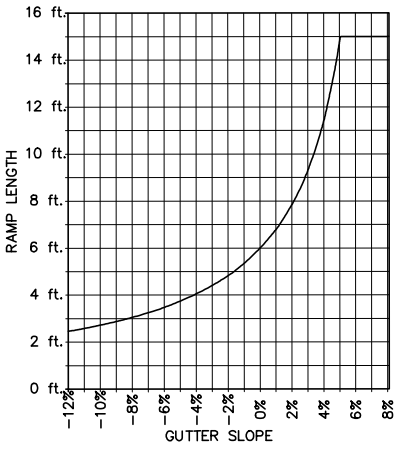


ELEVATION

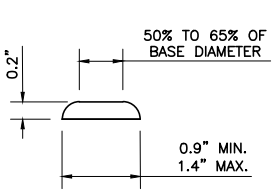


SECTION A-A

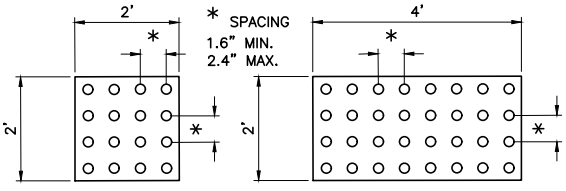
ENLARGED: N.T.S.



MINIMUM RAMP LENGTH



DOME DETAIL



DETECTABLE WARNING PANEL

NOTES:

1. LANDING SHALL NOT EXCEED 2% IN ANY DIRECTION.
2. TRUNCATED DOME DETECTABLE WARNING PANEL SHALL BE YELLOW POLYMER COMPOSITE/FIBERGLASS.

STATEMENT OF USE

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REVISION

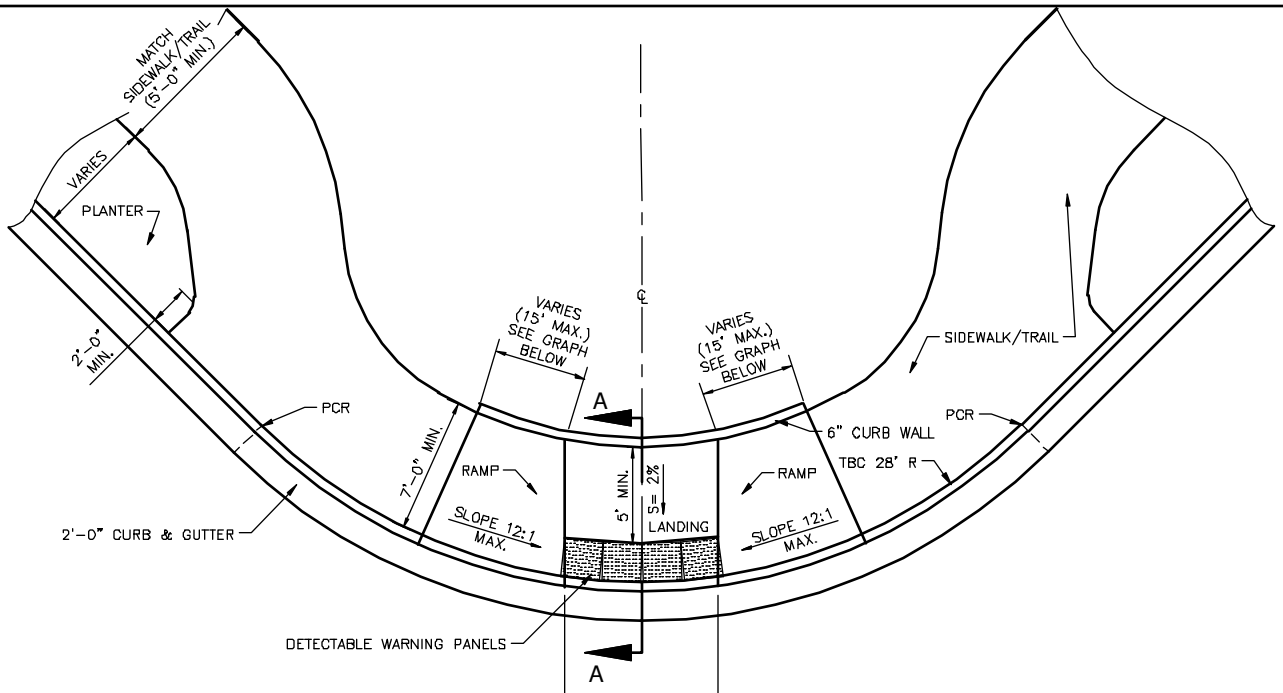
NO.	DESCRIPTION	BY	APR.	DATE
1	STANDARDS UPDATE	JMM	DEO	8/08/16
2	HANSEN, ALLEN & LUCE	DCL	CMT	9/12/25
3				
4				

VINEYARD
STAY CONNECTED

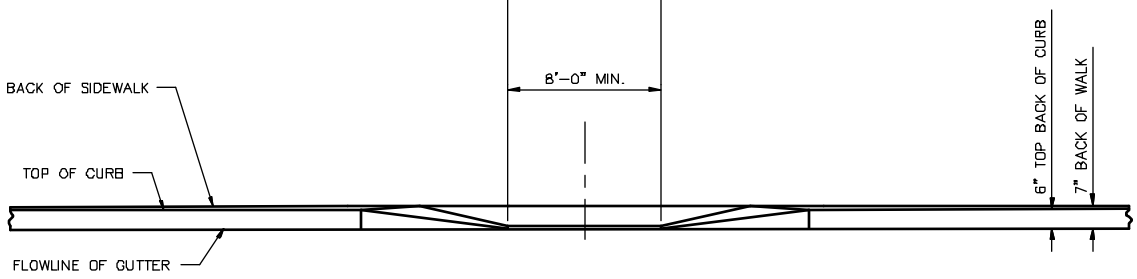
PEDESTRIAN ACCESS

VINEYARD

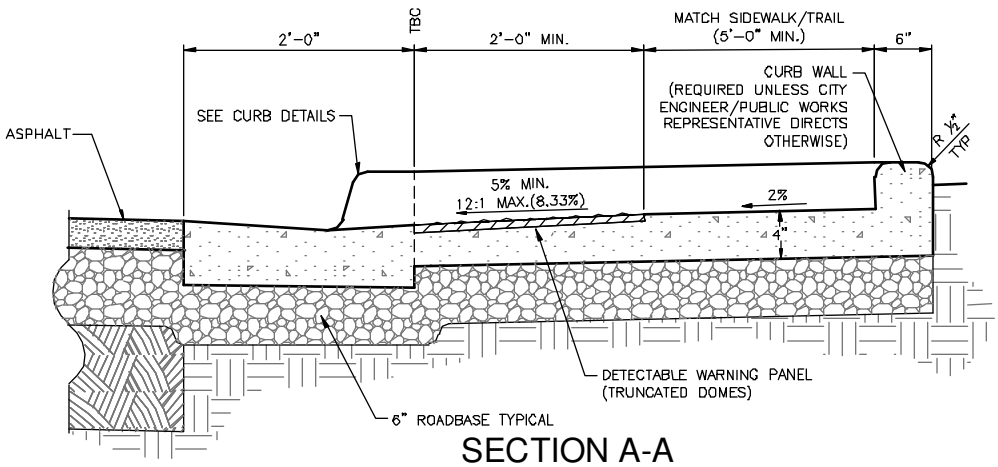
STANDARD DRAWING NUMBER:	8
CAD DWG:	STANDARD
PLOT SCALE:	DRAWING
DRAWN BY:	JMM
DESIGN BY:	CRW
CHECKED BY:	DEO
ADOPTED DATE:	SEPTEMBER 1, 2016



PLAN VIEW

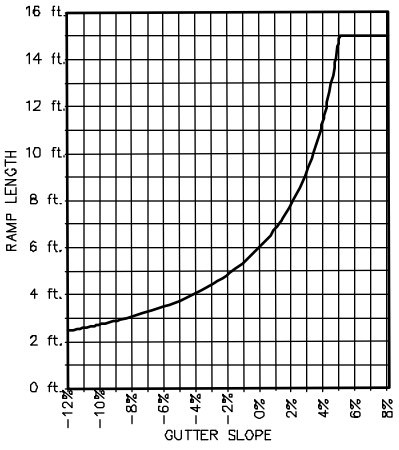


ELEVATION

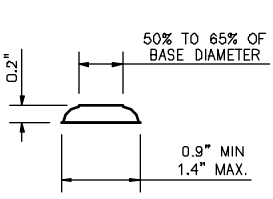


SECTION A-A

ENLARGED: N.T.S.



MINIMUM RAMP LENGTH



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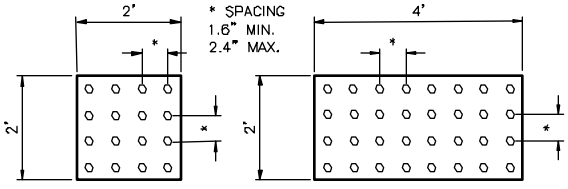

DETECTABLE WARNING PANEL

NOTES:

1. LANDING SHALL NOT EXCEED 2% IN ANY DIRECTION.
2. TRUNCATED DOME DETECTABLE WARNING PANEL SHALL BE YELLOW POLYMER COMPOSITE/FIBERGLASS.

STATEMENT OF USE

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REVISION

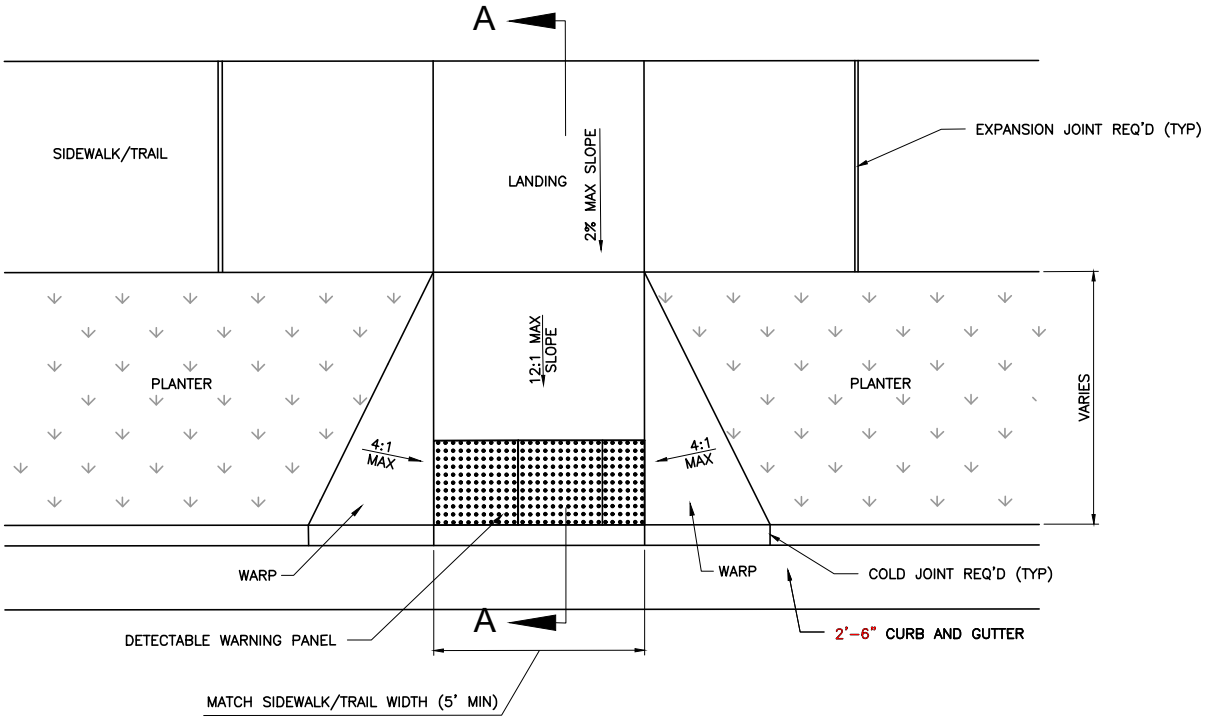
NO.	DESCRIPTION	BY	APR.	DATE
1	STANDARDS UPDATE	JMM	DEO	9/08/16
2				
3				
4				

VINEYARD
STAY CONNECTED

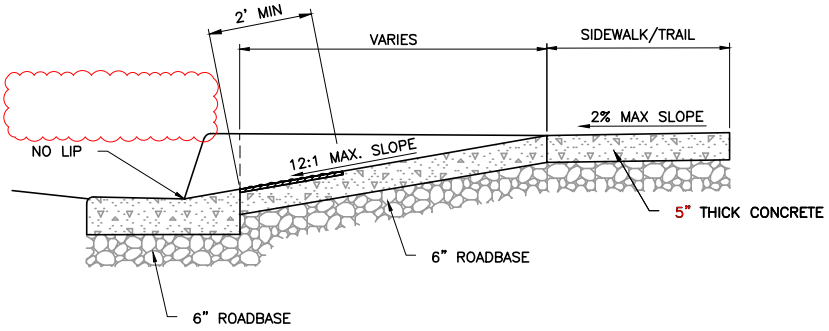
PEDESTRIAN ACCESS

TOWN OF VINEYARD

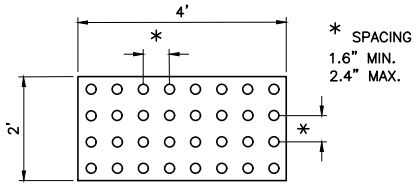
STANDARD DRAWING NUMBER:	7A
CAD DWG:	V_STD_DWGS
PLOT SCALE:	1.000
DRAWN BY:	JMM
DESIGN BY:	CRW
CHECKED BY:	DEO
ADOPTED DATE:	SEPTEMBER 1, 2016



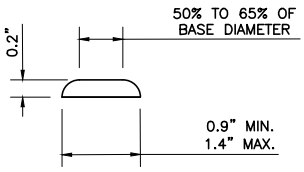
PLAN VIEW



SECTION A-A



DETECTABLE WARNING PANEL



DOME DETAIL

NOTES:
1. LANDING SHALL NOT EXCEED 2% IN ANY DIRECTION.
2. TRUNCATED DOME DETECTABLE WARNING PANEL SHALL BE YELLOW POLYMER COMPOSITE/FIBERGLASS.

STATEMENT OF USE

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REVISION

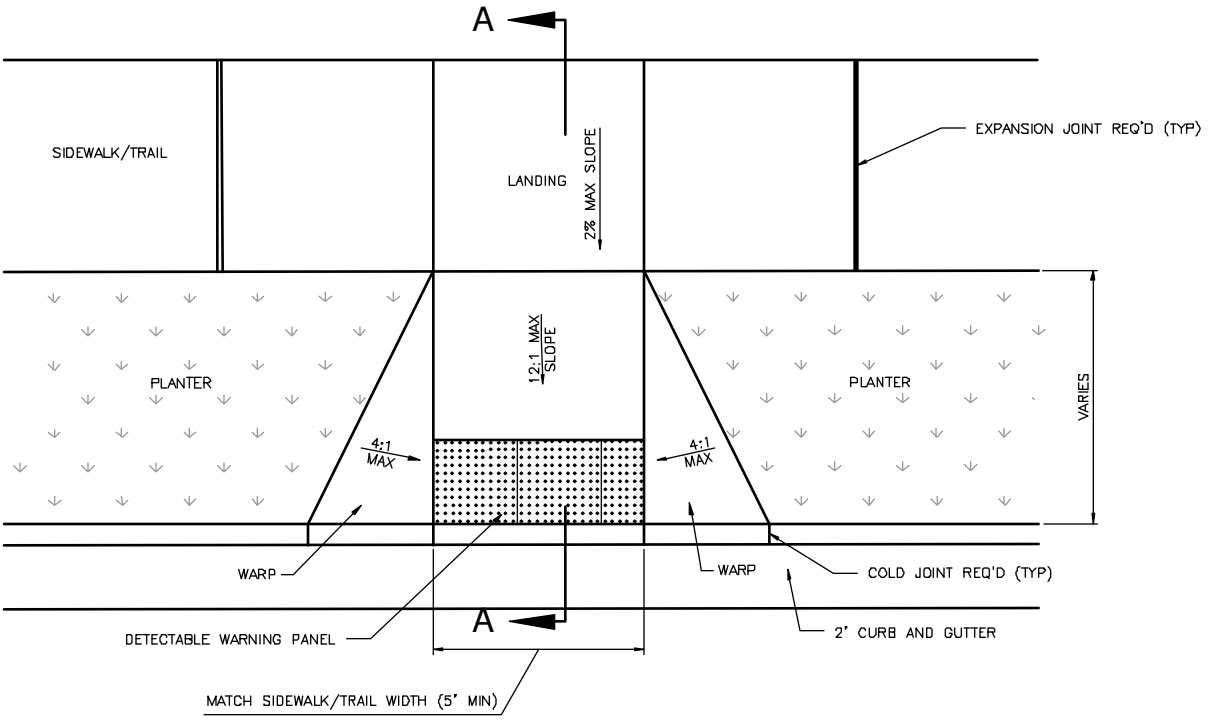
NO.	DESCRIPTION	BY	APR.	DATE
1	STANDARDS UPDATE	JMM	DEO	8/08/16
2	HANSEN, ALLEN & LUCE	DCL	CMT	9/12/25
3				
4				

VINEYARD
STAY CONNECTED

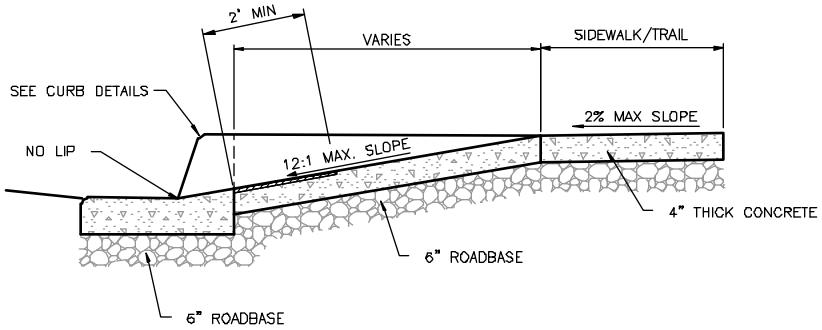
PEDESTRIAN ACCESS
MID BLOCK

VINEYARD

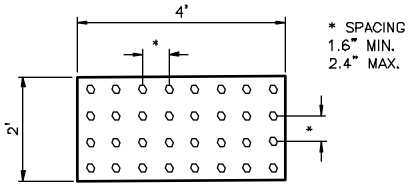
STANDARD DRAWING NUMBER:	9
CAD DWG:	STANDARD
PLOT SCALE:	DRAWING
DRAWN BY:	JMM
DESIGN BY:	CRW
CHECKED BY:	DEO
ADOPTED DATE:	SEPTEMBER 1, 2016



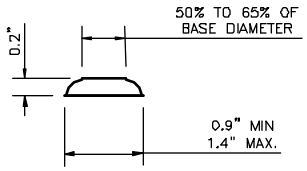
PLAN VIEW



SECTION A-A



DETECTABLE WARNING PANEL



DOME DETAIL

NOTES
1. LANDING SHALL NOT EXCEED 2% IN ANY DIRECTION.
2. TRUNCATED DOME DETECTABLE WARNING PANEL SHALL BE YELLOW POLYMER COMPOSITE/FIBERGLASS.

JUB

STATEMENT OF USE
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REVISION

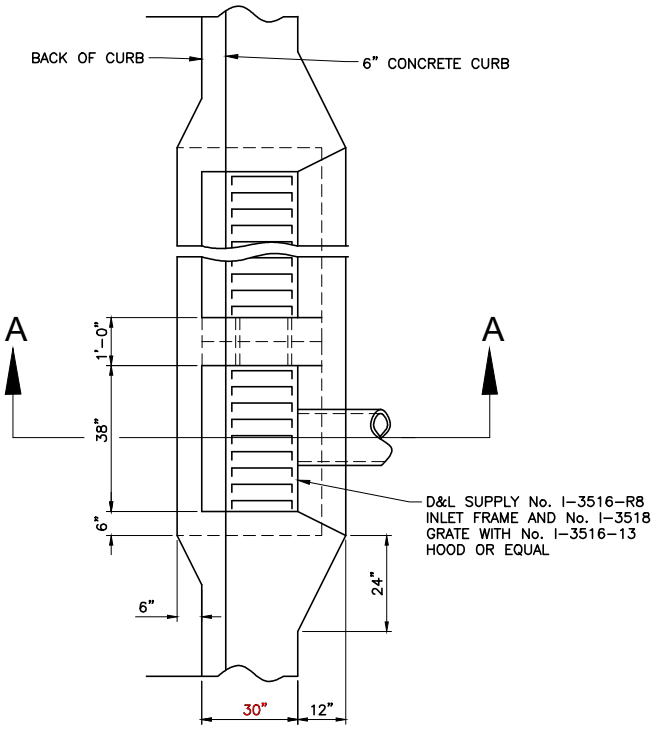
NO.	DESCRIPTION	BY	APR.	DATE
1	STANDARDS UPDATE	JMM	DEO	8/08/16
2				
3				
4				

VINEYARD
STAY CONNECTED

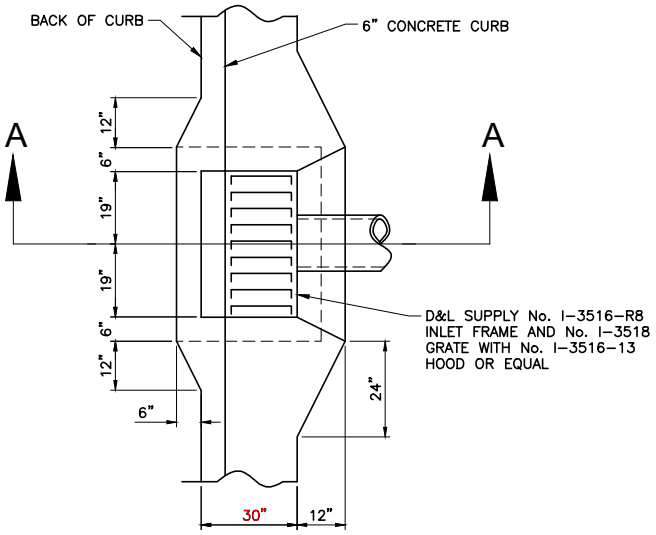
PEDESTRIAN ACCESS MID BLOCK

TOWN OF VINEYARD

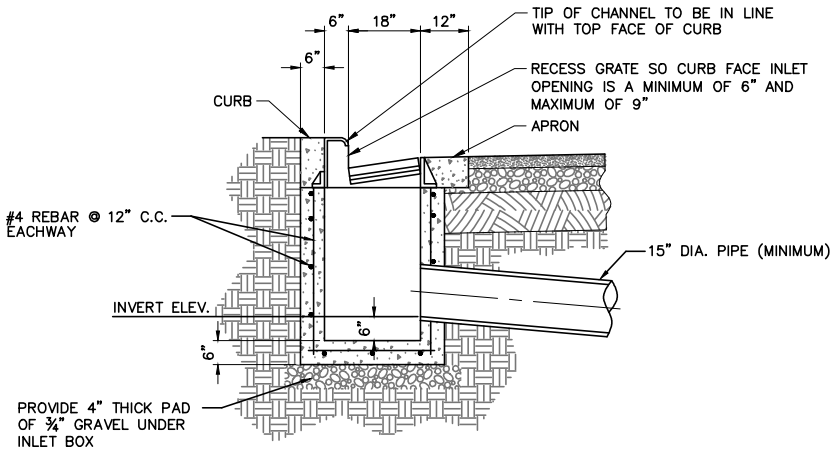
STANDARD DRAWING NUMBER:	7B
CAD DWG:	V_STD_DWGS
PLOT SCALE:	1.000
DRAWN BY:	JMM
DESIGN BY:	CRW
CHECKED BY:	DEO
ADOPTED DATE:	SEPTEMBER 1, 2016



MULTIPLE INLET PLAN VIEW



SINGLE INLET PLAN VIEW



SECTION A-A

NOTE:
1. INSTALL "SNOUT" BMP "F" SERIES OIL-WATER-DEBRIS SEPARATOR OR APPROVED EQUIVALENT WHEN LEAVING PRIVATE DEVELOPMENT TO CITY SYSTEM.

STATEMENT OF USE

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REVISION

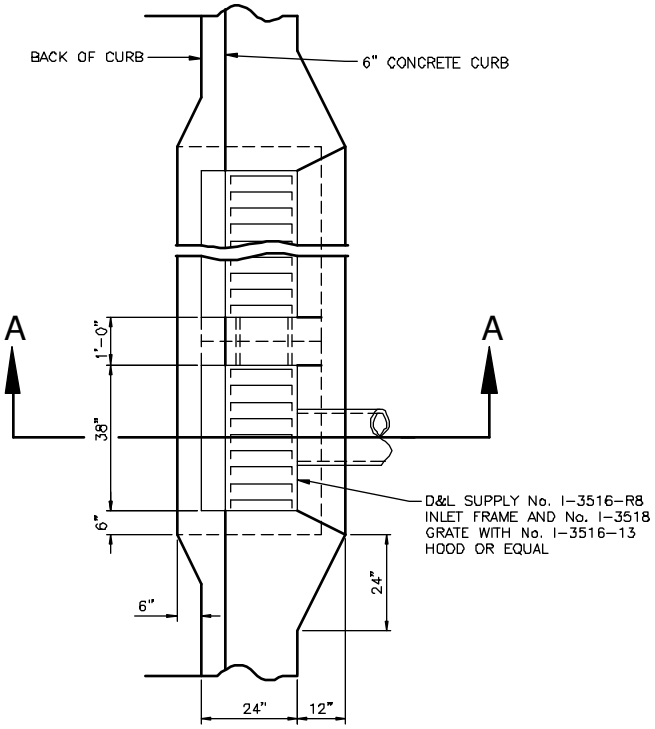
NO.	DESCRIPTION	BY	APR.	DATE
1	STANDARDS UPDATE	JMM	DEO	8/08/16
2	HANSEN, ALLEN & LUCE	DCL	CMT	9/12/25
3				
4				

VINEYARD
STAY CONNECTED

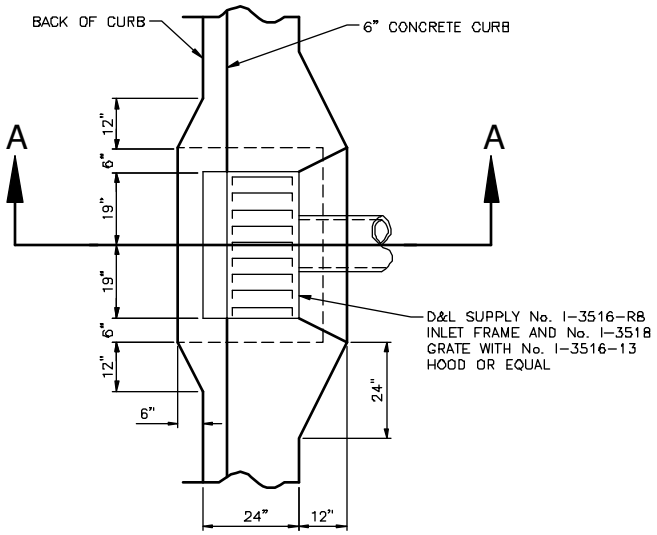
STANDARD CURB FACE INLET DETAIL

VINEYARD

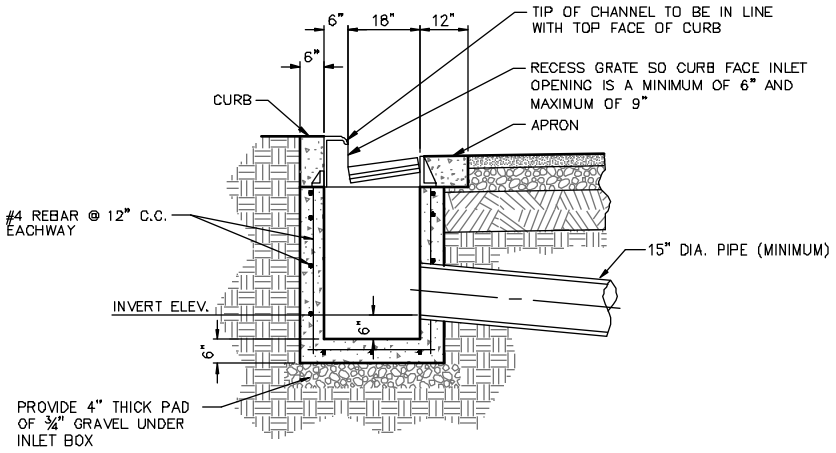
STANDARD DRAWING NUMBER:	10
CAD DWG:	STANDARD
PLOT SCALE:	DRAWING
DRAWN BY:	JMM
DESIGN BY:	CRW
CHECKED BY:	DEO
ADOPTED DATE:	SEPTEMBER 1, 2016



MULTIPLE INLET PLAN VIEW



SINGLE INLET PLAN VIEW



SECTION A-A

JUB

STATEMENT OF USE

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REVISION

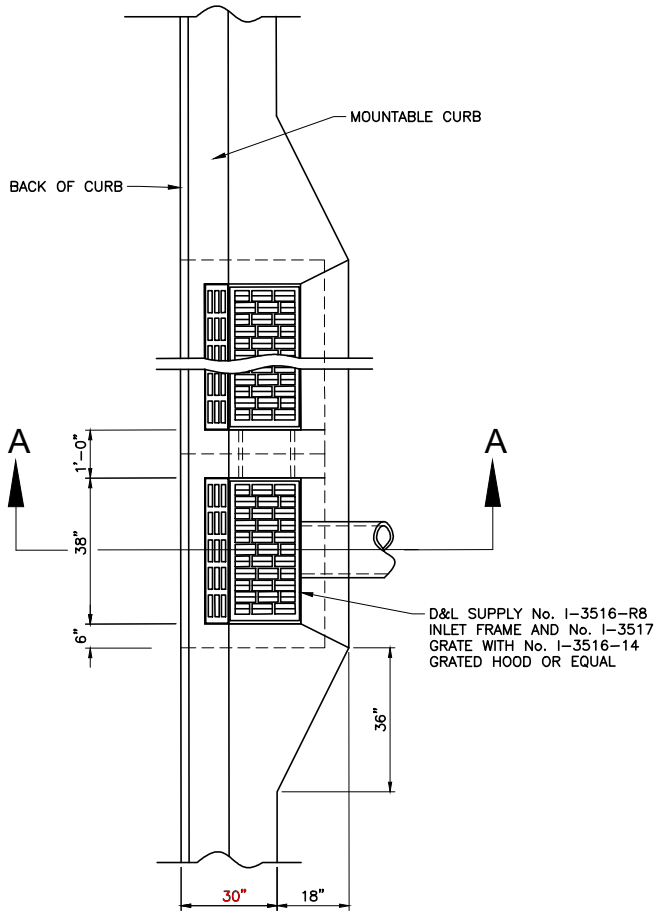
NO.	DESCRIPTION	BY	APR.	DATE
1	STANDARDS UPDATE	JMM	DEO	9/08/16
2				
3				
4				

VINEYARD
STAY CONNECTED

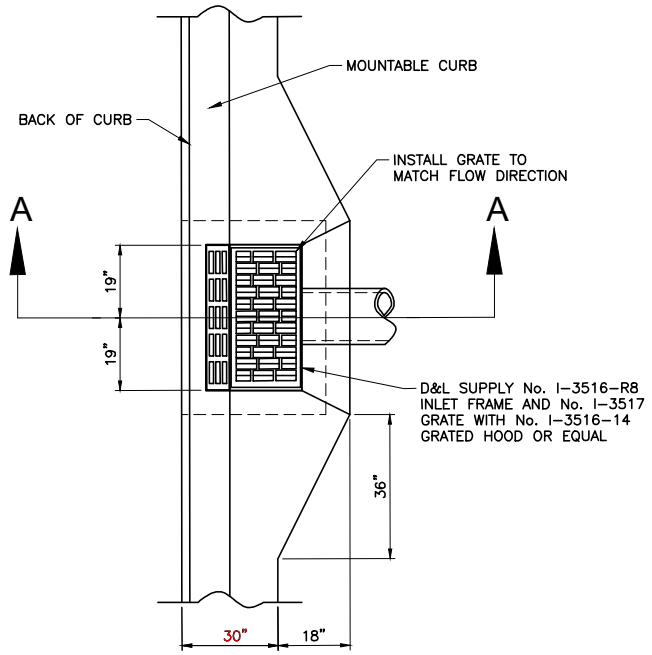
STANDARD CURB FACE INLET DETAIL

TOWN OF VINEYARD

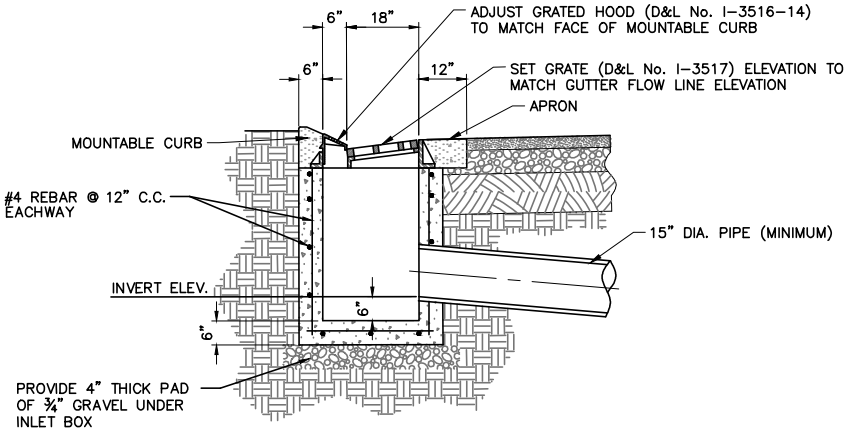
STANDARD DRAWING NUMBER:	8
CAD DWG:	V_STD_DWGS
PLOT SCALE:	1.000
DRAWN BY:	JMM
DESIGN BY:	CRW
CHECKED BY:	DEO
ADOPTED DATE:	SEPTEMBER 1, 2016



MULTIPLE INLET PLAN VIEW



SINGLE INLET PLAN VIEW



SECTION A-A

NOTE:
1. INSTALL "SNOUT" BMP "F" SERIES OIL-WATER-DEBRIS SEPARATOR OR APPROVED EQUIVALENT WHEN LEAVING PRIVATE DEVELOPMENT TO CITY SYSTEM.

STATEMENT OF USE

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REVISION

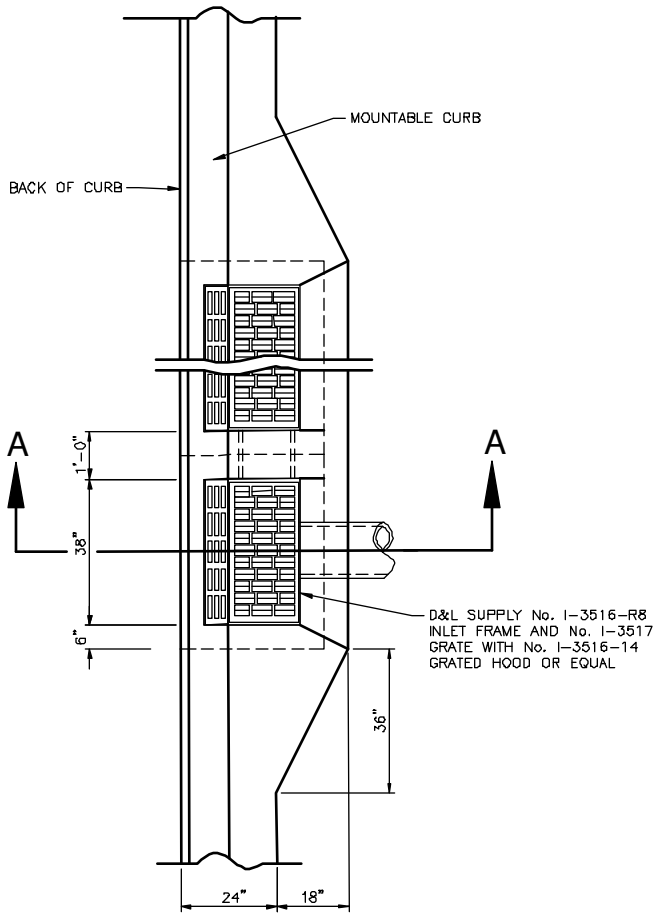
NO.	DESCRIPTION	BY	APR.	DATE
1	STANDARDS UPDATE	CRW	DEO	9/14/16
2	HANSEN, ALLEN & LUCE	DCL	CMT	9/12/25
3				
4				

VINEYARD
STAY CONNECTED

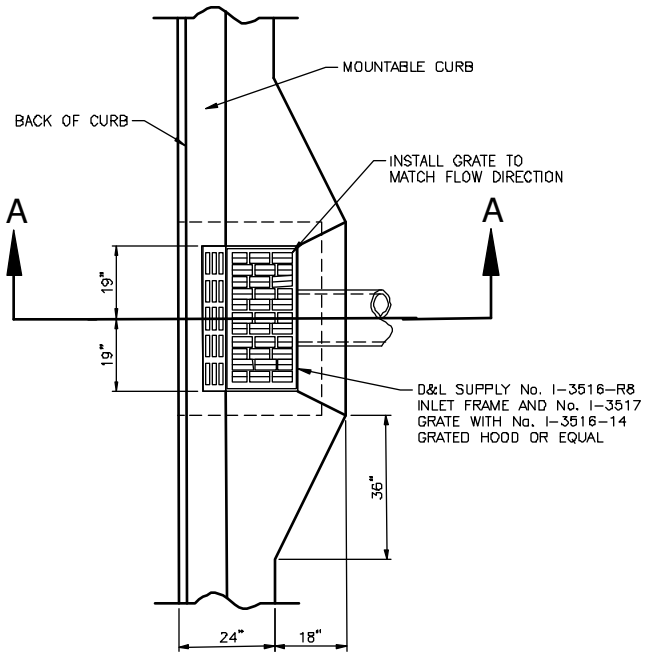
MOUNTABLE CURB INLET DETAIL

VINEYARD

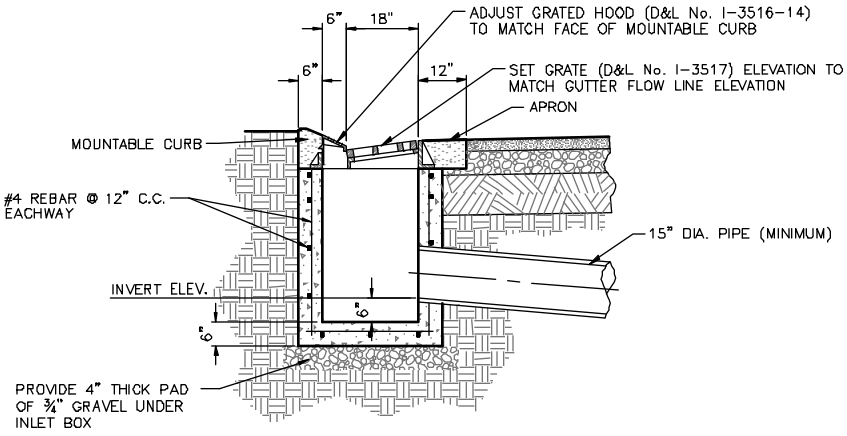
STANDARD DRAWING NUMBER:	11
CAD DWG:	STANDARD
PLOT SCALE:	DRAWING
DRAWN BY:	CRW
DESIGN BY:	CRW
CHECKED BY:	DEO
ADOPTED DATE:	SEPTEMBER 1, 2016



MULTIPLE INLET PLAN VIEW



SINGLE INLET PLAN VIEW



SECTION A-A

JUB

STATEMENT OF USE

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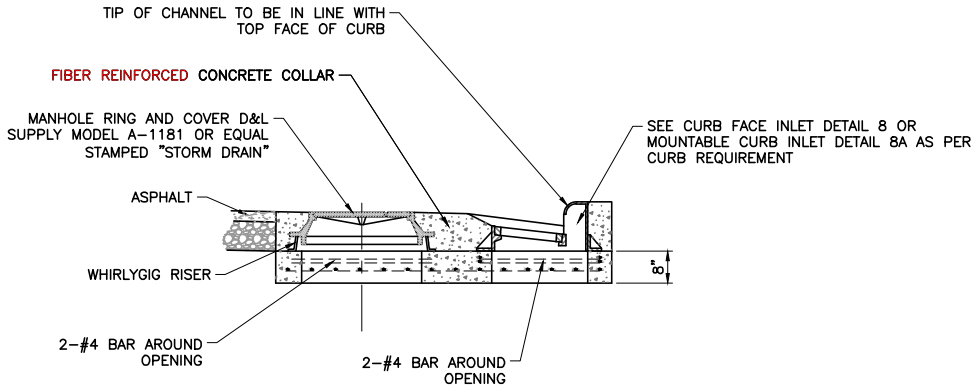
1	STANDARDS UPDATE	CRW	DEO	9/14/16
2				
3				
4				

VINEYARD
STAY CONNECTED

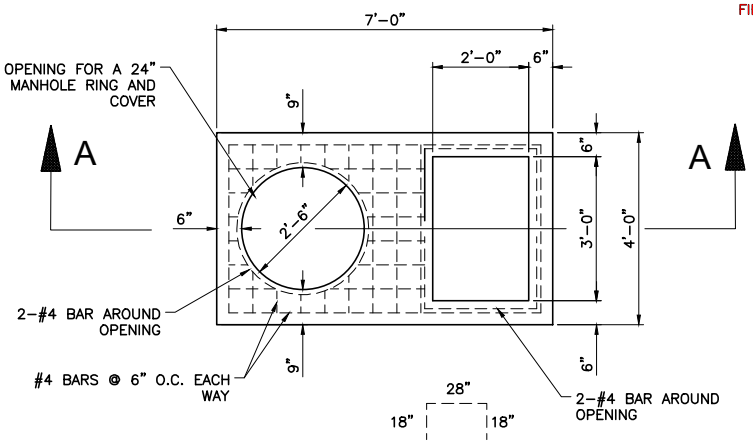
MOUNTABLE CURB INLET DETAIL

TOWN OF VINEYARD

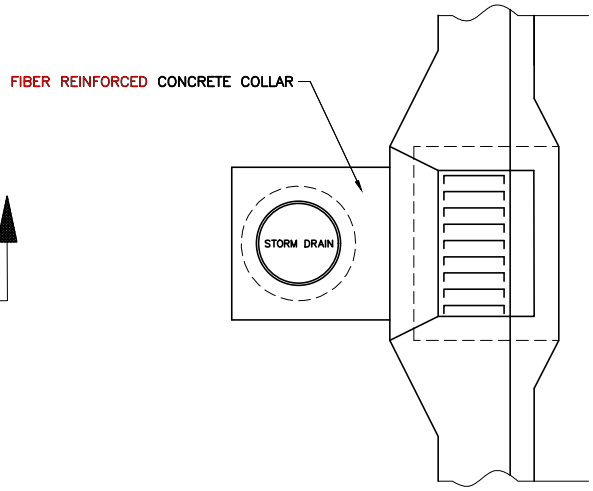
STANDARD DRAWING NUMBER:	8A
CAD DWG:	V_STD_DWGS
PLOT SCALE:	1.000
DRAWN BY:	CRW
DESIGN BY:	CRW
CHECKED BY:	DEO
ADOPTED DATE:	SEPTEMBER 1, 2016



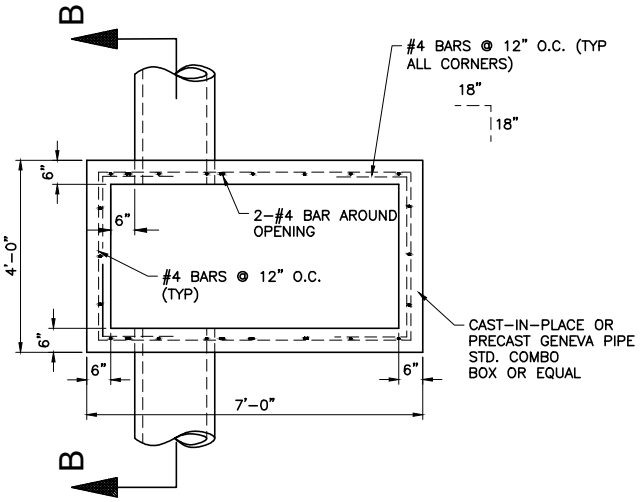
SECTION A-A



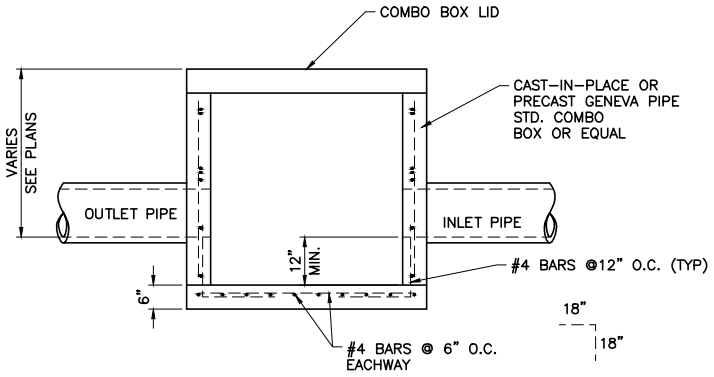
LID TOP VIEW



TOP VIEW WITH FIBER REINFORCED CONCRETE COLLAR



BOX TOP VIEW



NOTE – PIPE LOCATIONS VARY

SECTION B-B

MANHOLE ACCESS CURB INLET BOX (COMBO BOX) DETAILS

NOTES:
1. MANHOLE COVER TO BE A SOLID LID CONTAINING ONE PICK HOLE. SEE SPECIFICATION DIVISION 5 FOR COVER LABEL. D&L SUPPLY P/N A-1181 (OR EQUAL).
2. FLAT LIDS SHALL BE OF ECCENTRIC DESIGN AND MEET H20 LIVE LOADING. NO FLAT RING AND COVERS WILL BE ALLOWED UNLESS APPROVED BY TOWN ENGINEER.
3. WHIRLYGIG RISER OR EQUAL SHALL BE USED INSTEAD OF GRADE RINGS TO ADJUST MANHOLE RING AND COVER TO GRADE.

STATEMENT OF USE
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REVISION

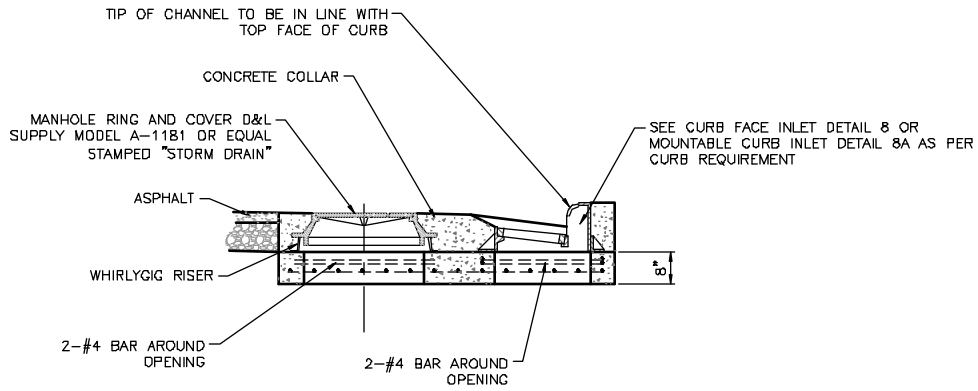
NO.	DESCRIPTION	BY	APR.	DATE
1	STANDARDS UPDATE	JMM	DEO	8/08/16
2	HANSEN, ALLEN & LUCE	DCL	CMT	9/12/25
3				
4				

VINEYARD
STAY CONNECTED

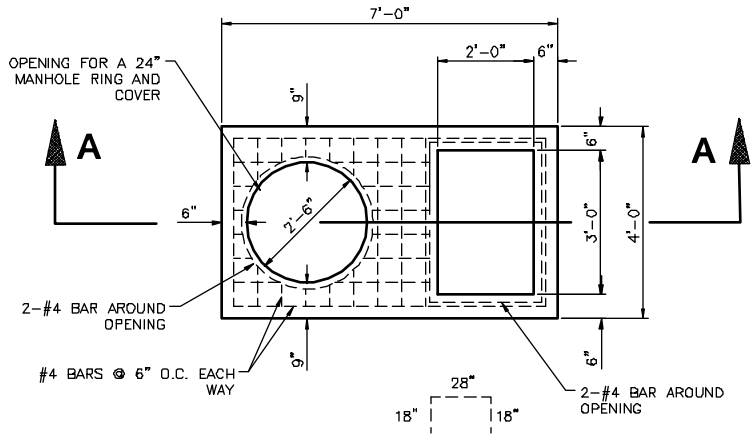
MANHOLE ACCESS CURB INLET BOX (COMBO BOX) DETAIL

VINEYARD

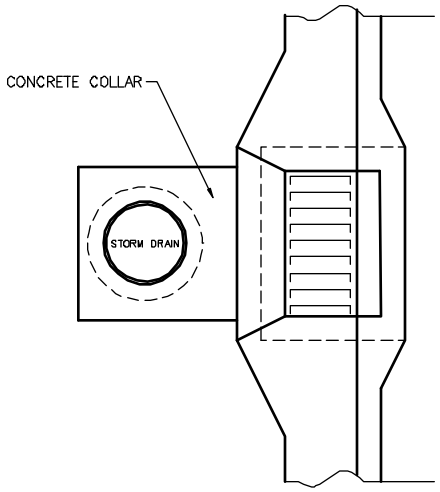
STANDARD DRAWING NUMBER:	12
CAD DWG:	STANDARD
PLOT SCALE:	DRAWING
DRAWN BY:	JMM
DESIGN BY:	CRW
CHECKED BY:	DEO
ADOPTED DATE:	SEPTEMBER 1, 2016



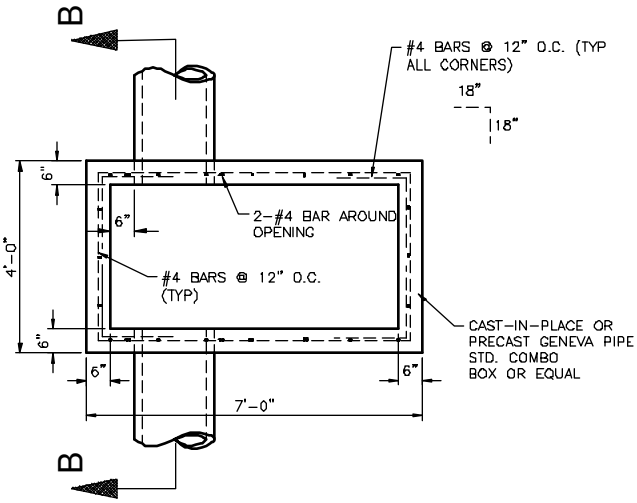
SECTION A-A



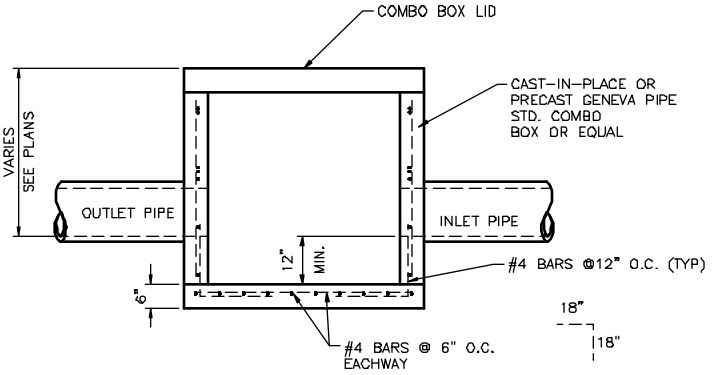
LID TOP VIEW



TOP VIEW WITH CONCRETE COLLAR



BOX TOP VIEW



NOTE – PIPE LOCATIONS VARY

SECTION B-B

MANHOLE ACCESS CURB INLET BOX (COMBO BOX) DETAILS

NOTES:
1. MANHOLE COVER TO BE A SOLID LID CONTAINING ONE PICK HOLE. SEE SPECIFICATION DIVISION 5 FOR COVER LABEL. D&L SUPPLY P/N A-1181 (OR EQUAL).
2. FLAT LIDS SHALL BE OF ECCENTRIC DESIGN AND MEET H20 LIVE LOADING. NO FLAT RING AND COVERS WILL BE ALLOWED UNLESS APPROVED BY TOWN ENGINEER.
3. WHIRLYGIG RISER OR EQUAL SHALL BE USED INSTEAD OF GRADE RINGS TO ADJUST MANHOLE RING AND COVER TO GRADE.

STATEMENT OF USE
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REVISION

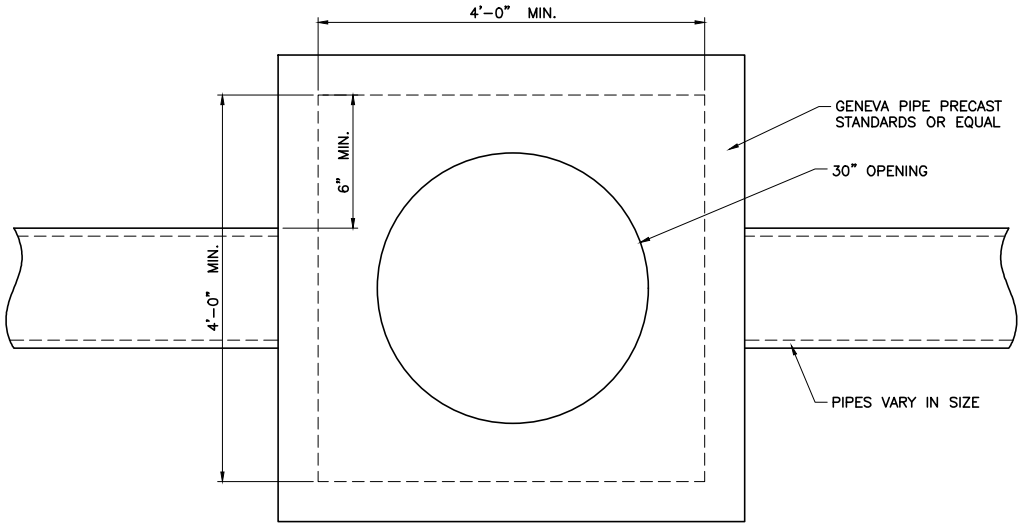
NO.	DESCRIPTION	BY	APR.	DATE
1	STANDARDS UPDATE	JMM	DEO	8/08/16
2				
3				
4				

VINEYARD
STAY CONNECTED

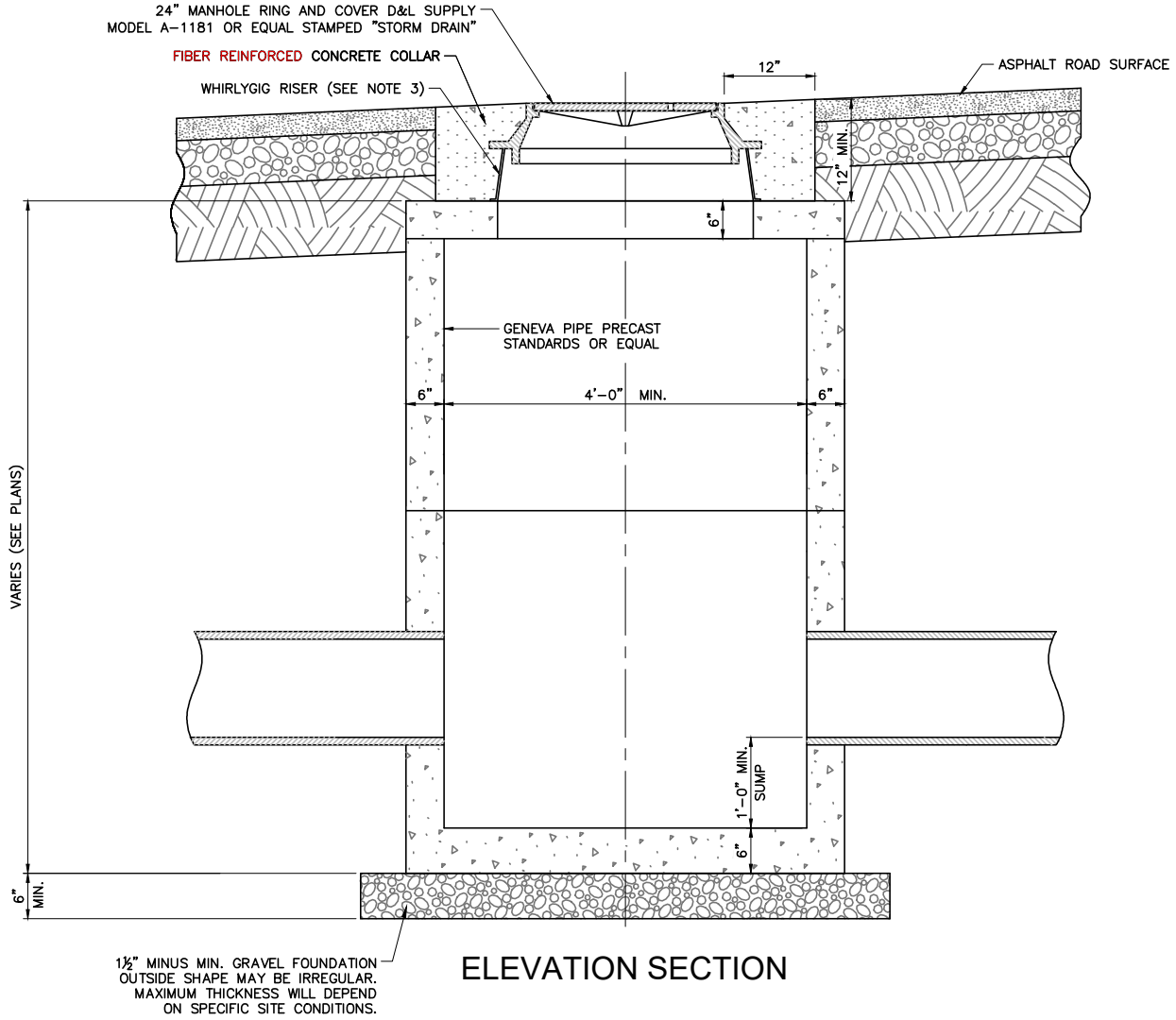
MANHOLE ACCESS CURB INLET BOX (COMBO BOX) DETAIL

TOWN OF VINEYARD

STANDARD DRAWING NUMBER:	9
CAD DWG:	V_STD_DWGS
PLOT SCALE:	1.000
DRAWN BY:	JMM
DESIGN BY:	CRW
CHECKED BY:	DEO
ADOPTED DATE:	SEPTEMBER 1, 2016



PLAN VIEW



ELEVATION SECTION

NOTES:
1. MANHOLE COVER TO BE A SOLID LID CONTAINING ONE PICK HOLE. SEE SPECIFICATION DIVISION 5 FOR COVER LABEL. D&L SUPPLY P/N A-1181 (OR EQUAL).
2. FLAT LIDS SHALL MEET H20 LIVE LOADING. NO FLAT RING AND COVERS WILL BE ALLOWED UNLESS APPROVED BY TOWN ENGINEER.
3. WHIRLYGIG RISER OR EQUAL SHALL BE USED INSTEAD OF GRADE RINGS TO ADJUST MANHOLE RING AND COVER TO GRADE.
4. 18" MAXIMUM WHIRLYGIG RISER HEIGHT.

STATEMENT OF USE

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REVISION

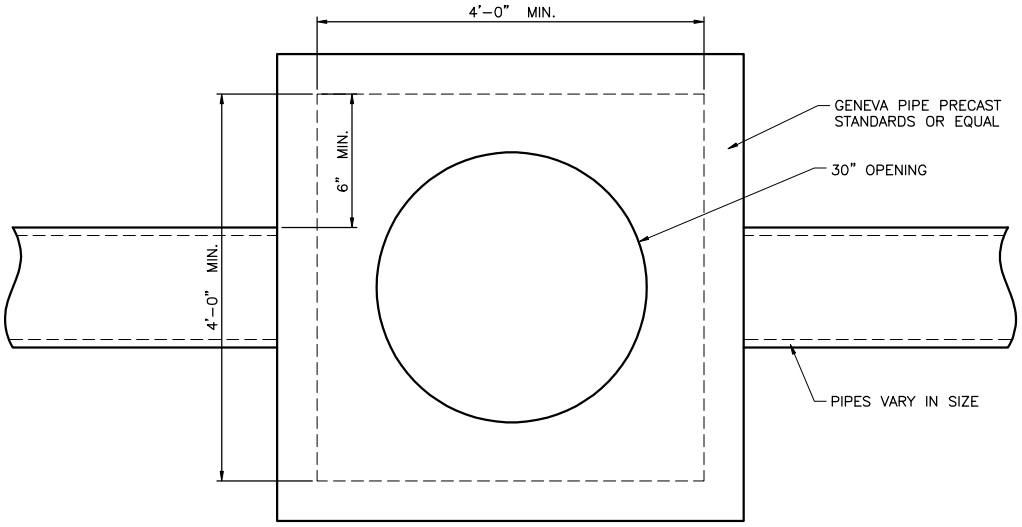
NO.	DESCRIPTION	BY	APR.	DATE
1	STANDARDS UPDATE	JMM	DEO	1/11/17
2	HANSE, ALLEN & LUCE	DCL	CMT	9/12/25
3				
4				

VINEYARD
STAY CONNECTED

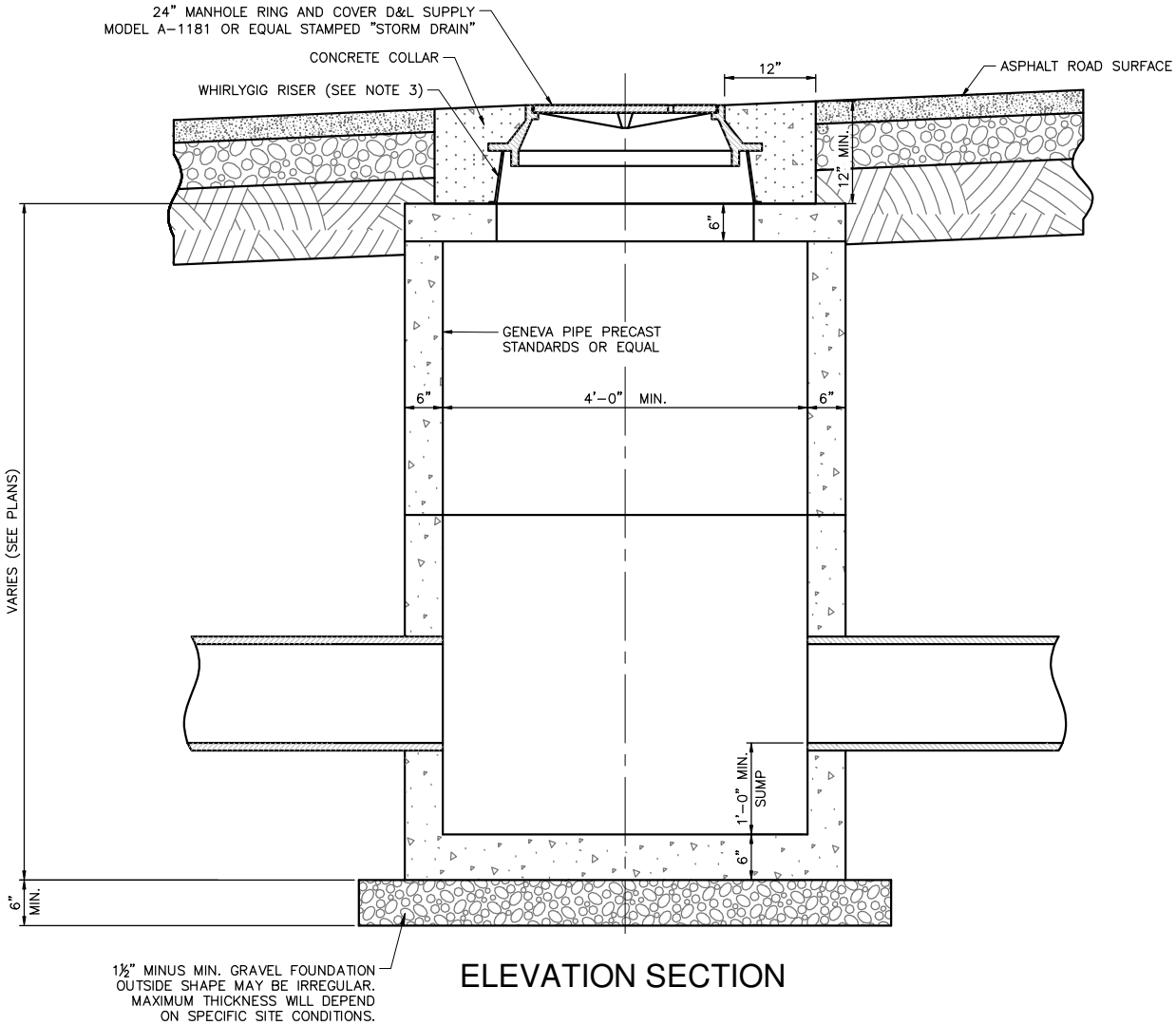
STORM DRAIN JUNCTION BOX DETAIL

VINEYARD

STANDARD DRAWING NUMBER:	13
CAD DWG:	STANDARD
PLOT SCALE:	DRAWING
DRAWN BY:	JMM
DESIGN BY:	CRW
CHECKED BY:	DEO
ADOPTED DATE:	SEPTEMBER 1, 2016



PLAN VIEW



ELEVATION SECTION

NOTES:
1. MANHOLE COVER TO BE A SOLID LID CONTAINING ONE PICK HOLE. SEE SPECIFICATION DIVISION 5 FOR COVER LABEL. D&L SUPPLY P/N A–1181 (OR EQUAL).
2. FLAT LIDS SHALL MEET H20 LIVE LOADING. NO FLAT RING AND COVERS WILL BE ALLOWED UNLESS APPROVED BY TOWN ENGINEER.
3. WHIRLYGIG RISER OR EQUAL SHALL BE USED INSTEAD OF GRADE RINGS TO ADJUST MANHOLE RING AND COVER TO GRADE.
4. 18" MAXIMUM WHIRLYGIG RISER HEIGHT.

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REVISION

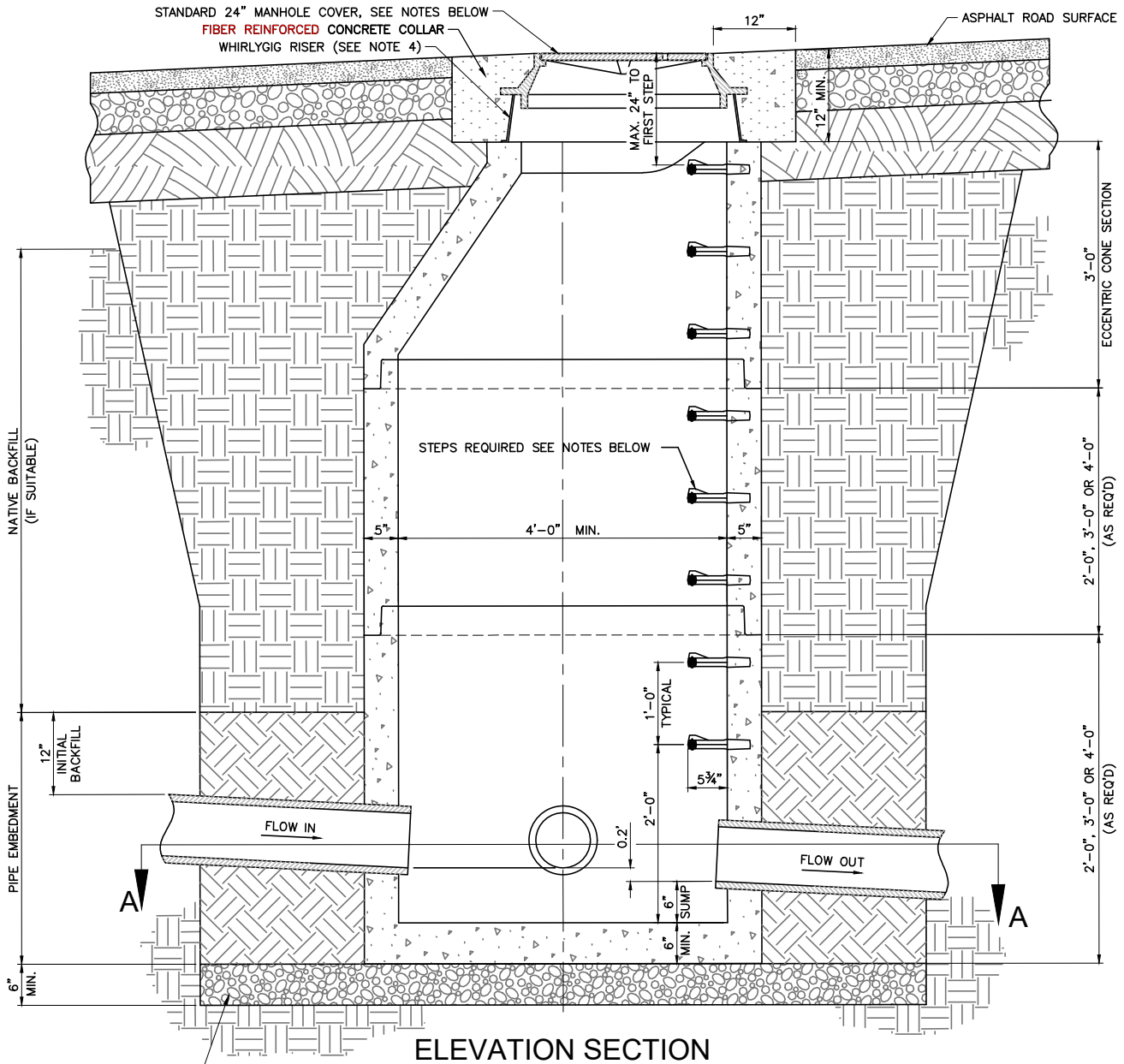
NO.	DESCRIPTION	BY	APR.	DATE
1	STANDARDS UPDATE	JMM	DEO	1/11/17
2				
3				
4				

VINEYARD
STAY CONNECTED

STORM DRAIN JUNCTION BOX DETAIL

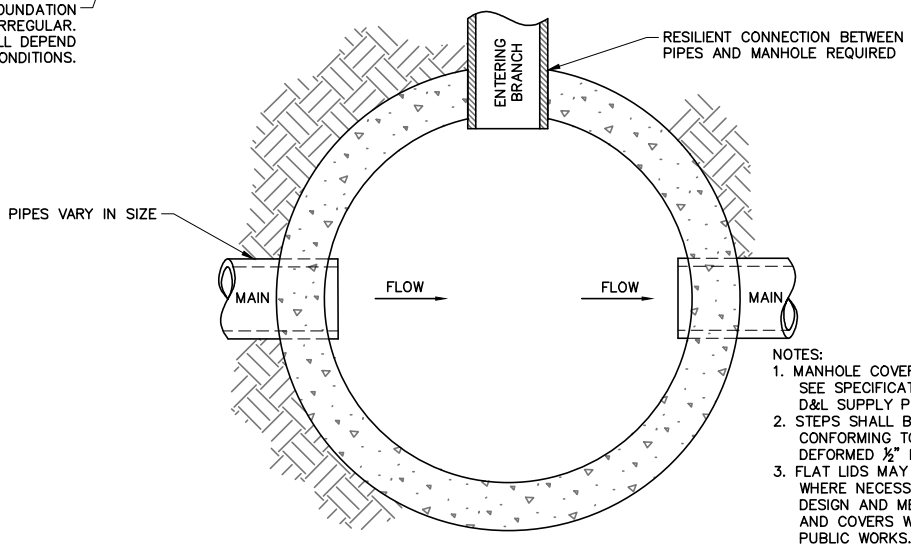
TOWN OF VINEYARD

STANDARD DRAWING NUMBER:	9A
CAD DWG:	V_STD_DWGS
PLOT SCALE:	1.000
DRAWN BY:	JMM
DESIGN BY:	CRW
CHECKED BY:	DEO
ADOPTED DATE:	SEPTEMBER 1, 2016



ELEVATION SECTION

1½" MINUS MIN. GRAVEL FOUNDATION OUTSIDE SHAPE MAY BE IRREGULAR. MAXIMUM THICKNESS WILL DEPEND ON SPECIFIC SITE CONDITIONS.



SECTION A-A

NOTES:
1. MANHOLE COVER TO CONTAIN ONE PICK HOLE. SEE SPECIFICATION DIVISION 5 FOR COVER LABEL. D&L SUPPLY P/N A-1181 (OR EQUAL).
2. STEPS SHALL BE MADE OF COPOLYMER POLYPROPYLENE CONFORMING TO ASTM D-4101. REINFORCING STEEL TO BE DEFORMED ½" DIAMETER GRADE 60 ROD.
3. FLAT LIDS MAY BE USED IN LIEU OF ECCENTRIC CONES WHERE NECESSARY. FLAT LIDS SHALL BE OF ECCENTRIC DESIGN AND MEET H20 LIVE LOADING. NO FLAT RING AND COVERS WILL BE ALLOWED UNLESS APPROVED BY PUBLIC WORKS.
4. WHIRLYGIG RISER OR EQUAL SHALL BE USED INSTEAD OF GRADE RINGS TO ADJUST MANHOLE RING AND COVER TO GRADE.
5. 18" MAXIMUM RISER HEIGHT.

STATEMENT OF USE

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REVISION

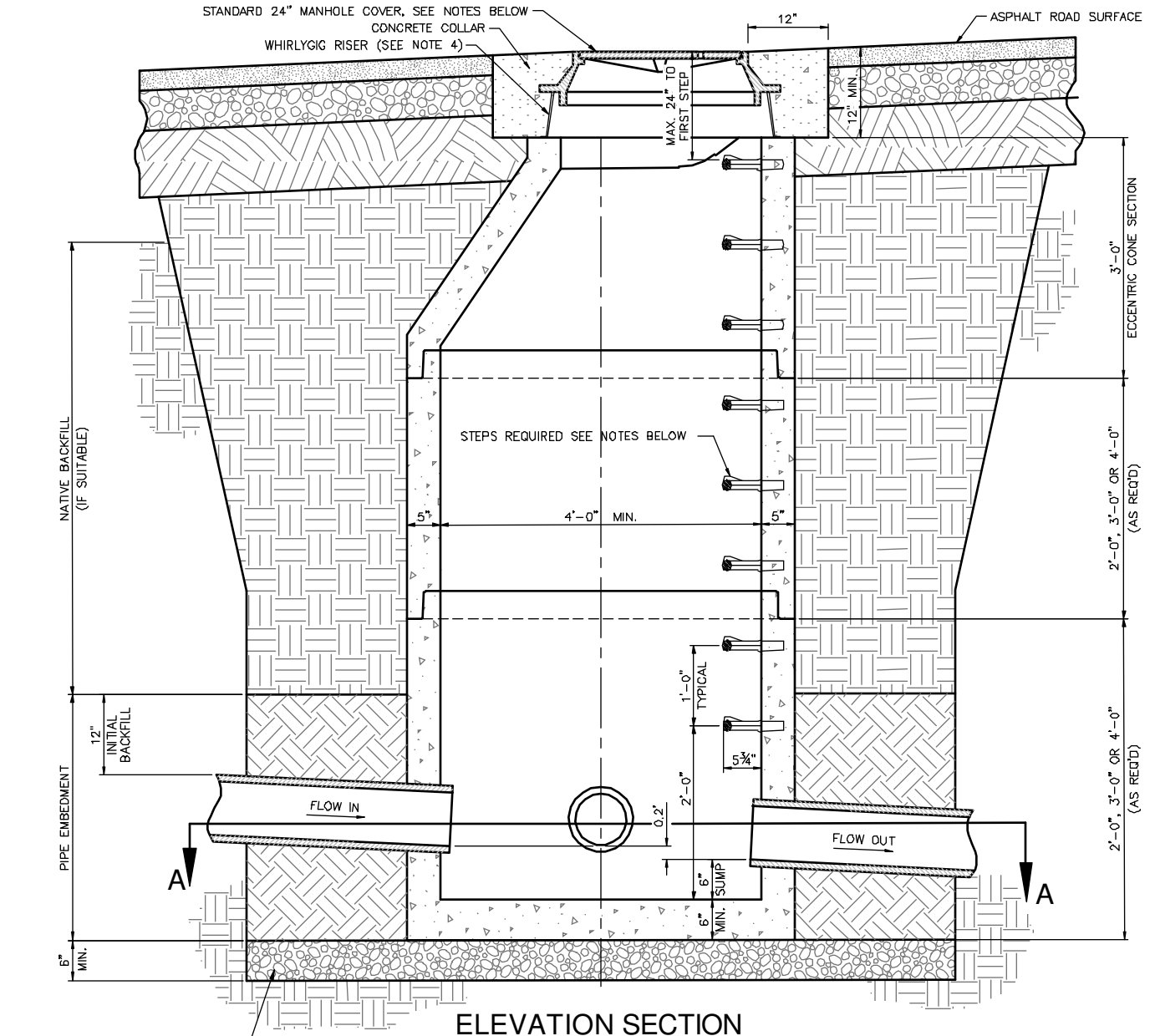
NO.	DESCRIPTION	BY	APR.	DATE
1	STANDARDS UPDATE	JMM	DEO	6/08/16
2	HANSEN, ALLEN & LUCE	DCL	CMT	9/12/25
3				
4				

VINEYARD
STAY CONNECTED

TYPICAL LAND DRAIN MANHOLE DETAIL

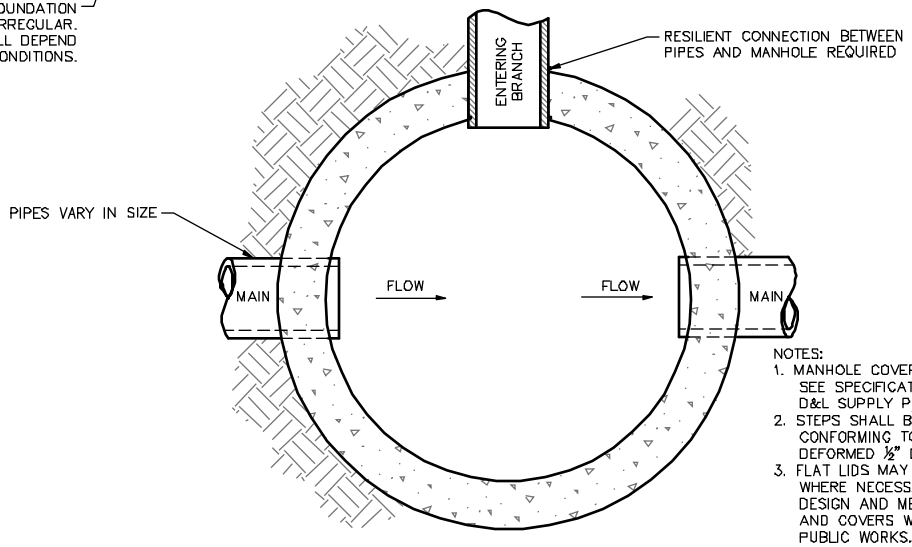
VINEYARD

STANDARD DRAWING NUMBER:	14
CAD DWG:	STANDARD
PLOT SCALE:	DRAWING
DRAWN BY:	JMM
DESIGN BY:	CRW
CHECKED BY:	DEO
ADOPTED DATE:	SEPTEMBER 1, 2016



ELEVATION SECTION

1½" MINUS MIN. GRAVEL FOUNDATION OUTSIDE SHAPE MAY BE IRREGULAR. MAXIMUM THICKNESS WILL DEPEND ON SPECIFIC SITE CONDITIONS.



SECTION A-A

NOTES:
1. MANHOLE COVER TO CONTAIN ONE PICK HOLE. SEE SPECIFICATION DIVISION 5 FOR COVER LABEL. D&L SUPPLY P/N A-1181 (OR EQUAL).
2. STEPS SHALL BE MADE OF COPOLYMER POLYPROPYLENE CONFORMING TO ASTM D-4101. REINFORCING STEEL TO BE DEFORMED ½" DIAMETER GRADE 60 ROD.
3. FLAT LIDS MAY BE USED IN LIEU OF ECCENTRIC CONES WHERE NECESSARY. FLAT LIDS SHALL BE OF ECCENTRIC DESIGN AND MEET H20 LIVE LOADING. NO FLAT RING AND COVERS WILL BE ALLOWED UNLESS APPROVED BY PUBLIC WORKS.
4. WHIRLYGIG RISER OR EQUAL SHALL BE USED INSTEAD OF GRADE RINGS TO ADJUST MANHOLE RING AND COVER TO GRADE.
5. 18" MAXIMUM RISER HEIGHT.

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REVISION

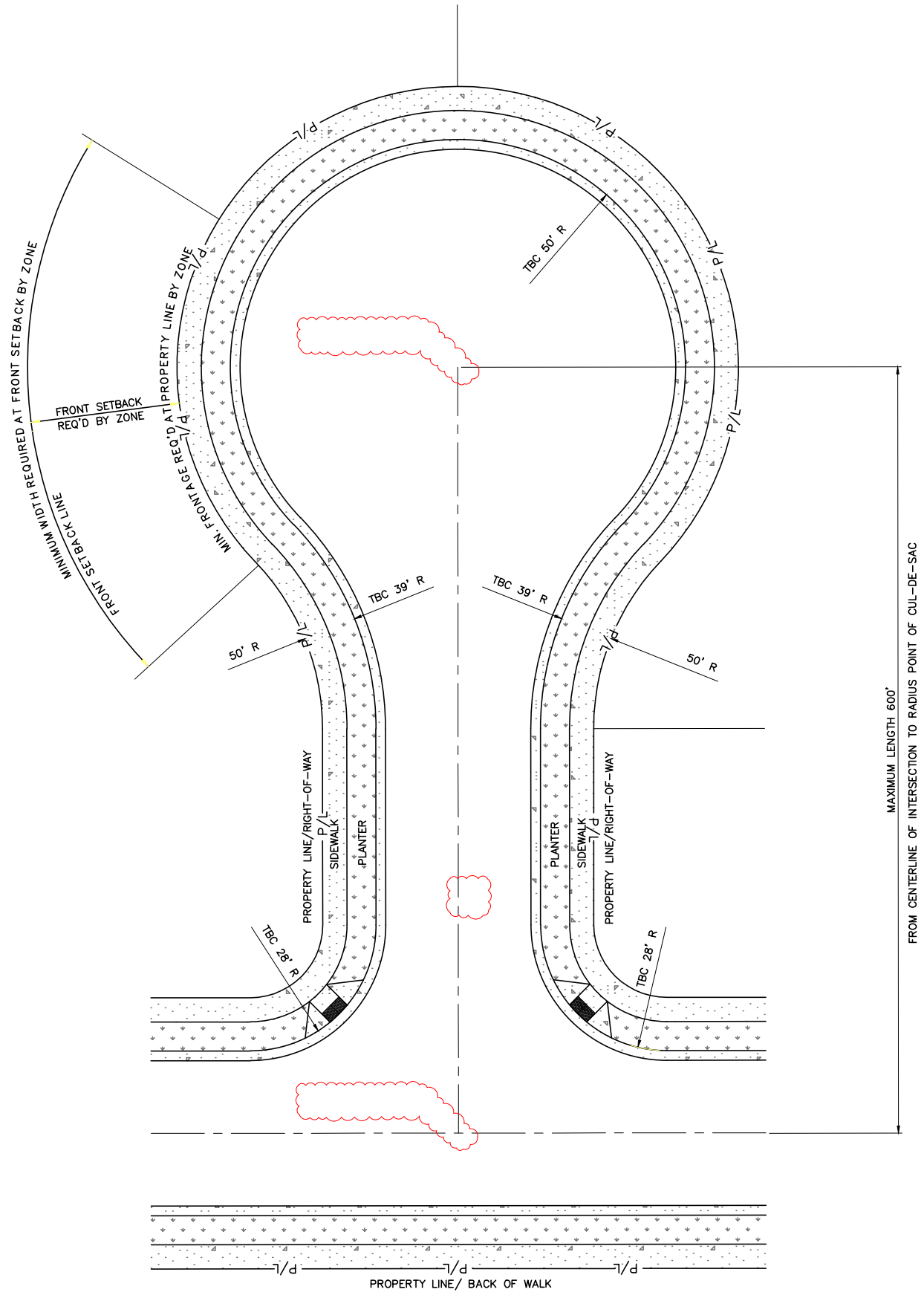
NO.	DESCRIPTION	BY	APR.	DATE
1	STANDARDS UPDATE	JMM	DEO	8/08/16
2				
3				
4				

VINEYARD
STAY CONNECTED

TYPICAL LAND DRAIN MANHOLE DETAIL

TOWN OF VINEYARD

STANDARD DRAWING NUMBER:	10
CAD DWG:	V_STD_DWGS
PLOT SCALE:	1.000
DRAWN BY:	JMM
DESIGN BY:	CRW
CHECKED BY:	DEO
ADOPTED DATE:	SEPTEMBER 1, 2016



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REVISION

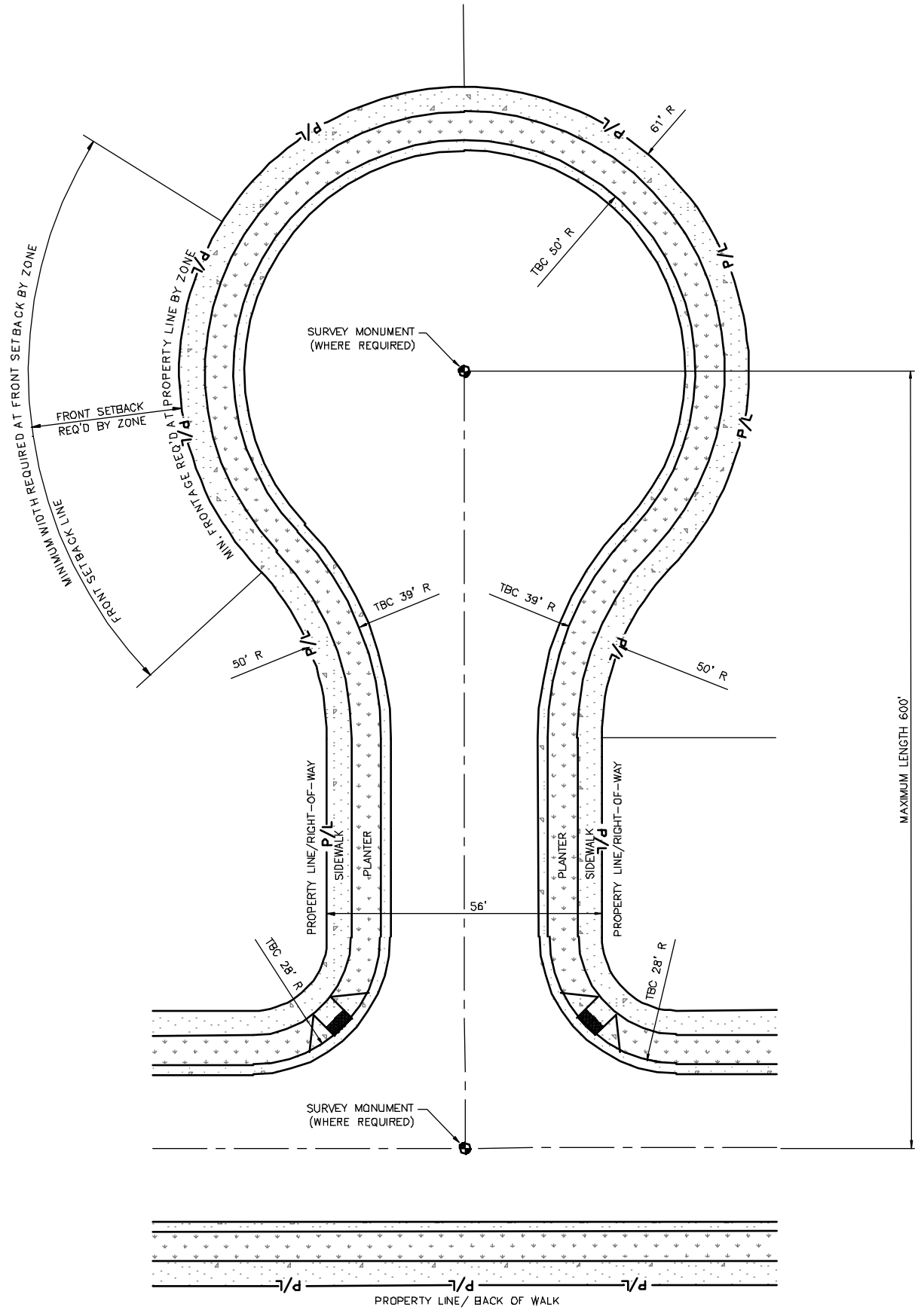
NO.	DESCRIPTION	BY	APR.	DATE
1	STANDARDS UPDATE	JMM	DEO	8/08/16
2	HANSEN, ALLEN & LUCE	DCL	CMT	9/12/25
3				
4				

VINEYARD
STAY CONNECTED

STANDARD CUL-DE-SAC

VINEYARD

STANDARD DRAWING NUMBER:	15
CAD DWG:	STANDARD
PLOT SCALE:	DRAWING
DRAWN BY:	JMM
DESIGN BY:	CRW
CHECKED BY:	DEO
ADOPTED DATE:	SEPTEMBER 1, 2016



JUB

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REVISION

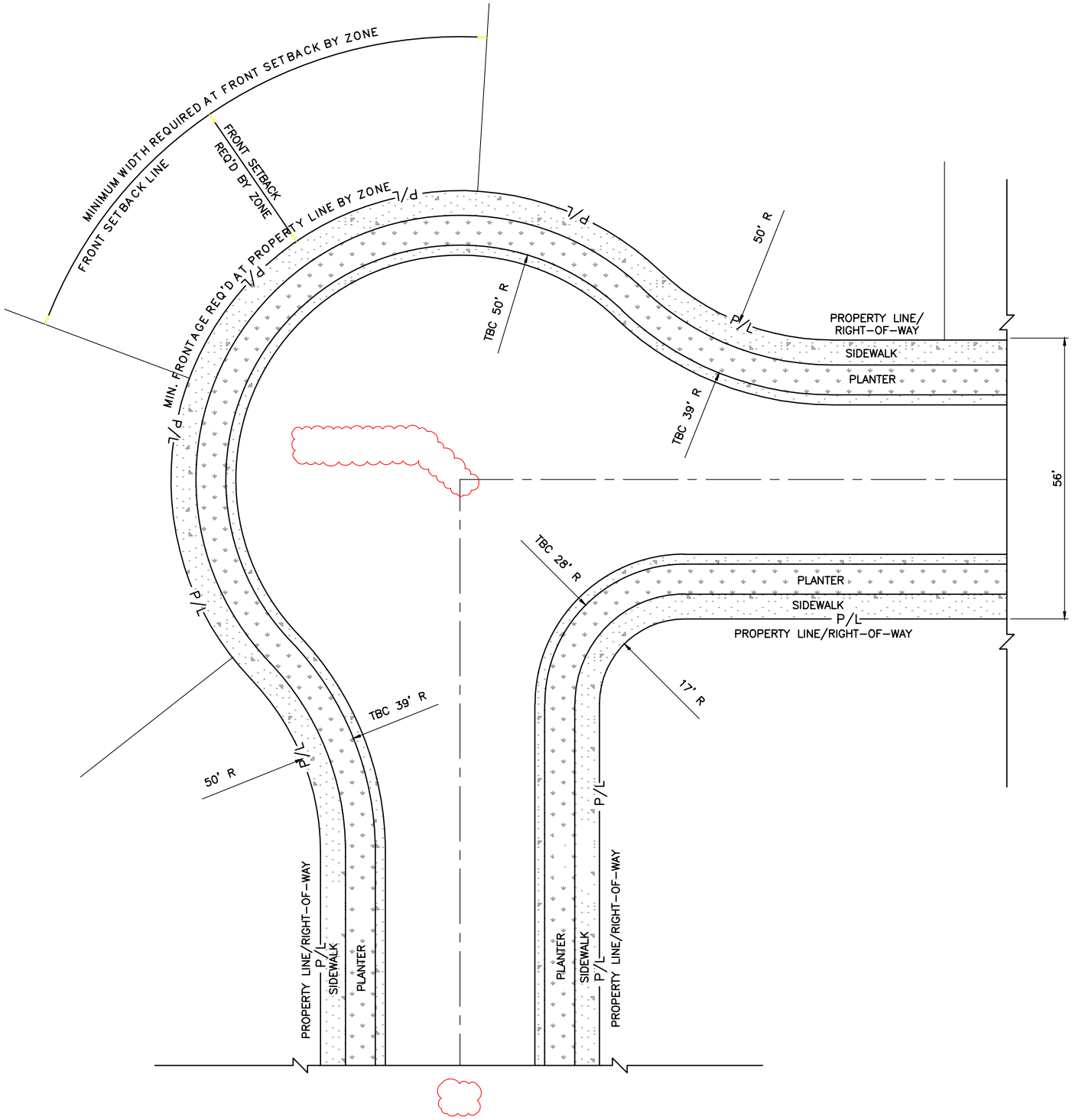
NO.	DESCRIPTION	BY	APR.	DATE
1	STANDARDS UPDATE	JMM	DEO	9/08/16
2				
3				
4				

VINEYARD
STAY CONNECTED

STANDARD CUL-DE-SAC

TOWN OF VINEYARD

STANDARD DRAWING NUMBER:	11
CAD DWG:	V_STD_DWGS
PLOT SCALE:	1.000
DRAWN BY:	JMM
DESIGN BY:	CRW
CHECKED BY:	DEO
ADOPTED DATE:	SEPTEMBER 1, 2016



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REVISION

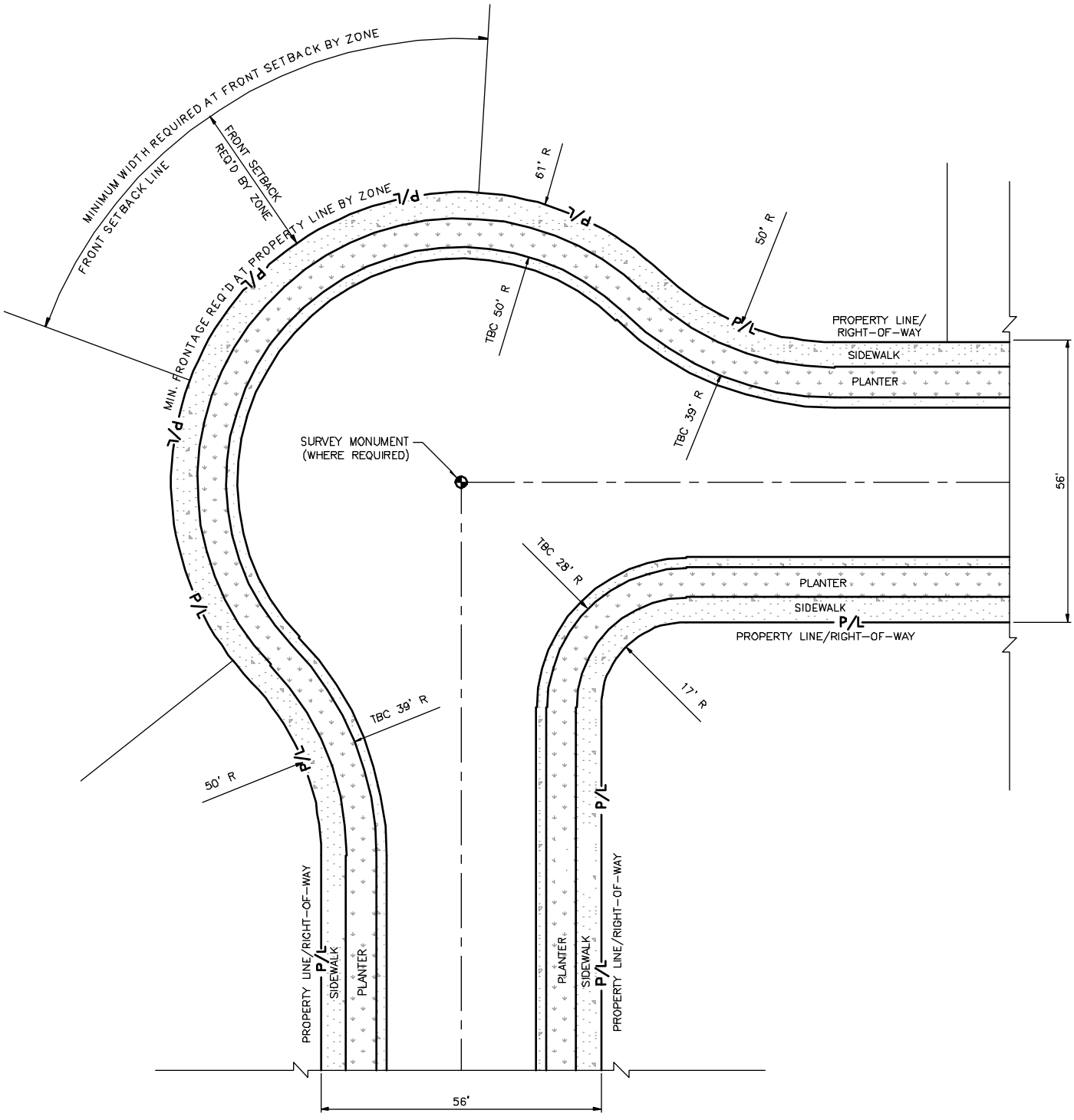
NO.	DESCRIPTION	BY	APR.	DATE
1	STANDARDS UPDATE	JMM	DEO	8/08/16
2	HANSEN, ALLEN & LUCE	DCL	CMT	9/12/25
3				
4				

VINEYARD
STAY CONNECTED

STANDARD KNUCKLE

VINEYARD

STANDARD DRAWING NUMBER:	16
CAD DWG:	STANDARD
PLOT SCALE:	DRAWING
DRAWN BY:	JMM
DESIGN BY:	CRW
CHECKED BY:	DEO
ADOPTED DATE:	SEPTEMBER 1, 2016



JUB

STATEMENT OF USE

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REVISION

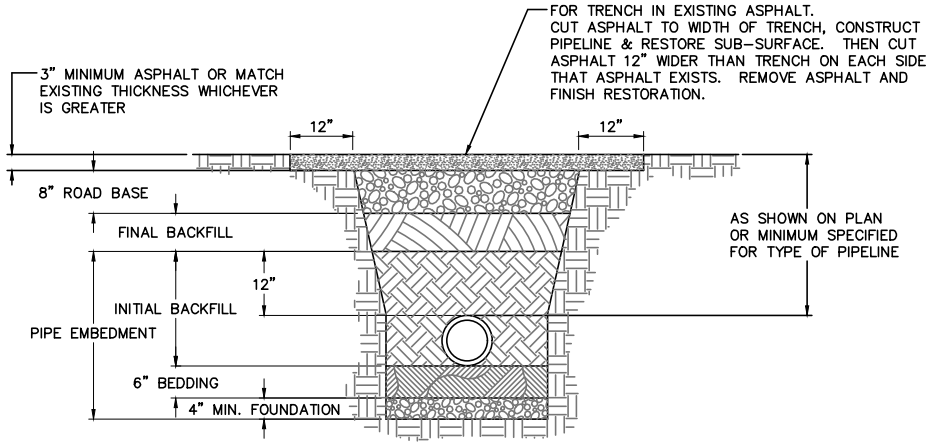
NO.	DESCRIPTION	BY	APR.	DATE
1	STANDARDS UPDATE	JMM	DEO	9/08/16
2				
3				
4				

VINEYARD
STAY CONNECTED

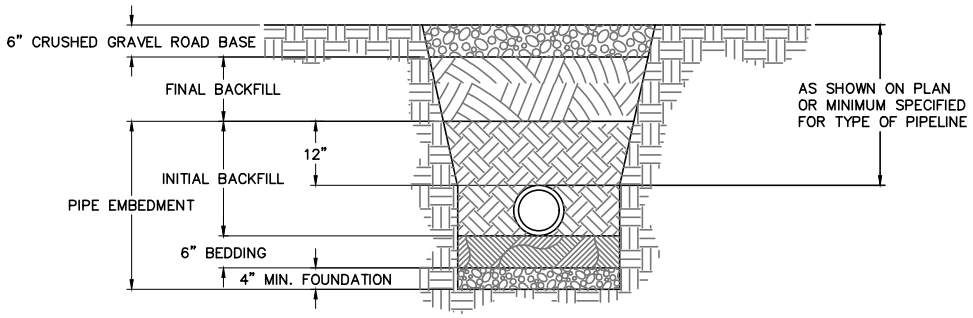
STANDARD KNUCKLE

TOWN OF VINEYARD

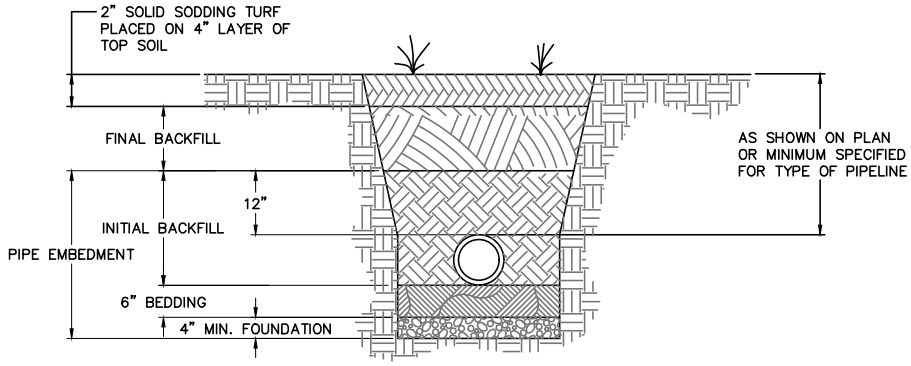
STANDARD DRAWING NUMBER:	12
CAD DWG:	V_STD_DWGS
PLOT SCALE:	1.000
DRAWN BY:	JMM
DESIGN BY:	CRW
CHECKED BY:	DEO
ADOPTED DATE:	SEPTEMBER 1, 2016



ASPHALT SURFACE



GRAVEL SURFACE



TURF SURFACE

NOTES:
1. SLOPE TRENCH TO MEET OSHA REQUIREMENTS (LATEST EDITION) OR USE TRENCH BOX.
2. FOUNDATION AND BEDDING MATERIAL AS REQUIRED.
3. INSTALL PIPELINES ON STABLE FOUNDATION WITH UNIFORM BEARING FOR FULL LENGTH OF BARREL, EXCAVATE IN BEDDING FOR ALL PIPE JOINTS.
4. NO PATCHES WITHIN EXISTING PATCHES.

STATEMENT OF USE

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REVISION

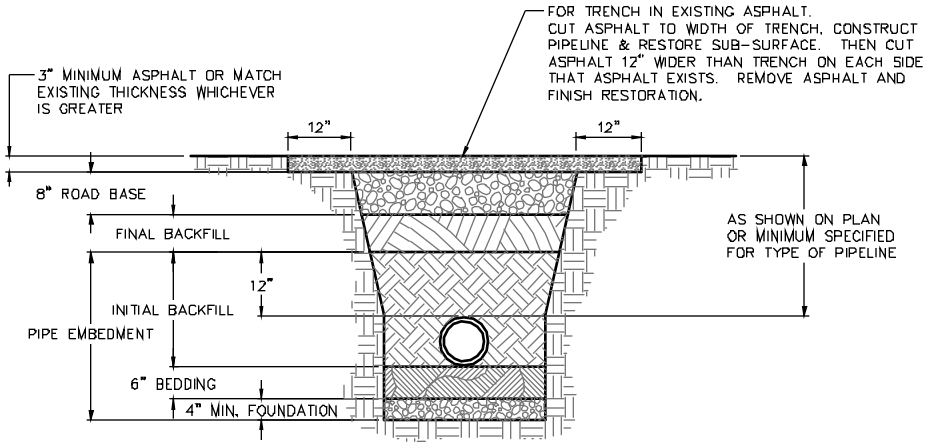
NO.	DESCRIPTION	BY	APR.	DATE
1	STANDARDS UPDATE	JMM	DEO	8/08/16
2	HANSEN, ALLEN & LUCE	DCL	CMT	9/12/25
3				
4				

VINEYARD
STAY CONNECTED

TYPICAL TRENCH SECTION

VINEYARD

STANDARD DRAWING NUMBER:	17
CAD DWG:	STANDARD
PLOT SCALE:	DRAWING
DRAWN BY:	JMM
DESIGN BY:	CRW
CHECKED BY:	DEO
ADOPTED DATE:	SEPTEMBER 1, 2016



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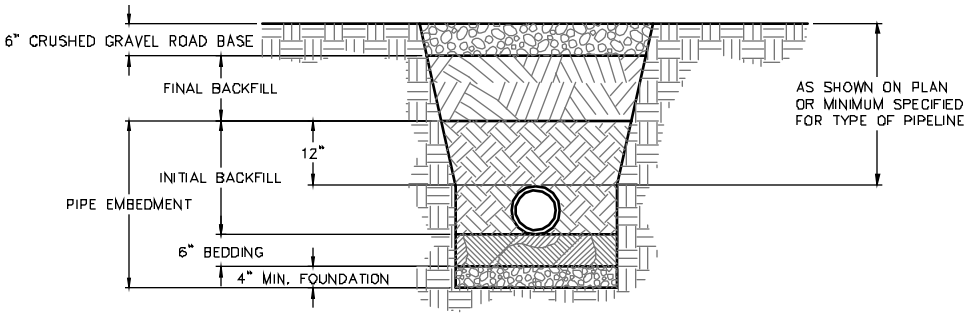
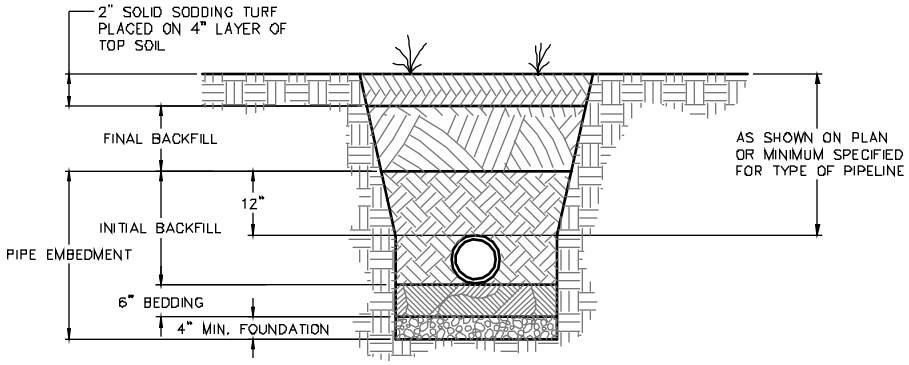


GRAVEL SURFACE



TURF SURFACE

NOTES:
1. SLOPE TRENCH TO MEET OSHA REQUIREMENTS (LATEST EDITION) OR USE TRENCH BOX.
2. FOUNDATION AND BEDDING MATERIAL AS REQUIRED.
3. INSTALL PIPELINES ON STABLE FOUNDATION WITH UNIFORM BEARING FOR FULL LENGTH OF BARREL, EXCAVATE IN BEDDING FOR ALL PIPE JOINTS.
4. NO PATCHES WITHIN EXISTING PATCHES.

JUB

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REVISION

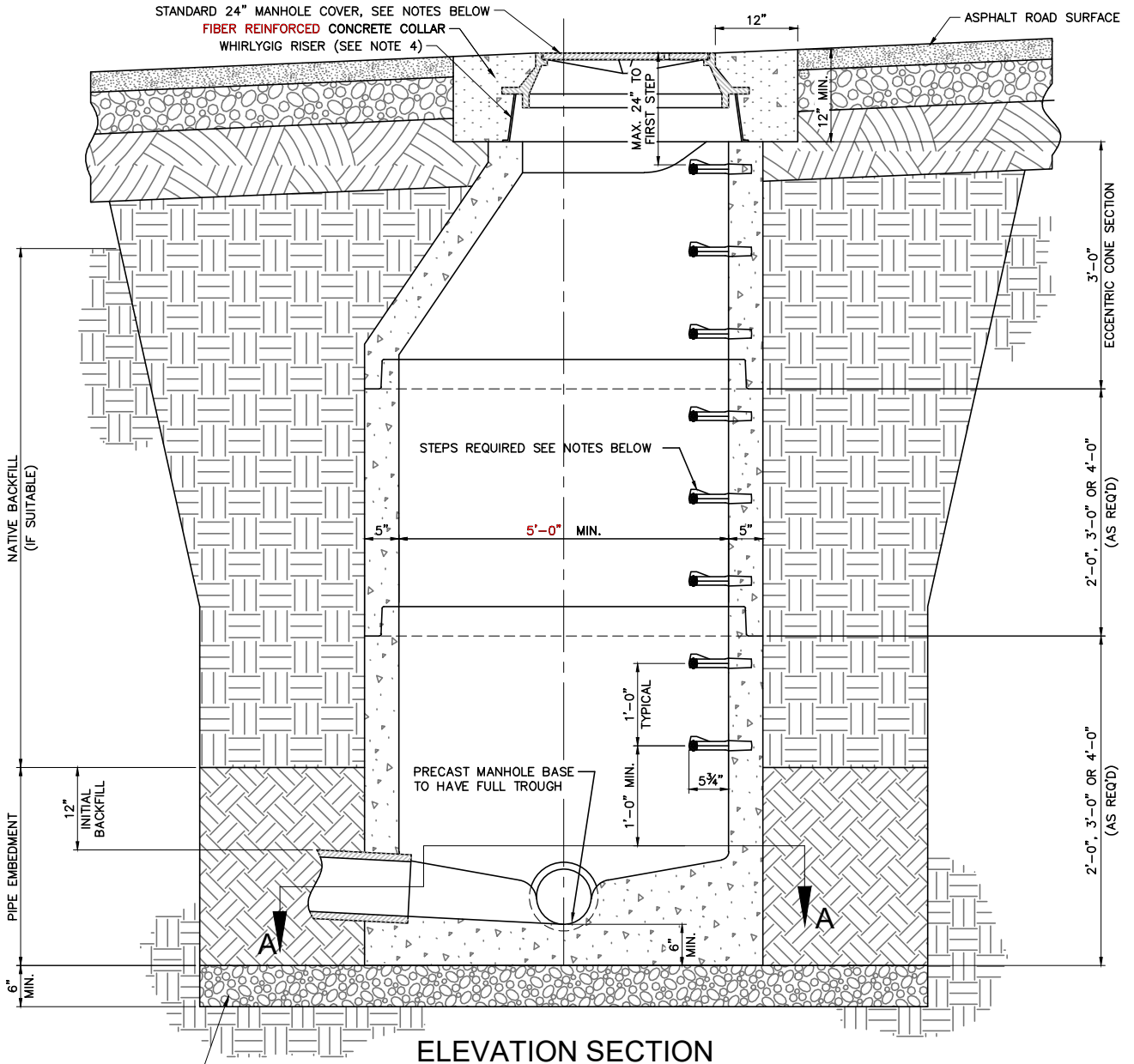
NO.	DESCRIPTION	BY	APR.	DATE
1	STANDARDS UPDATE	JMM	DEO	8/08/16
2				
3				
4				

VINEYARD
STAY CONNECTED

TYPICAL TRENCH SECTION

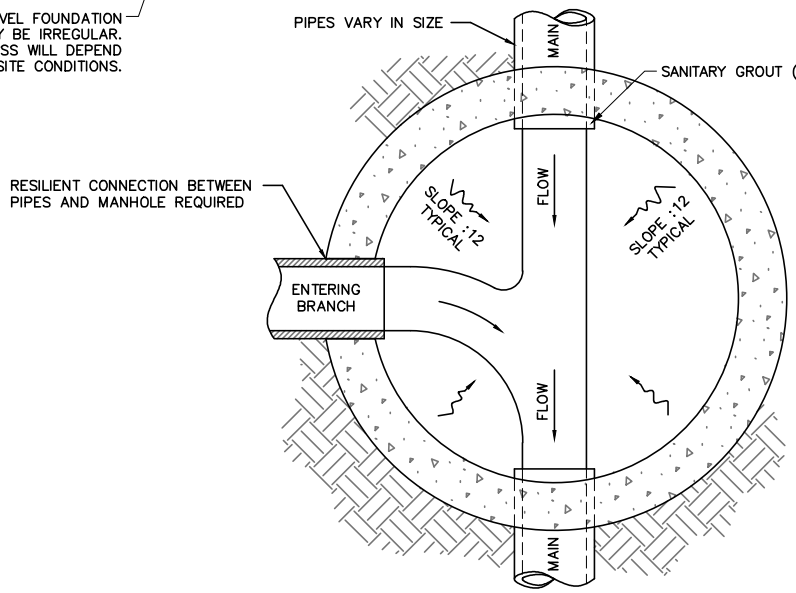
TOWN OF VINEYARD

STANDARD DRAWING NUMBER:	13
CAD DWG:	V_STD_DWGS
PLOT SCALE:	1.000
DRAWN BY:	JMM
DESIGN BY:	CRW
CHECKED BY:	DEO
ADOPTED DATE:	SEPTEMBER 1, 2016



ELEVATION SECTION

1½" MINUS MIN. GRAVEL FOUNDATION OUTSIDE SHAPE MAY BE IRREGULAR. MAXIMUM THICKNESS WILL DEPEND ON SPECIFIC SITE CONDITIONS.



SECTION A-A

NOTES:
1. MANHOLE COVER TO CONTAIN ONE PICK HOLE. SEE SPECIFICATION DIVISION 5 FOR COVER LABEL. D&L SUPPLY P/N A-1180 VENTED (OR EQUAL).
2. STEPS SHALL BE MADE OF COPOLYMER POLYPROPYLENE CONFORMING TO ASTM D-4101. REINFORCING STEEL TO BE DEFORMED ½" DIAMETER GRADE 60 ROD.
3. FLAT LIDS MAY BE USED IN LIEU OF ECCENTRIC CONES WHERE NECESSARY. FLAT LIDS SHALL BE OF ECCENTRIC DESIGN AND MEET H20 LIVE LOADING. NO FLAT RING AND COVERS WILL BE ALLOWED UNLESS APPROVED BY PUBLIC WORKS.
4. WHIRLYGIG RISER OR EQUAL SHALL BE USED INSTEAD OF GRADE RINGS TO ADJUST MANHOLE RING AND COVER TO GRADE.
5. 18" MAXIMUM RISER HEIGHT.
6. REFER TO DESIGN CRITERIA FOR INVERT REQUIREMENTS.

STATEMENT OF USE

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REVISION

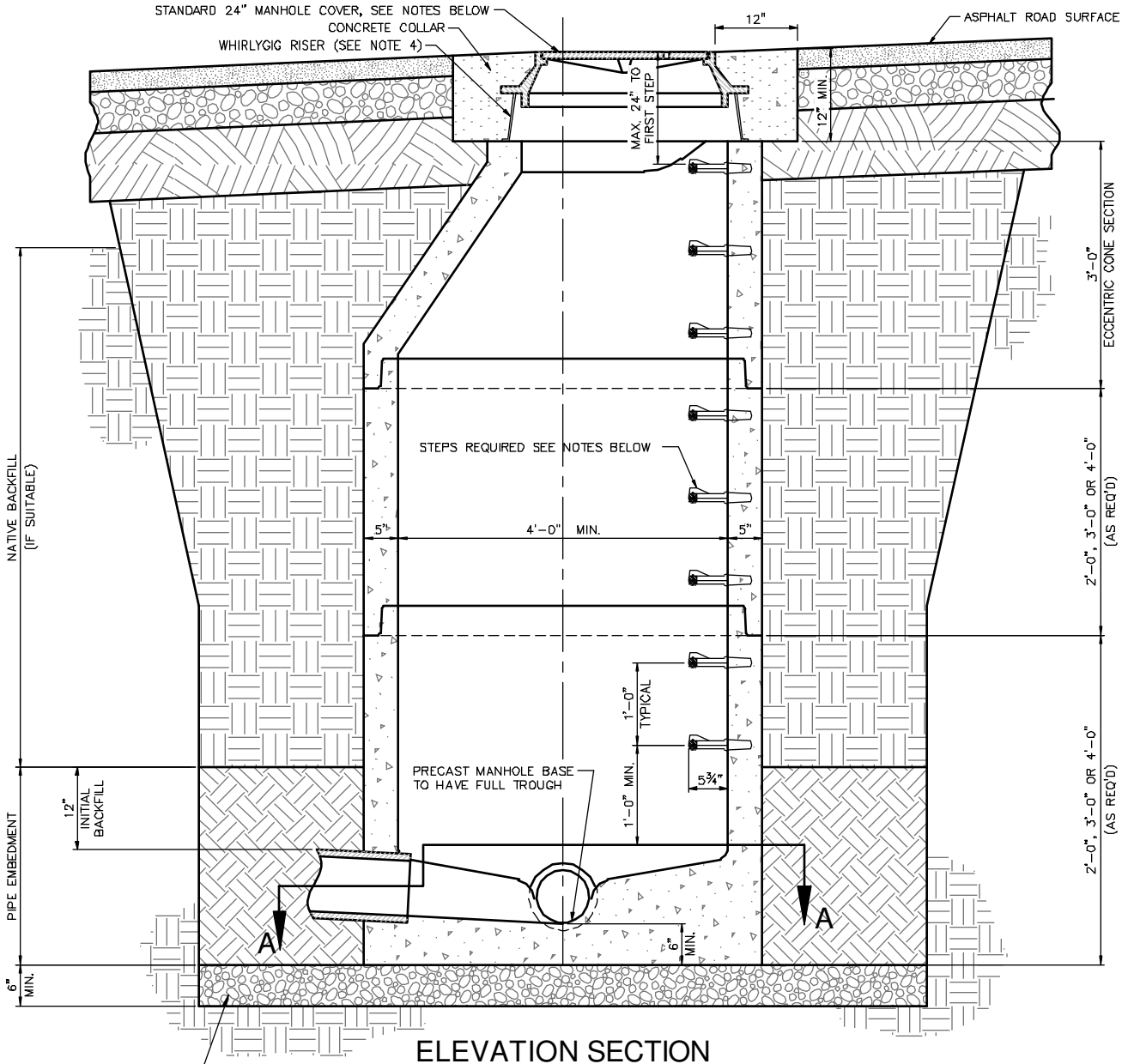
NO.	DESCRIPTION	BY	APR.	DATE
1	STANDARDS UPDATE	JMM	DEO	8/08/16
2	HANSEN, ALLEN & LUCE	DCL	CMT	9/12/25
3				
4				

VINEYARD
STAY CONNECTED

TYPICAL SEWER MANHOLE DETAIL

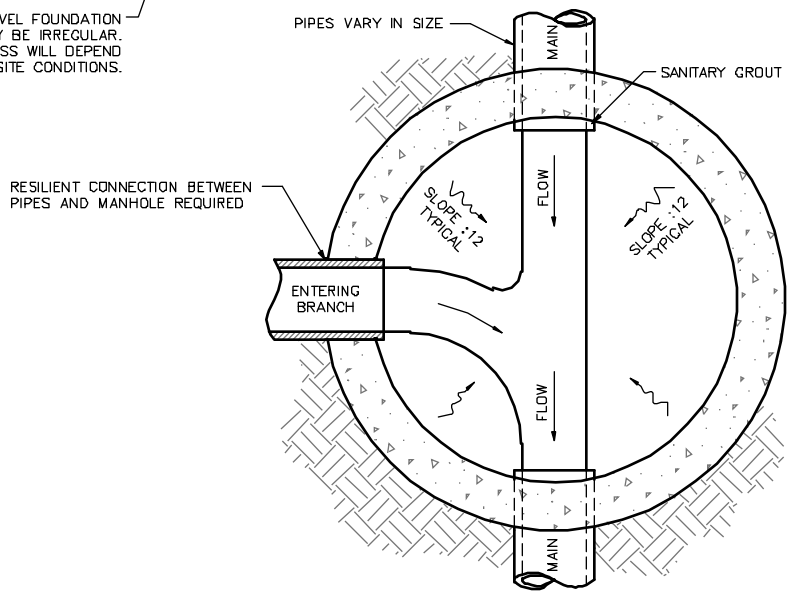
VINEYARD

STANDARD DRAWING NUMBER:	18
CAD DWG:	STANDARD
PLOT SCALE:	DRAWING
DRAWN BY:	JMM
DESIGN BY:	CRW
CHECKED BY:	DEO
ADOPTED DATE:	SEPTEMBER 1, 2016



ELEVATION SECTION

1½" MINUS MIN. GRAVEL FOUNDATION OUTSIDE SHAPE MAY BE IRREGULAR. MAXIMUM THICKNESS WILL DEPEND ON SPECIFIC SITE CONDITIONS.



SECTION A-A

NOTES:
1. MANHOLE COVER TO CONTAIN ONE PICK HOLE. SEE SPECIFICATION DIVISION 5 FOR COVER LABEL. D&L SUPPLY P/N A-1180 VENTED (OR EQUAL).
2. STEPS SHALL BE MADE OF COPOLYMER POLYPROPYLENE CONFORMING TO ASTM D-4101. REINFORCING STEEL TO BE DEFORMED ½" DIAMETER GRADE 60 ROD.
3. FLAT LIDS MAY BE USED IN LIEU OF ECCENTRIC CONES WHERE NECESSARY. FLAT LIDS SHALL BE OF ECCENTRIC DESIGN AND MEET H20 LIVE LOADING. NO FLAT RING AND COVERS WILL BE ALLOWED UNLESS APPROVED BY PUBLIC WORKS.
4. WHIRLYGIG RISER OR EQUAL SHALL BE USED INSTEAD OF GRADE RINGS TO ADJUST MANHOLE RING AND COVER TO GRADE.
5. 18" MAXIMUM RISER HEIGHT.
6. REFER TO DESIGN CRITERIA FOR INVERT REQUIREMENTS.

STATEMENT OF USE
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REVISION

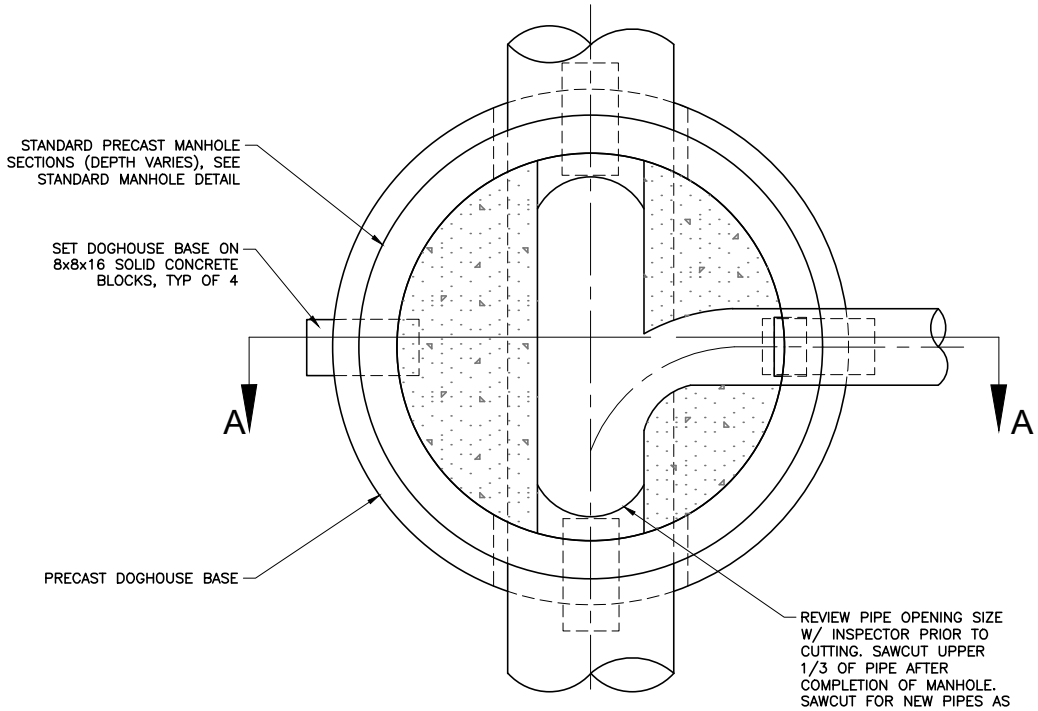
NO.	DESCRIPTION	BY	APR.	DATE
1	STANDARDS UPDATE	JMM	DEO	8/08/16
2				
3				
4				

VINEYARD
STAY CONNECTED

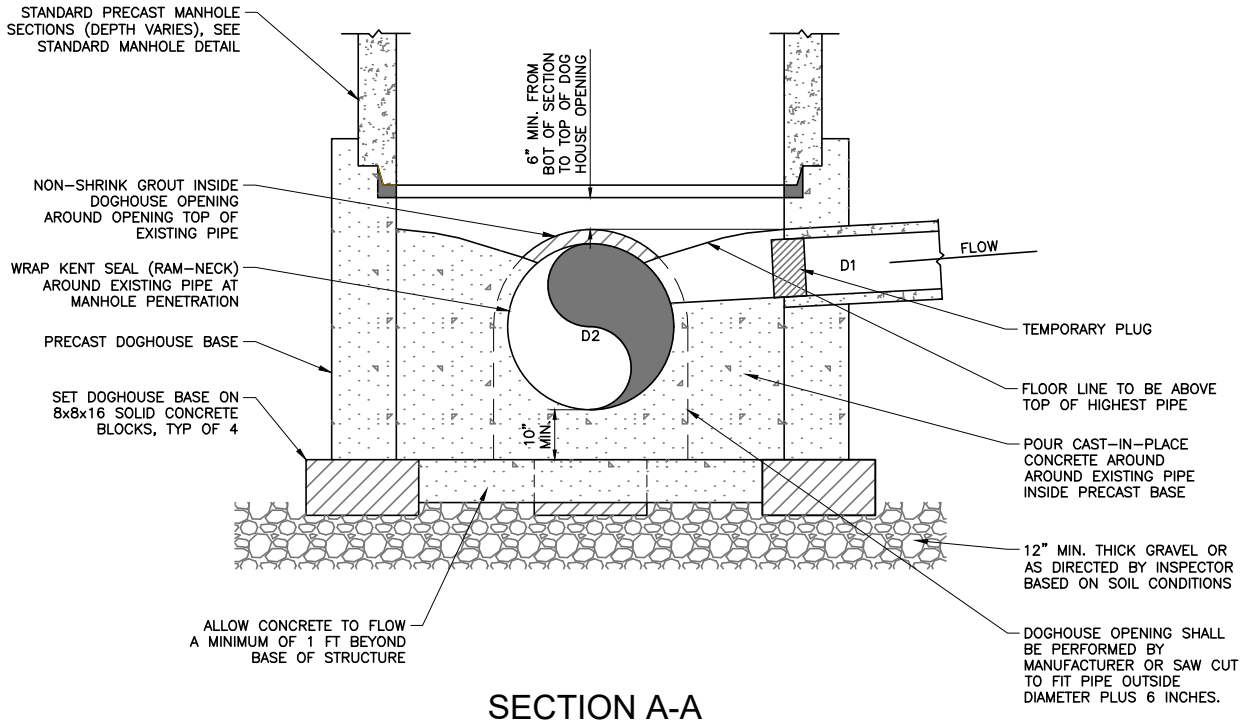
TYPICAL SEWER MANHOLE DETAIL

TOWN OF VINEYARD

STANDARD DRAWING NUMBER:	14
CAD DWG:	V_STD_DWGS
PLOT SCALE:	1.000
DRAWN BY:	JMM
DESIGN BY:	CRW
CHECKED BY:	DEO
ADOPTED DATE:	SEPTEMBER 1, 2016



PLAN VIEW



SECTION A-A

NOTES:
1. IF GRADE ALLOWS, INVERT D1 SHALL MATCH THE 0.75 DEPTH POINT OF D2. OTHERWISE, MATCH TOP OF PIPE FOR D1 TO TOP OF PIPE OF D2 AS APPROVED BY INSPECTOR.
2. AFTER ALL GRADING AROUND MANHOLE HAS BEEN COMPLETED AND FINAL SURFACING IS IN PLACE, REMOVE DEBRIS AND TEMPORARY PLUGS OR PLYWOOD FROM INSIDE OF MANHOLES.
3. IF MANHOLE IS TO BE POURED IN PLACE, FOLLOW SAME PATTERN AS SHOWN EXCEPT USE 10" MIN. WALL THICKNESS.
4. CONTACT INSPECTOR 48 HOURS (2 BUSINESS DAYS) PRIOR TO CONSTRUCTION.
5. STUBS FOR FUTURE CONNECTIONS SHALL BE PLUGGED UNTIL ACTIVATION IS APPROVED BY INSPECTOR.

STATEMENT OF USE

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REVISION

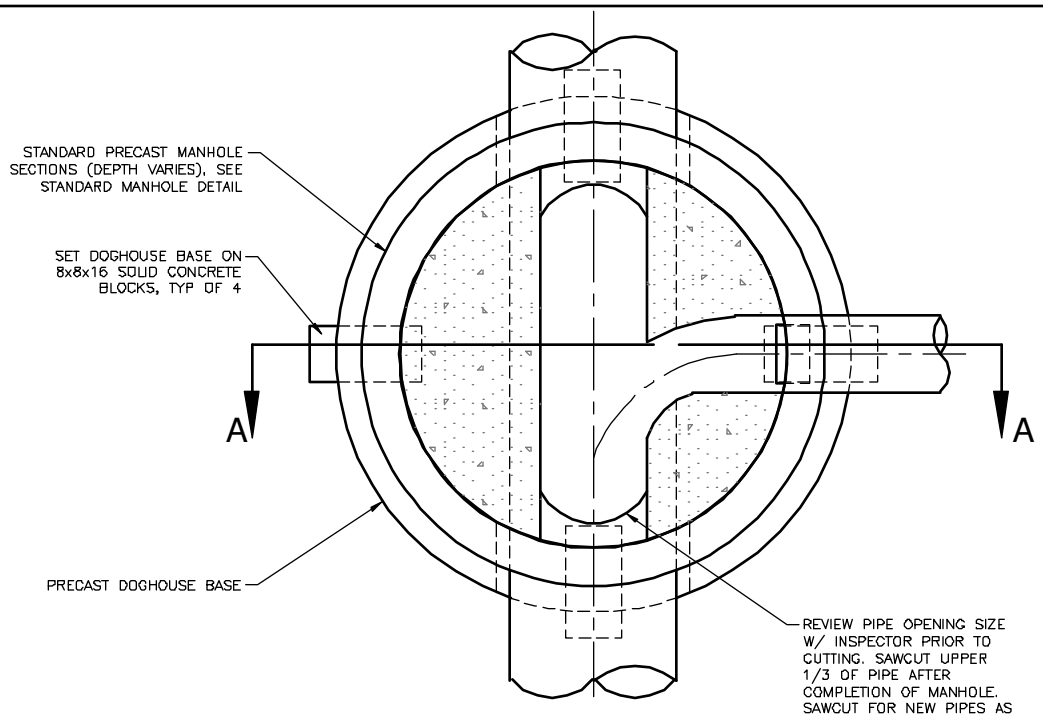
NO.	DESCRIPTION	BY	APR.	DATE
1	STANDARDS UPDATE	JMM	DEO	8/08/16
2	HANSEN, ALLEN & LUCE	DCL	CMT	9/12/25
3				
4				

VINEYARD
STAY CONNECTED

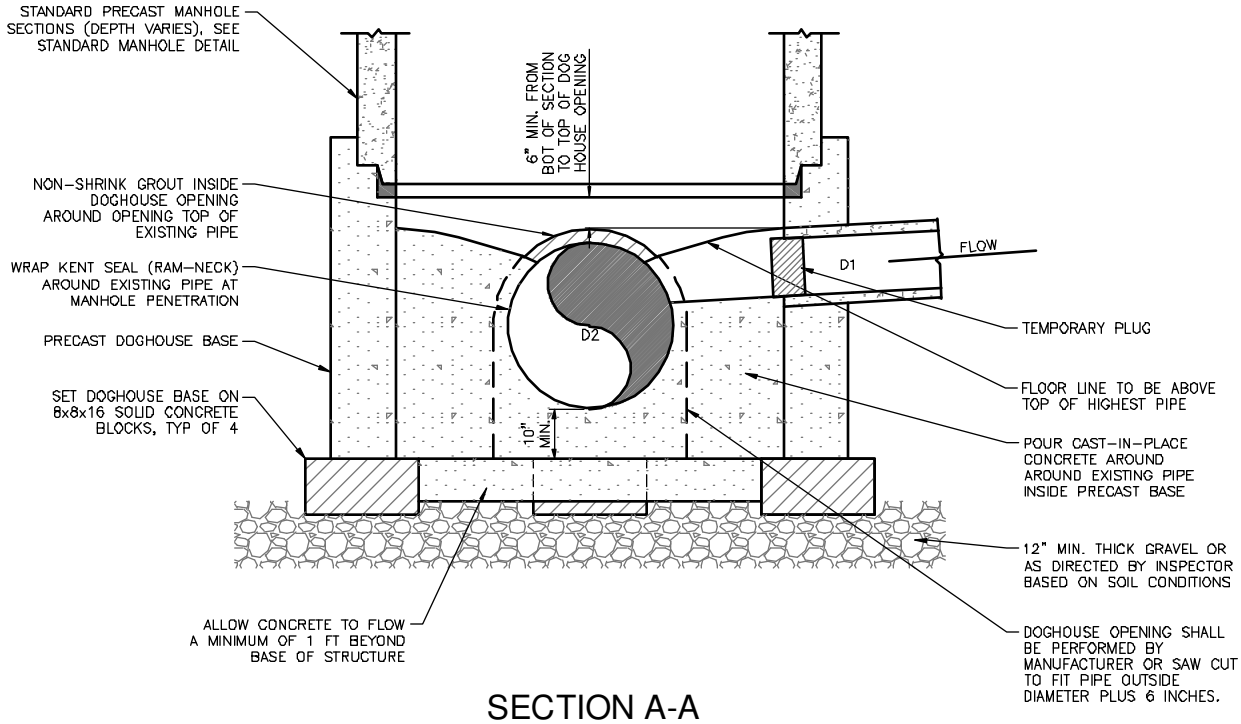
TYPICAL MANHOLE ON EXISTING PIPE

VINEYARD

STANDARD DRAWING NUMBER:	19
CAD DWG:	STANDARD
PLOT SCALE:	DRAWING
DRAWN BY:	JMM
DESIGN BY:	CRW
CHECKED BY:	DEO
ADOPTED DATE:	SEPTEMBER 1, 2016



PLAN VIEW



SECTION A-A

NOTES:

1. IF GRADE ALLOWS, INVERT D1 SHALL MATCH THE 0.75 DEPTH POINT OF D2. OTHERWISE, MATCH TOP OF PIPE FOR D1 TO TOP OF PIPE OF D2 AS APPROVED BY INSPECTOR.
2. AFTER ALL GRADING AROUND MANHOLE HAS BEEN COMPLETED AND FINAL SURFACING IS IN PLACE, REMOVE DEBRIS AND TEMPORARY PLUGS OR PLYWOOD FROM INSIDE OF MANHOLES.
3. IF MANHOLE IS TO BE POURED IN PLACE, FOLLOW SAME PATTERN AS SHOWN EXCEPT USE 10" MIN. WALL THICKNESS.
4. CONTACT INSPECTOR 48 HOURS (2 BUSINESS DAYS) PRIOR TO CONSTRUCTION.
5. STUBS FOR FUTURE CONNECTIONS SHALL BE PLUGGED UNTIL ACTIVATION IS APPROVED BY INSPECTOR.

JUB

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REVISION

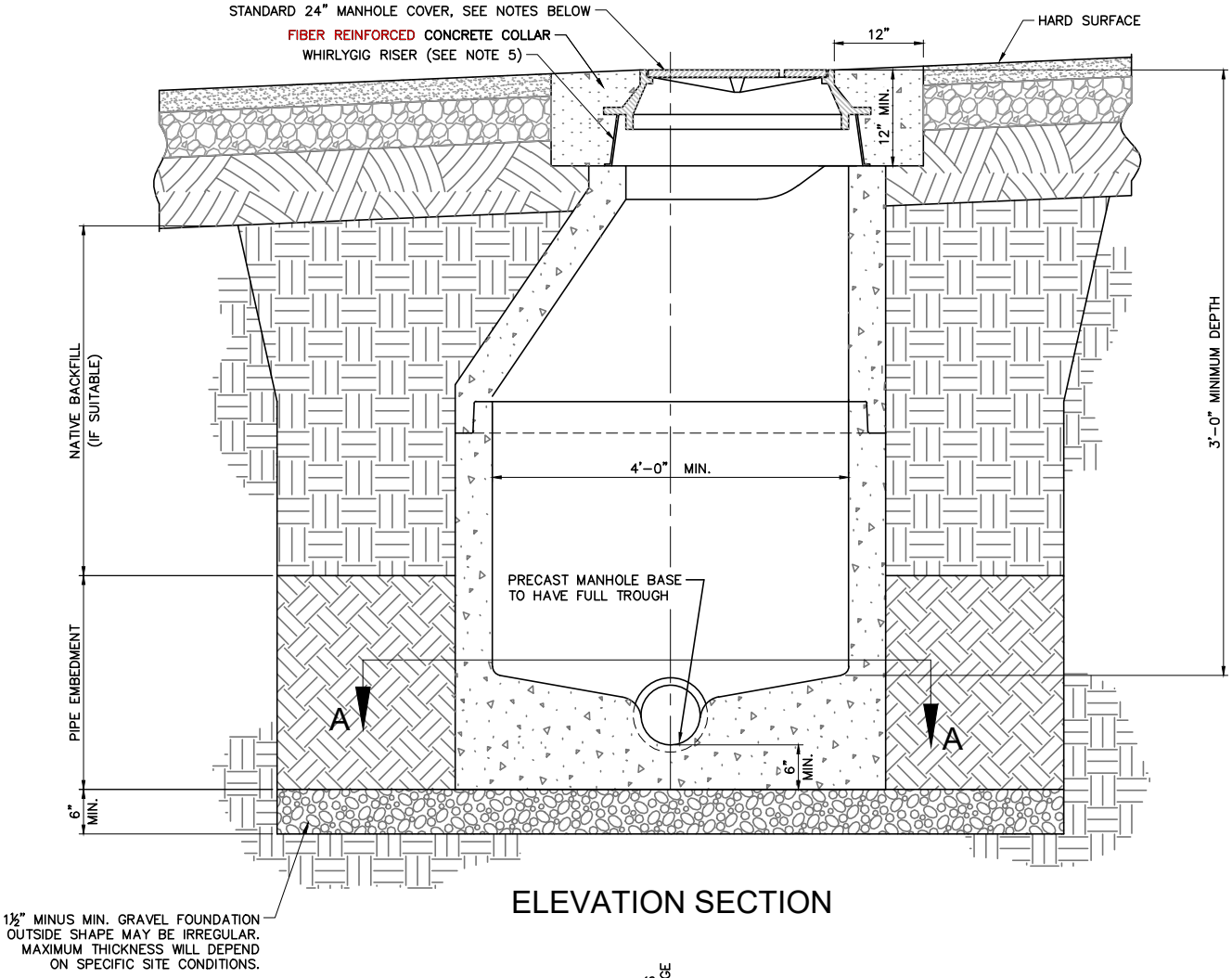
NO.	DESCRIPTION	BY	APR.	DATE
1	STANDARDS UPDATE	JMM	DEO	8/08/16
2				
3				
4				

VINEYARD
STAY CONNECTED

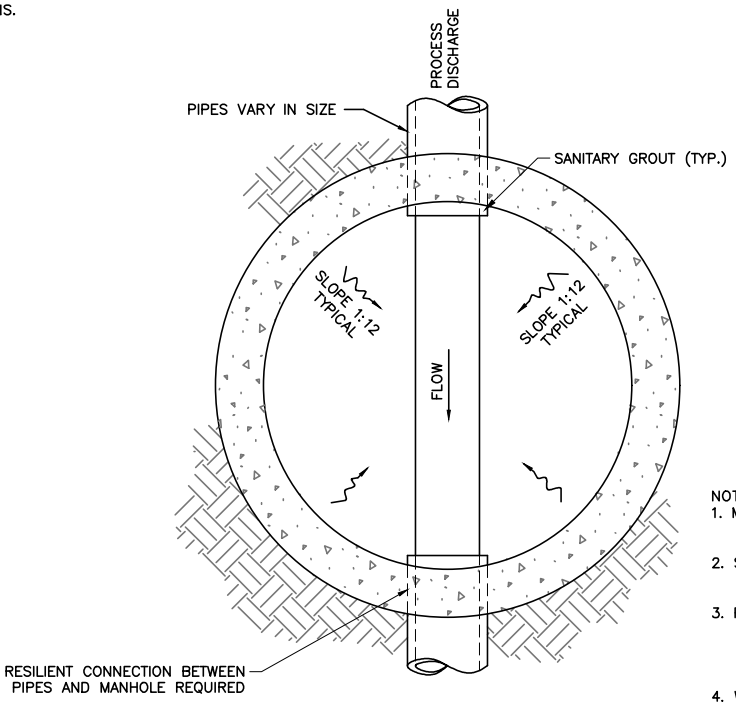
TYPICAL MANHOLE ON EXISTING PIPE

TOWN OF VINEYARD

STANDARD DRAWING NUMBER:	14A
CAD DWG:	V_STD_DWGS
PLOT SCALE:	1.000
DRAWN BY:	JMM
DESIGN BY:	CRW
CHECKED BY:	DEO
ADOPTED DATE:	SEPTEMBER 1, 2016



ELEVATION SECTION



SECTION A-A

NOTES:
1. MANHOLE COVER TO CONTAIN ONE PICK HOLE. SEE SPECIFICATION DIVISION 5 FOR COVER LABEL. D&L SUPPLY P/N A-1180 VENTED (OR EQUAL).
2. STEPS SHALL BE MADE OF COPOLYMER POLYPROPYLENE CONFORMING TO ASTM D-4101. REINFORCING STEEL TO BE DEFORMED ½" DIAMETER GRADE 60 ROD.
3. FLAT LIDS MAY BE USED IN LIEU OF ECCENTRIC CONES WHERE NECESSARY. FLAT LIDS SHALL BE OF ECCENTRIC DESIGN AND MEET H20 LIVE LOADING. NO FLAT RING AND COVERS WILL BE ALLOWED UNLESS APPROVED BY PUBLIC WORKS.
4. WHIRLYGIG RISER OR EQUAL SHALL BE USED INSTEAD OF GRADE RINGS TO ADJUST MANHOLE RING AND COVER TO GRADE.
5. 18" MAXIMUM RISER HEIGHT.
6. REFER TO DESIGN CRITERIA FOR INVERT REQUIREMENTS.

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REVISION

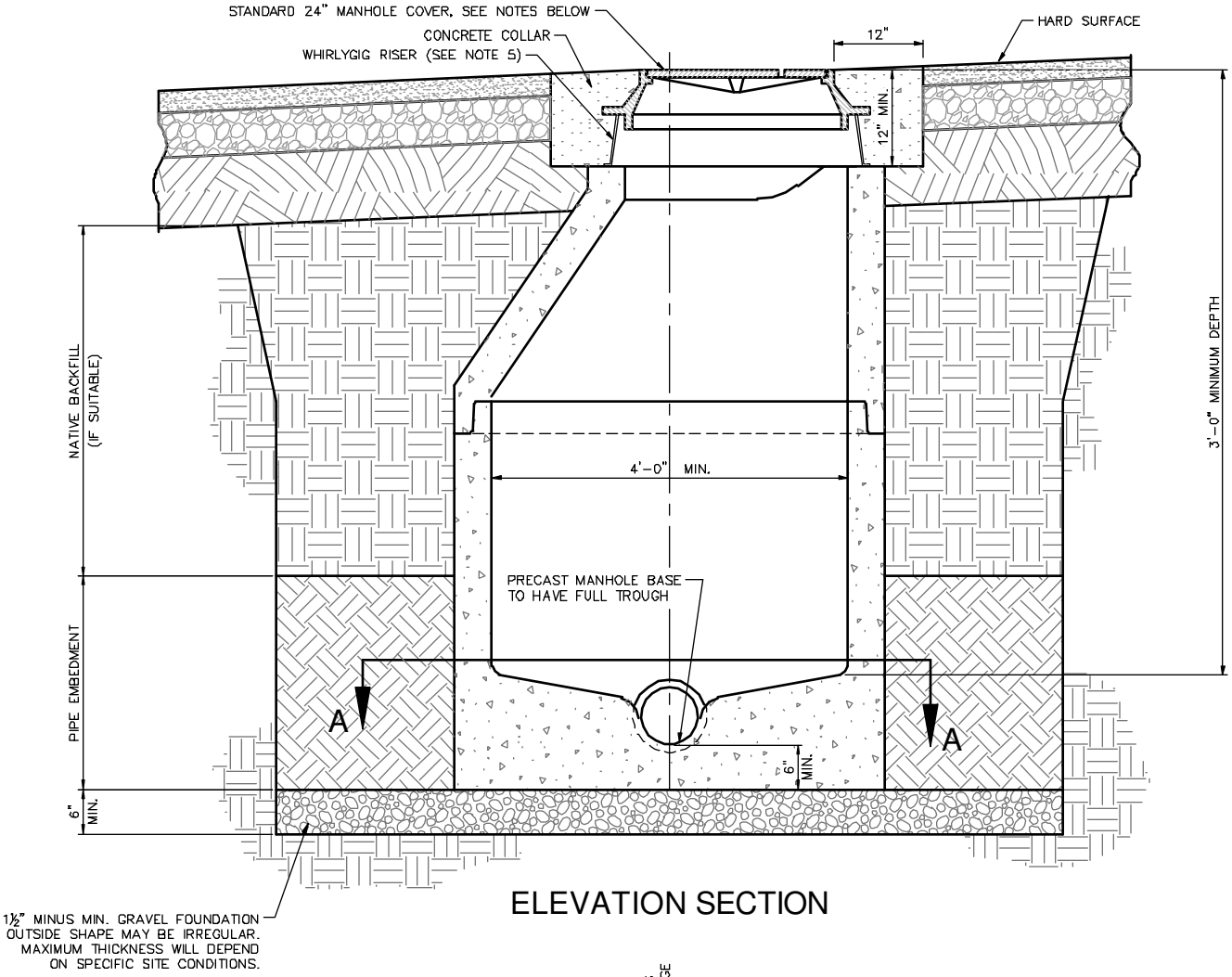
NO.	DESCRIPTION	BY	APR.	DATE
1	STANDARDS UPDATE	JMM	DEO	6/08/16
2	HANSEN, ALLEN & LUCE	DCL	CMT	9/12/25
3				
4				

VINEYARD
STAY CONNECTED

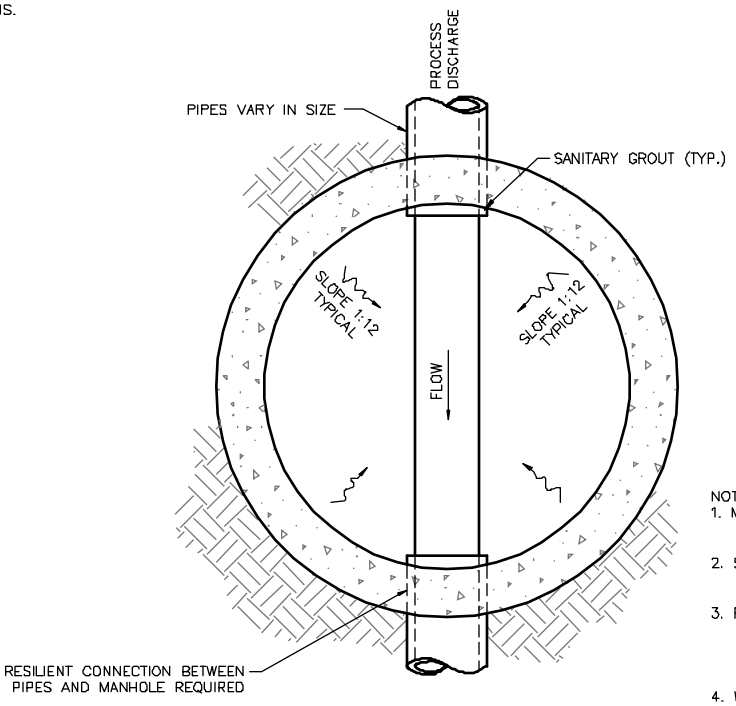
TYPICAL SAMPLING MANHOLE

VINEYARD

STANDARD DRAWING NUMBER:	20
CAD DWG:	STANDARD
PLOT SCALE:	DRAWING
DRAWN BY:	JMM
DESIGN BY:	CRW
CHECKED BY:	DEO
ADOPTED DATE:	SEPTEMBER 1, 2016



ELEVATION SECTION



SECTION A-A

NOTES:
1. MANHOLE COVER TO CONTAIN ONE PICK HOLE. SEE SPECIFICATION DIVISION 5 FOR COVER LABEL. D&L SUPPLY P/N A-1180 VENTED (OR EQUAL).
2. STEPS SHALL BE MADE OF COPOLYMER POLYPROPYLENE CONFORMING TO ASTM D-4101. REINFORCING STEEL TO BE DEFORMED ½" DIAMETER GRADE 60 ROD.
3. FLAT LIDS MAY BE USED IN LIEU OF ECCENTRIC CONES WHERE NECESSARY. FLAT LIDS SHALL BE OF ECCENTRIC DESIGN AND MEET H20 LIVE LOADING. NO FLAT RING AND COVERS WILL BE ALLOWED UNLESS APPROVED BY PUBLIC WORKS.
4. WHIRLYGIG RISER OR EQUAL SHALL BE USED INSTEAD OF GRADE RINGS TO ADJUST MANHOLE RING AND COVER TO GRADE.
5. 18" MAXIMUM RISER HEIGHT.
6. REFER TO DESIGN CRITERIA FOR INVERT REQUIREMENTS.

STATEMENT OF USE
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REVISION

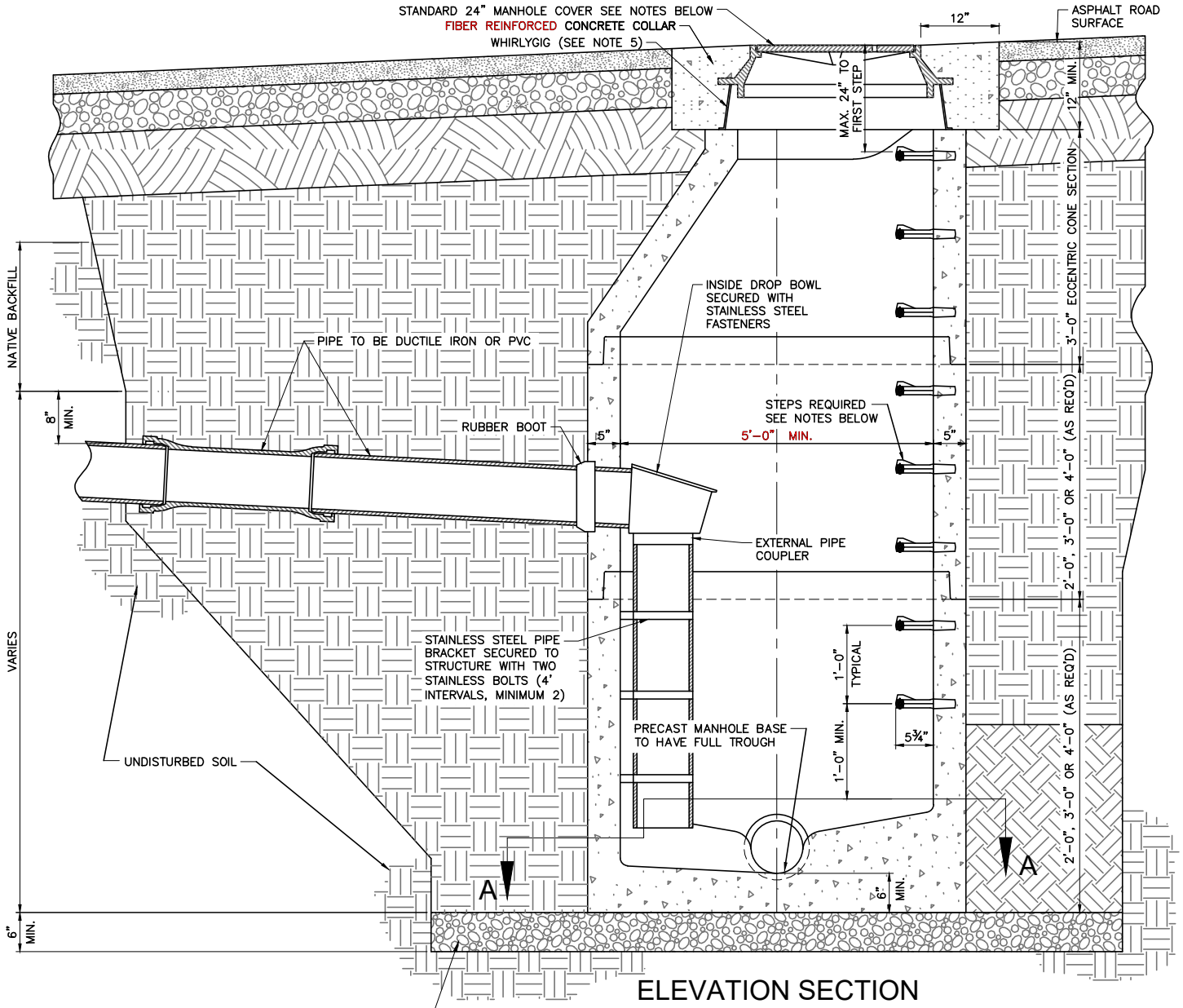
NO.	DESCRIPTION	BY	APR.	DATE
1	STANDARDS UPDATE	JMM	DEO	9/08/16
2				
3				
4				

VINEYARD
STAY CONNECTED

TYPICAL SAMPLING MANHOLE

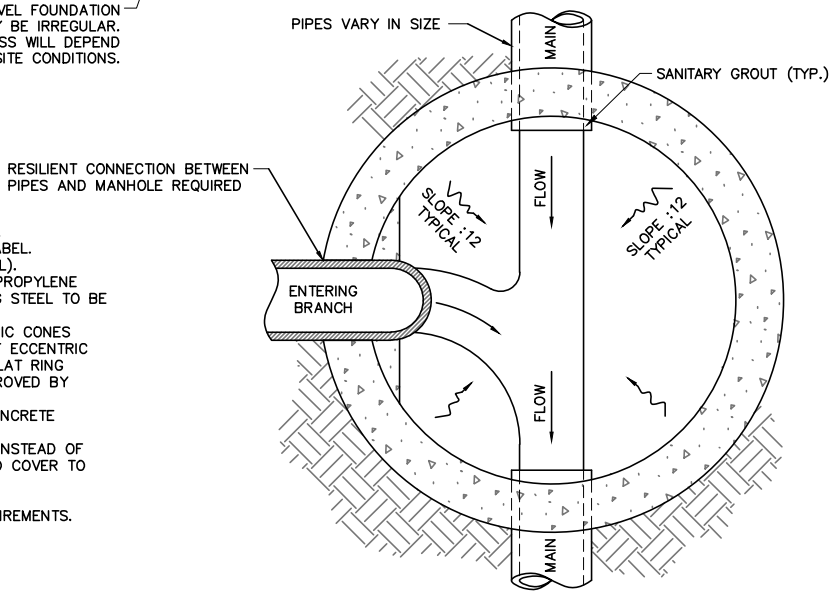
TOWN OF VINEYARD

STANDARD DRAWING NUMBER:	15
CAD DWG:	V_STD_DWGS
PLOT SCALE:	1.000
DRAWN BY:	JMM
DESIGN BY:	CRW
CHECKED BY:	DEO
ADOPTED DATE:	SEPTEMBER 1, 2016



ELEVATION SECTION

1½" MINUS MIN. GRAVEL FOUNDATION OUTSIDE SHAPE MAY BE IRREGULAR. MAXIMUM THICKNESS WILL DEPEND ON SPECIFIC SITE CONDITIONS.



SECTION A-A

NOTES:
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4. USE FERNCO COUPLING TO TRANSITION TO CONCRETE OR PVC PIPE AS APPROPRIATE.
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REVISION

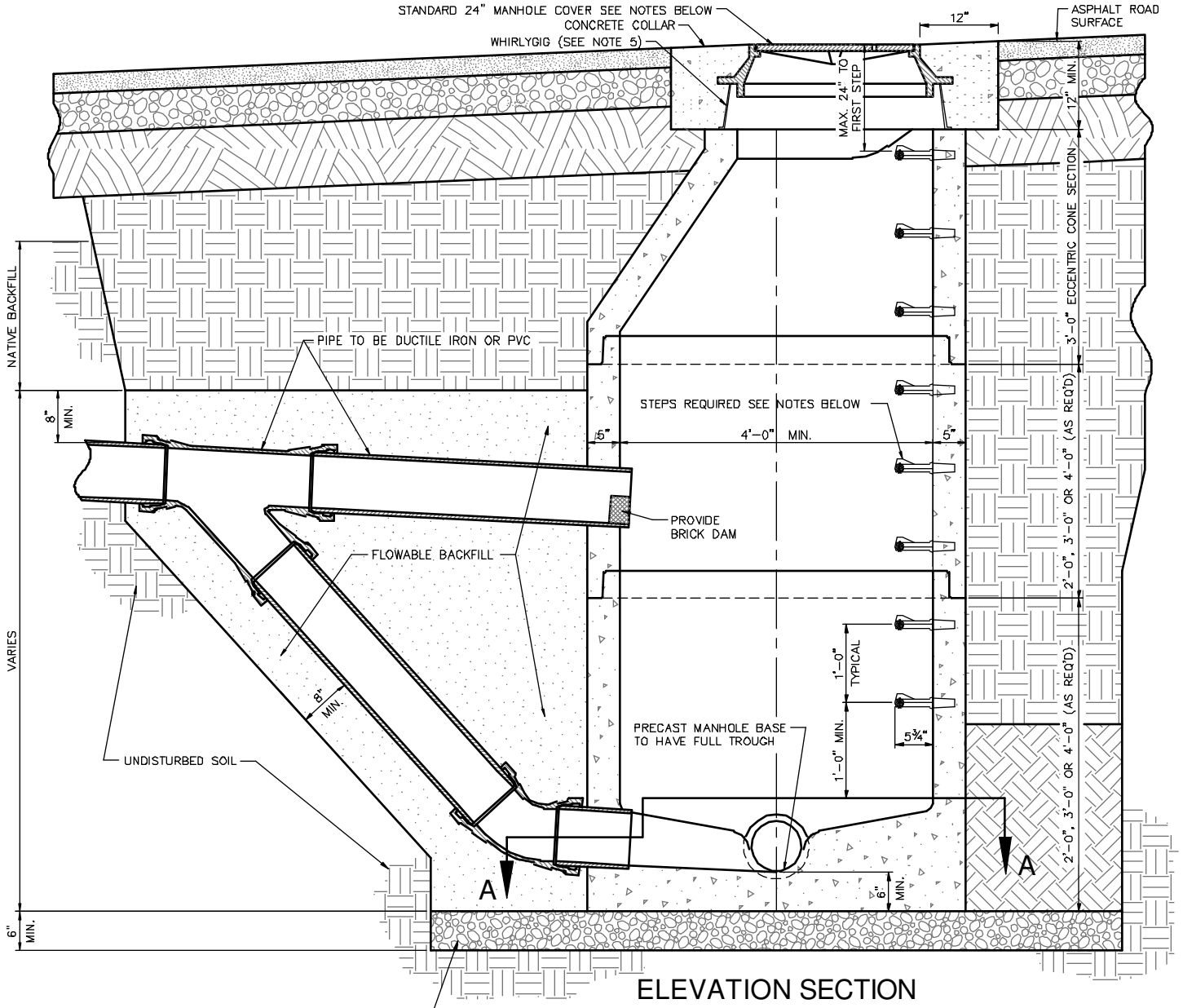
NO.	DESCRIPTION	BY	APR.	DATE
1	STANDARDS UPDATE	JMM	DEO	8/08/16
2	HANSEN, ALLEN & LUCE	DCL	CMT	9/12/25
3				
4				

VINEYARD
STAY CONNECTED

TYPICAL SEWER DROP MANHOLE

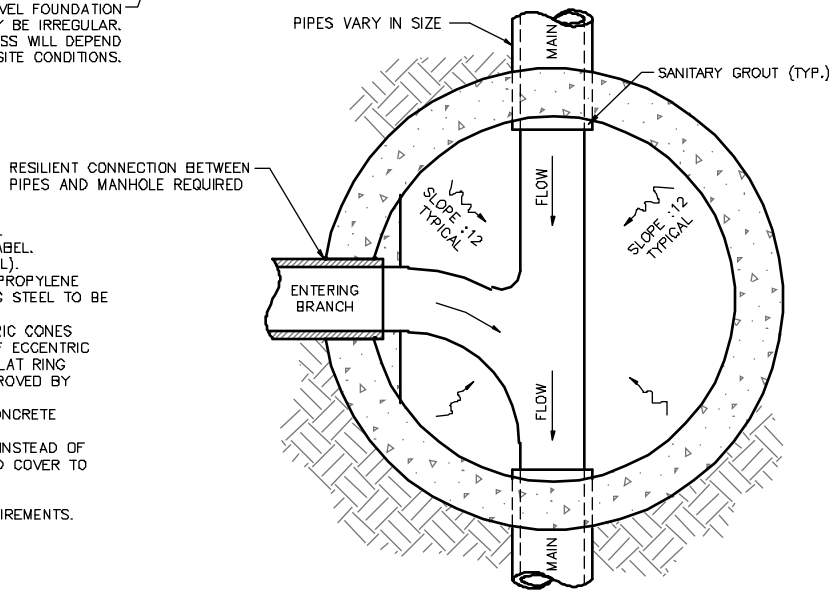
VINEYARD

STANDARD DRAWING NUMBER:	21
CAD DWG:	STANDARD
PLOT SCALE:	DRAWING
DRAWN BY:	JMM
DESIGN BY:	CRW
CHECKED BY:	DEO
ADOPTED DATE:	SEPTEMBER 1, 2016



ELEVATION SECTION

1½" MINUS MIN. GRAVEL FOUNDATION OUTSIDE SHAPE MAY BE IRREGULAR. MAXIMUM THICKNESS WILL DEPEND ON SPECIFIC SITE CONDITIONS.



SECTION A-A

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REVISION

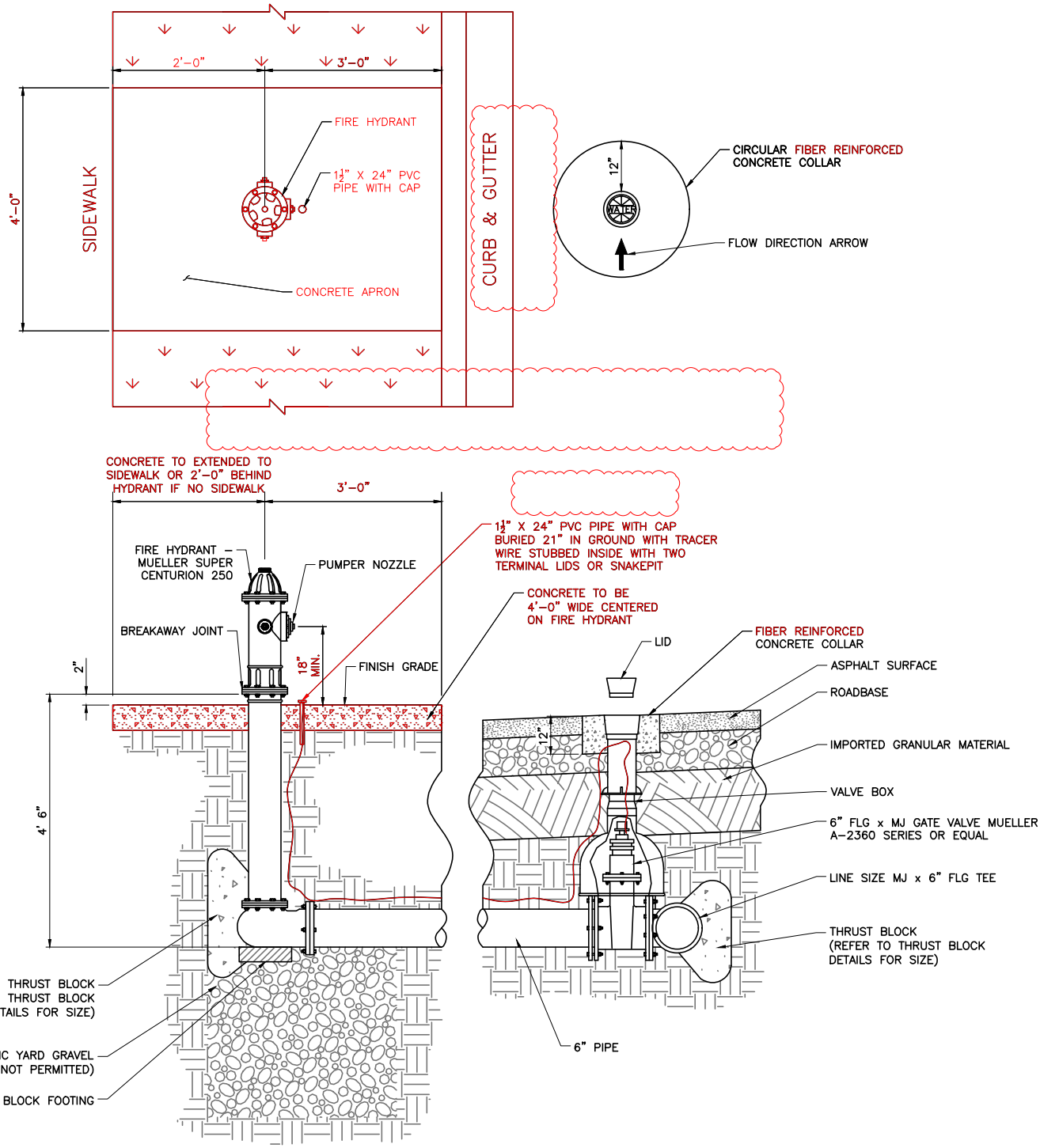
NO.	DESCRIPTION	BY	APR.	DATE
1	STANDARDS UPDATE	JMM	DEO	8/08/16
2				
3				
4				

VINEYARD
STAY CONNECTED

TYPICAL SEWER OUTSIDE DROP MANHOLE

TOWN OF VINEYARD

STANDARD DRAWING NUMBER:	16
CAD DWG:	V_STD_DWGS
PLOT SCALE:	1.000
DRAWN BY:	JMM
DESIGN BY:	CRW
CHECKED BY:	DEO
ADOPTED DATE:	SEPTEMBER 1, 2016



FIRE HYDRANT & WATER VALVE

NOTES:

1. BOLTS: APPLY ONE (1) COAT OF FM2 GREASE (FOOD GRADE) TO ALL EXPOSED SURFACES OF BOLTS AND TO ALL BOLT THREADS AFTER INSTALLATION OF PIPING, FITTINGS, VALVES, AND COUPLINGS.

2. VALVES, FITTINGS, CONNECTIONS, ETC.: ENCASE ALL BURIED DUCTILE IRON VALVES, FITTINGS, CONNECTIONS AND SPECIALTIES IN MINIMUM 8 MIL. BLACK POLYETHYLENE SHEETS IN ACCORDANCE WITH AWWA C-105. SECURE POLYETHYLENE SHEETS TO THE PIPE AS SPECIFIED ABOVE.

3. DUCTILE IRON PIPE: ENCASE BURIED DUCTILE IRON PIPE IN MINIMUM 8 MIL. POLYETHYLENE SHEETS IN ACCORDANCE WITH AWWA C105 IN ALL AREAS AND SOIL TYPES AS SHOWN ON THE PROJECT PLANS OR AS SPECIFIED BY THE ENGINEER.

4. NO RISER KITS SHALL BE INSTALLED ABOVE FINISHED GRADE.

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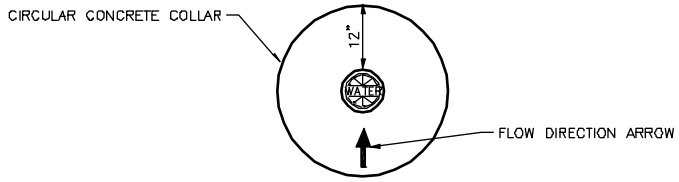
NO.	DESCRIPTION	BY	APR.	DATE
1	STANDARDS UPDATE	JMM	DEO	8/08/16
2	HANSEN, ALLEN & LUCE	DCL	CMT	9/12/25
3				
4				

VINEYARD
STAY CONNECTED

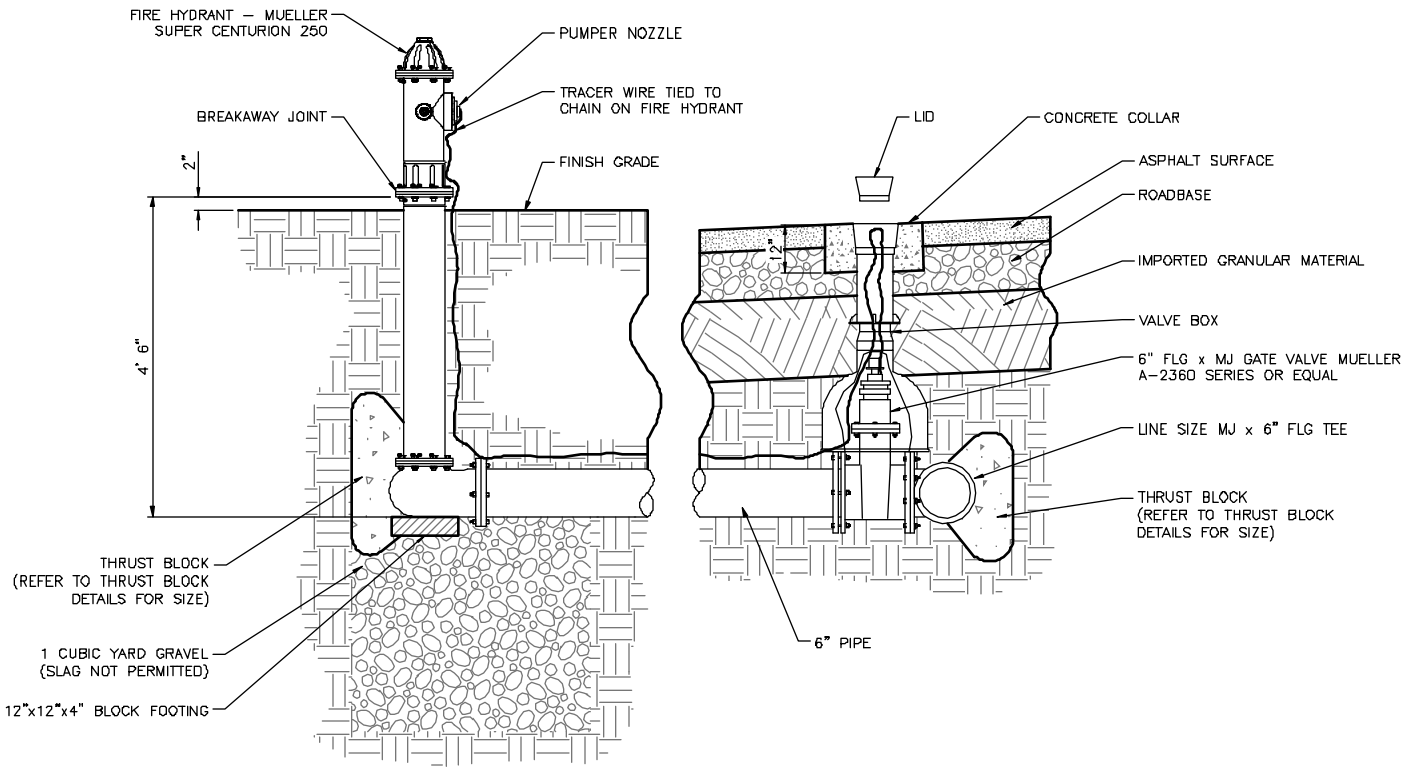
FIRE HYDRANT AND WATER VALVE DETAIL

VINEYARD

STANDARD DRAWING NUMBER:	22
CAD DWG:	STANDARD
PLOT SCALE:	DRAWING
DRAWN BY:	JMM
DESIGN BY:	CRW
CHECKED BY:	DEO
ADOPTED DATE:	SEPTEMBER 1, 2016



CULINARY WATER VALVE CONCRETE COLLAR



FIRE HYDRANT & WATER VALVE

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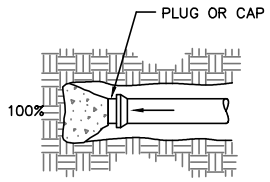
NO.	DESCRIPTION	BY	APR.	DATE
1	STANDARDS UPDATE	JMM	DEO	8/08/16
2				
3				
4				

VINEYARD
STAY CONNECTED

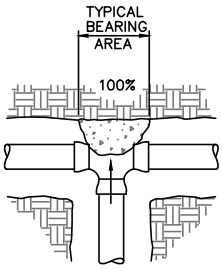
FIRE HYDRANT AND WATER VALVE DETAIL

TOWN OF VINEYARD

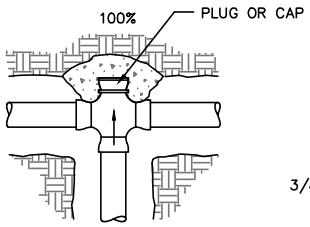
STANDARD DRAWING NUMBER:	17
CAD DWG:	V_STD_DWGS
PLOT SCALE:	1.000
DRAWN BY:	JMM
DESIGN BY:	CRW
CHECKED BY:	DEO
ADOPTED DATE:	SEPTEMBER 1, 2016



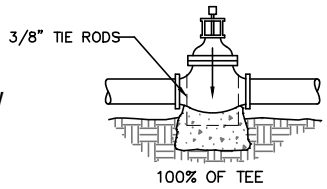
DEAD END PLAN VIEW



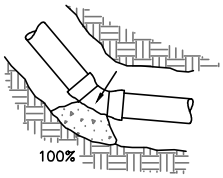
TEE PLAN VIEW



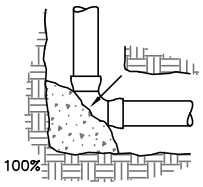
CROSS W/PLUG PLAN VIEW



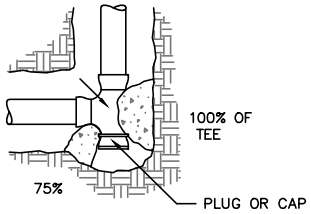
VALVE ELEVATION VIEW



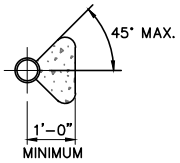
ELBOW PLAN VIEW



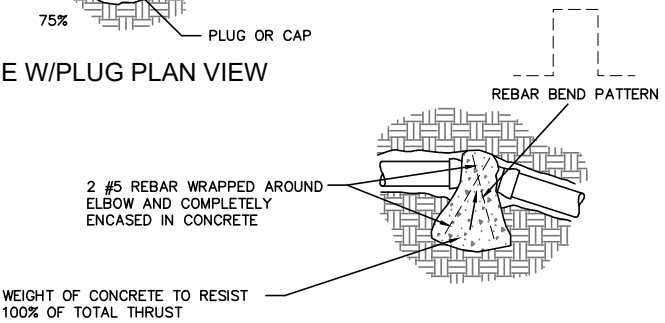
ELBOW PLAN VIEW



TEE W/PLUG PLAN VIEW



TYPICAL SECTION
THRU THRUST BLOCK



GRAVITY THRUST BLOCK
ELEVATION VIEW

NOTES:
1. THE FIGURE (100%) AT THE THRUST BLOCK INDICATES PER CENT OF TOTAL THRUST TO BE APPLIED FOR BEARING AREA.
2. THE ARROW (——→) INDICATES THRUST DIRECTION.
3. CONCRETE FOR THRUST BLOCKS TO BE 3000 P.S.I. .
4. ALL MJ AND FLANGED FITTINGS TO BE WRAPPED WITH 8 MIL POLYETHYLENE PRIOR TO PLACING CONCRETE THRUST BLOCK
5. WHERE SUFFICIENT BEARING SURFACE IS NOT AVAILABLE FOR THRUST BLOCK, MEGALUG THRUST RESTRAINING GLANDS MAY BE USED. MEGALUG THRUST RESTRAINING GLANDS SHALL BE INSTALLED PER MANUFACTURER'S RECOMENDATION INCLUDING ANY JOINT RESTRAINT. ANY USE OF MEGALUG OR CHANGE TO THE THRUST BEARING CHART MUST BE REVIEWED BY THE ENGINEER.
6. MEGALUGS OR EQUAL REQ'D AT ALL FITTING TO PIPE JOINTS.

TABLE 1

USE WHEN LINE PRESSURE AND SOIL BEARING STRENGTH ARE KNOWN.

LINE PRESSURE: psi
TEST PRESSURE (sf = 1.5): psi
SOIL BEARING STRENGTH: psf
(SOIL BEARING STRENGTH DETERMINED FROM A GEOTECHNICAL INVESTIGATION.)

SIDE THRUST (lbs.) PER 1 PSI LINE PRESSURE

PIPE SIZE (")	PIPE AREA (sq. in.)	DEAD END OR TEE (lbs.)	90° BEND (lbs.)	45° BEND (lbs.)	22.5° BEND (lbs.)	11.25° BEND (lbs.)
4	14.39	22	31	17	9	5
6	31.17	49	69	37	19	10
8	56.88	86	121	66	34	17
10	86.92	131	185	100	51	26
12	124.29	187	264	143	73	37
14	168.33	253	358	194	99	50
16	219.56	330	466	253	129	65
18	277.59	417	589	319	163	82
20	342.41	514	727	394	201	101
24	490.09	736	1040	563	287	145
30	757.69	1137	1608	870	444	223

TABLE 2

USE WHEN LINE PRESSURE AND SOIL BEARING STRENGTH ARE NOT KNOWN.

LINE PRESSURE: 120 psi
TEST PRESSURE (sf = 1.5): 180 psi
SOIL BEARING STRENGTH: 1,500 psi

AREA OF BEARING REQUIRED (sq. ft.)

PIPE SIZE (")	PIPE AREA (sq. in.)	DEAD END OR TEE (lbs.)	90° BEND (lbs.)	45° BEND (lbs.)	22.5° BEND (lbs.)	11.25° BEND (lbs.)
4	14.39	1.7	2.4	1.3	0.7	0.3
6	31.17	3.9	5.5	3.0	1.5	0.8
8	56.88	6.8	9.7	5.2	2.7	1.3
10	86.92	10.4	14.8	8.0	4.1	2.0
12	124.29	14.9	21.1	11.4	5.8	2.9
14	168.33	20.2	28.6	15.5	7.9	4.0
16	219.56	26.3	37.3	20.2	10.3	5.2
18	277.59	33.3	47.1	25.5	13.0	6.5
20	342.41	41.1	58.1	31.4	16.0	8.1
24	490.09	58.8	83.2	45.0	22.0	11.5
30	757.69	90.9	128.6	69.6	35.5	17.8

EXAMPLE FOR TABLE 1:
8-INCH 90° BEND
LINE PRESSURE = 100 psi
FROM TABLE: THRUST PER 1 psi =121 lbs.
CALCULATE TOTAL THRUST: 100 psi x 121 lbs/psi = 12,100 lbs
SOIL BEARING STRENGTH = 2,000 psf
AREA OF BEARING REQUIRED FOR THRUST BLOCK IS 6.1 sq. ft. (12,100 lbs / 2,000 psf = 6.1 sf. ft.)

* PIPE AREA IS BASED ON LARGEST ACTUAL INSIDE DIAMETER OF DUCTILE IRON PIPE.

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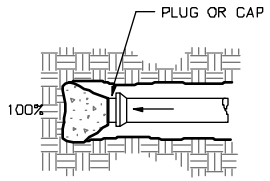
NO.	DESCRIPTION	BY	APR.	DATE
1	STANDARDS UPDATE	JMM	DEO	8/08/16
2	HANSEN, ALLEN & LUCE	DCL	CMT	9/12/25
3				
4				

VINEYARD
STAY CONNECTED

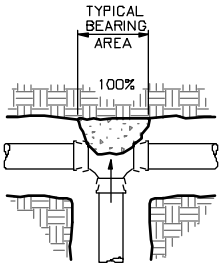
THRUST BLOCK DETAILS

VINEYARD

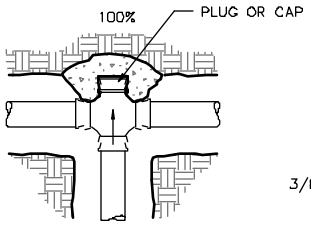
STANDARD DRAWING NUMBER: 23
CAD DWG: STANDARD
PLOT SCALE: DRAWING
DRAWN BY: JMM
DESIGN BY: CRW
CHECKED BY: DEO
ADOPTED DATE: SEPTEMBER 1, 2016



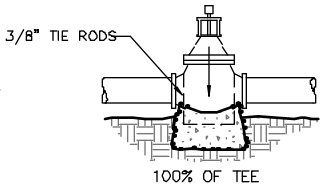
DEAD END PLAN VIEW



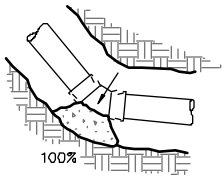
TEE PLAN VIEW



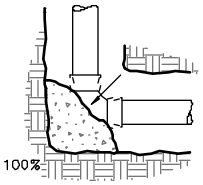
CROSS W/PLUG PLAN VIEW



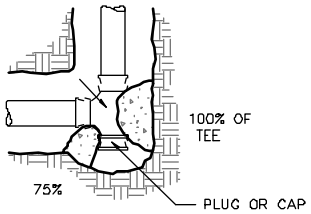
VALVE ELEVATION VIEW



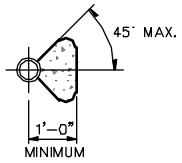
ELBOW PLAN VIEW



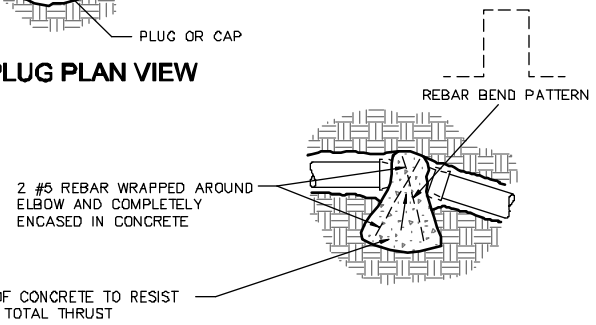
ELBOW PLAN VIEW



TEE W/PLUG PLAN VIEW



TYPICAL SECTION THRU THRUST BLOCK



GRAVITY THRUST BLOCK ELEVATION VIEW

NOTES:
1. THE FIGURE (100%) AT THE THRUST BLOCK INDICATES PER CENT OF TOTAL THRUST TO BE APPLIED FOR BEARING AREA.
2. THE ARROW (⟶) INDICATES THRUST DIRECTION.
3. CONCRETE FOR THRUST BLOCKS TO BE 3000 P.S.I. .
4. ALL MJ AND FLANGED FITTINGS TO BE WRAPPED WITH 8 MIL POLYETHYLENE PRIOR TO PLACING CONCRETE THRUST BLOCK
5. WHERE SUFFICIENT BEARING SURFACE IS NOT AVAILABLE FOR THRUST BLOCK, MEGALUG THRUST RESTRAINING GLANDS MAY BE USED. MEGALUG THRUST RESTRAINING GLANDS SHALL BE INSTALLED PER MANUFACTURER'S RECOMENDATION INCLUDING ANY JOINT RESTRAINT. ANY USE OF MEGALUG OR CHANGE TO THE THRUST BEARING CHART MUST BE REVIEWED BY THE ENGINEER.
6. MEGALUGS OR EQUAL REQ'D AT ALL FITTING TO PIPE JOINTS.

TABLE 1

USE WHEN LINE PRESSURE AND SOIL BEARING STRENGTH ARE KNOWN.

LINE PRESSURE: psi
TEST PRESSURE (sf = 1.5): psi
SOIL BEARING STRENGTH: psf
(SOIL BEARING STRENGTH DETERMINED FROM A GEOTECHNICAL INVESTIGATION.)

SIDE THRUST (lbs.) PER 1 PSI LINE PRESSURE

PIPE SIZE (")	PIPE AREA (sq. in.)	DEAD END OR TEE (lbs.)	90° BEND (lbs.)	45° BEND (lbs.)	22.5° BEND (lbs.)	11.25° BEND (lbs.)
4	14.39	22	31	17	9	5
6	31.17	49	69	37	19	10
8	56.88	86	121	66	34	17
10	86.92	131	185	100	51	26
12	124.29	187	264	143	73	37
14	168.33	253	358	194	99	50
16	219.56	330	466	253	129	65
18	277.59	417	589	319	163	82
20	342.41	514	727	394	201	101
24	490.09	736	1040	563	287	145
30	757.69	1137	1608	870	444	223

TABLE 2

USE WHEN LINE PRESSURE AND SOIL BEARING STRENGTH ARE NOT KNOWN.

LINE PRESSURE: 120 psi
TEST PRESSURE (sf = 1.5): 180 psi
SOIL BEARING STRENGTH: 1,500 psi

AREA OF BEARING REQUIRED (sq. ft.)

PIPE SIZE (")	PIPE AREA (sq. in.)	DEAD END OR TEE (lbs.)	90° BEND (lbs.)	45° BEND (lbs.)	22.5° BEND (lbs.)	11.25° BEND (lbs.)
4	14.39	1.7	2.4	1.3	0.7	0.3
6	31.17	3.9	5.5	3.0	1.5	0.8
8	56.88	6.8	9.7	5.2	2.7	1.3
10	86.92	10.4	14.8	8.0	4.1	2.0
12	124.29	14.9	21.1	11.4	5.8	2.9
14	168.33	20.2	28.6	15.5	7.9	4.0
16	219.56	26.3	37.3	20.2	10.3	5.2
18	277.59	33.3	47.1	25.5	13.0	6.5
20	342.41	41.1	58.1	31.4	16.0	8.1
24	490.09	58.8	83.2	45.0	22.0	11.5
30	757.69	90.9	128.6	69.6	35.5	17.8

EXAMPLE FOR TABLE 1:
8-INCH 90° BEND
LINE PRESSURE = 100 psi
FROM TABLE: THRUST PER 1 psi =121 lbs.
CALCULATE TOTAL THRUST: 100 psi x 121 lbs/psi = 12,100 lbs
SOIL BEARING STRENGTH = 2,000 psf
AREA OF BEARING REQUIRED FOR THRUST BLOCK IS 6.1 sq. ft. (12,100 lbs / 2,000 psf = 6.1 sf. ft.)

* PIPE AREA IS BASED ON LARGEST ACTUAL INSIDE DIAMETER OF DUCTILE IRON PIPE.

JUB

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REVISION

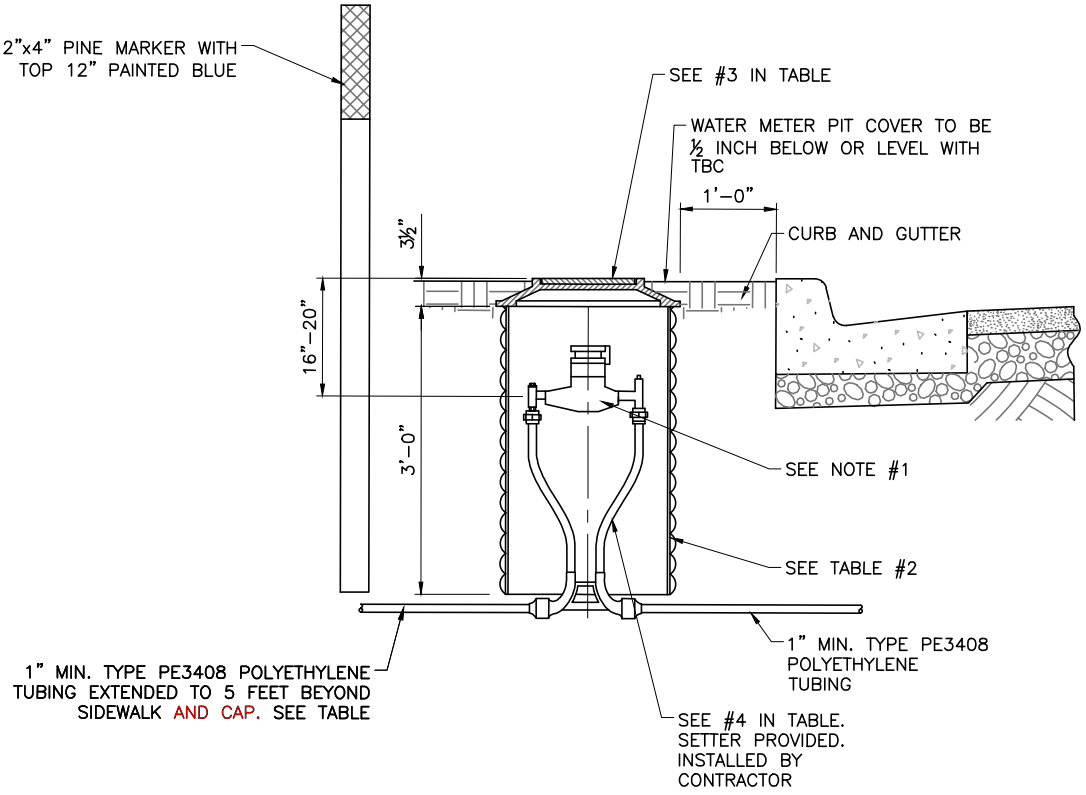
NO.	DESCRIPTION	BY	APR.	DATE
1	STANDARDS UPDATE	JMM	DEO	8/08/16
2				
3				
4				

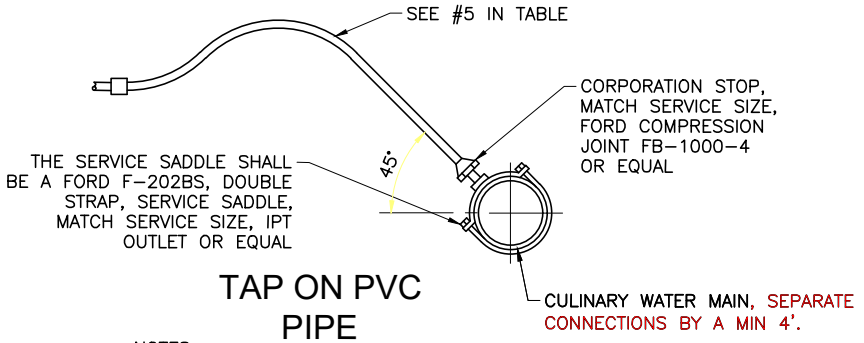
VINEYARD
STAY CONNECTED

THRUST BLOCK DETAILS

TOWN OF VINEYARD

STANDARD DRAWING NUMBER:	18
CAD DWG:	V_STD_DWGS
PLOT SCALE:	1.000
DRAWN BY:	JMM
DESIGN BY:	CRW
CHECKED BY:	DEO
ADOPTED DATE:	SEPTEMBER 1, 2016





TAP ON PVC PIPE

NOTES:

1. ¾" – 1" METERS PROVIDED AND INSTALLED BY CITY.
   1½" – 2" METERS PROVIDED BY CITY, INSTALLED BY CONTRACTOR.
2. WATER SERVICE TO BE LOCATED PER APPROVED UTILITY PLAN.
3. ALL CONNECTIONS SHALL BE MADE USING PACK JOINTS (COMPRESSION) TYPE FITTINGS WITH INSERTS.
4. NO. 14 GAUGE COPPER TRACER WIRE REQUIRED, ATTACHED TO WIRE AT MAIN AND EXTENDED INTO METER BOX.
5. WATER METER TO BE LOCATED 2' MIN. FROM DRIVEWAYS.

TABLE

	1	2	3	4	5
METER SIZE	BADGER METER MODEL	METER BOX SIZE, ADS/HDPE WHITE	LID D&L FOUNDRY 2" HOLE *	FORD COPPERSETTERS PART # *	
¾"	M–25	21" x 36"	L–2244	VBHC7318W4444QNL	1" POLY
1"	M–70	21" x 36"	L–2244	VBHC7418W4444QNL	1" POLY
1½"	M–120	30" DIA. x 30" DEEP	B–5076 w/ PICK HOLE	VBH76181166NL	1½" POLY
2"	M–170	30" DIA. x 30" DEEP	B–5076 w/ PICK HOLE	VBH77181177NL	2" POLY

* OR EQUIVALENT UPON APPROVAL BY TOWN/CITY

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REVISION

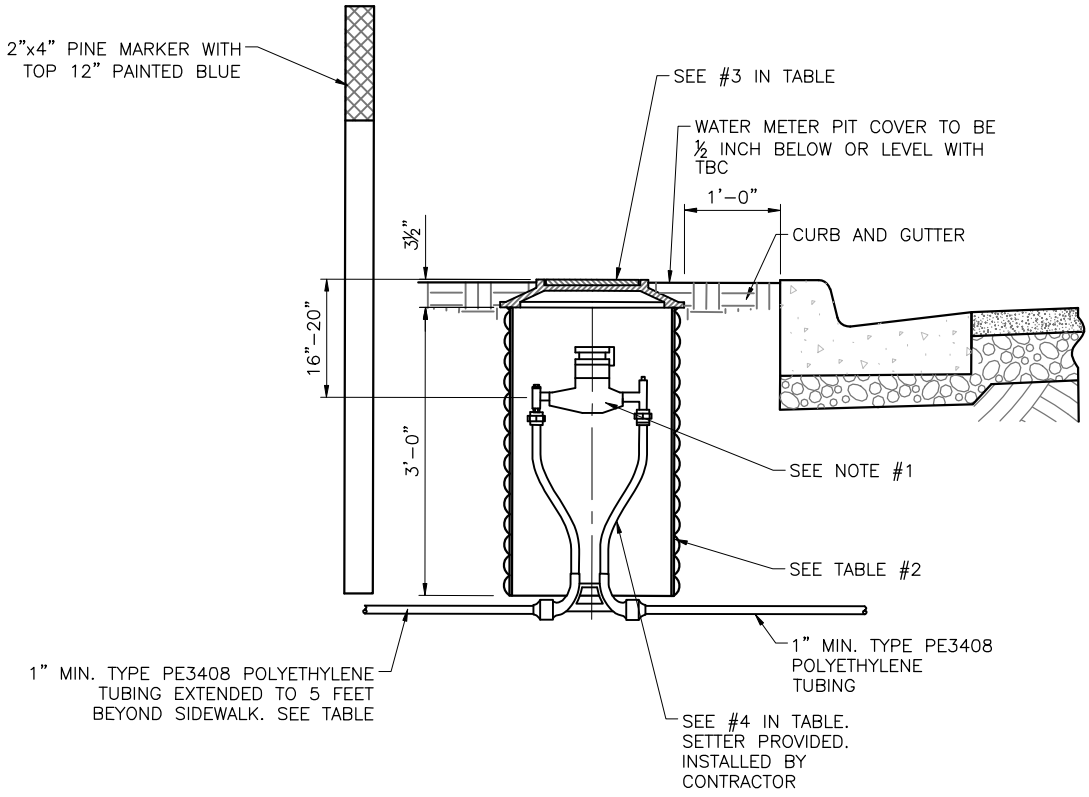
NO.	DESCRIPTION	BY	APR.	DATE
1	STANDARDS UPDATE	JMM	DEO	8/08/16
2	HANSEN, ALLEN & LUCE	DCL	CMT	9/12/25
3				
4				

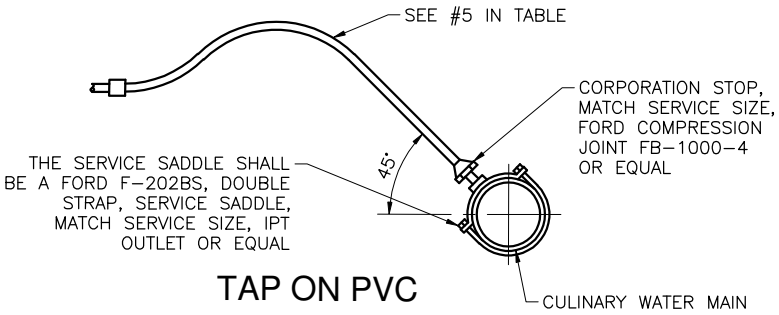
VINEYARD
STAY CONNECTED

TYPICAL CULINARY WATER CONNECTION

VINEYARD

STANDARD DRAWING NUMBER: 24
CAD DWG: STANDARD
PLOT SCALE: DRAWING
DRAWN BY: JMM
DESIGN BY: CRW
CHECKED BY: DEO
ADOPTED DATE: SEPTEMBER 1, 2016





TAP ON PVC PIPE

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TABLE

	1	2	3	4	5
METER SIZE	BADGER METER MODEL	METER BOX SIZE, ADS/HDPE WHITE	LID D&L FOUNDRY 2" HOLE *	FORD COPPERSETTERS PART # *	
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1½"	M-120	30" DIA. x 30" DEEP	B-5076 w/ PICK HOLE	VBH76181166NL	1½" POLY
2"	M-170	30" DIA. x 30" DEEP	B-5076 w/ PICK HOLE	VBH77181177NL	2" POLY

* OR EQUIVALENT UPON APPROVAL BY TOWN/CITY

JUB

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REVISION

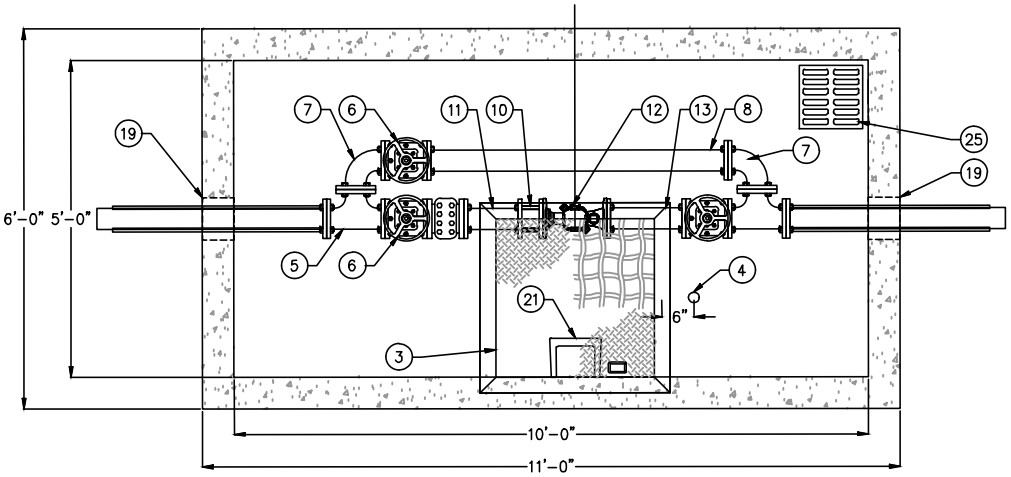
NO.	DESCRIPTION	BY	APR.	DATE
1	STANDARDS UPDATE	JMM	DEO	8/08/16
2				
3				
4				

VINEYARD
STAY CONNECTED

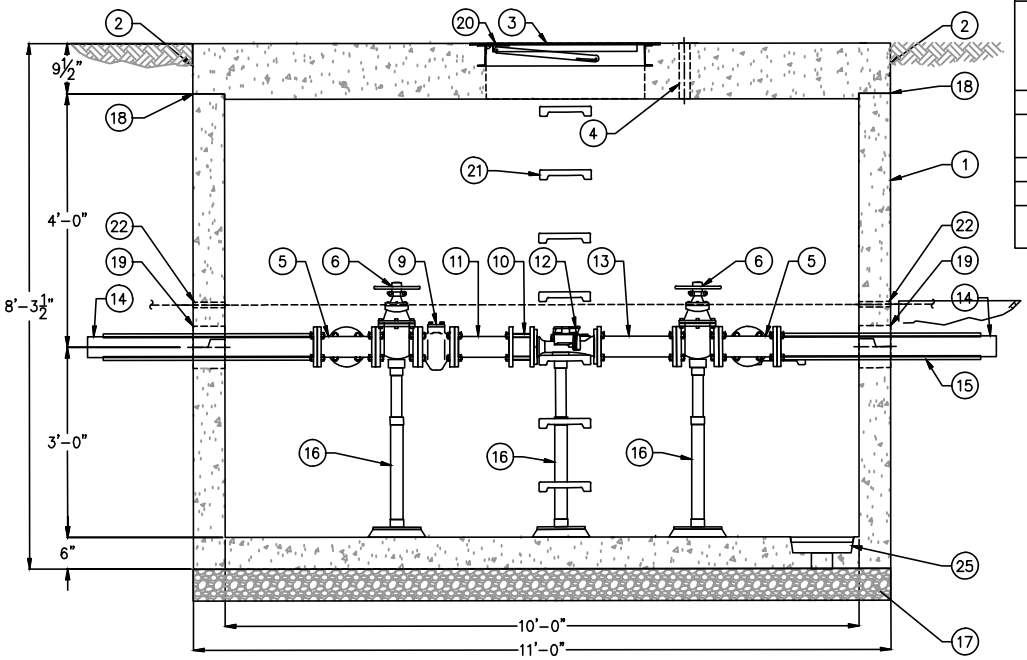
TYPICAL CULINARY WATER CONNECTION

TOWN OF VINEYARD

STANDARD DRAWING NUMBER:	19
CAD DWG:	V_STD_DWGS
PLOT SCALE:	1.000
DRAWN BY:	JMM
DESIGN BY:	CRW
CHECKED BY:	DEO
ADOPTED DATE:	SEPTEMBER 1, 2016

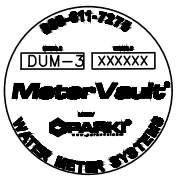


PLAN VIEW



ELEVATION

KEYED NOTES		
MARK	QTY	DESCRIPTION
1	1	5'-0"x10'-0" I.D. PRECAST CONCRETE VAULT
2	1	8" THK FLAT CONCRETE TOP
3	1	30"x30" ALUMINUM HATCHWAY w/ SAFETY NET, EXTEND 6" ABOVE VAULT LID IF COVERED BY LANDSCAPING
4	1	2" HOLE IN LID FOR AMR TRANSMITTER
5	2	3" FLG TEE
6	3	3" NRS GATE VALVE
7	2	3" FLG 90° ELL
8	1	3" FLG x FLG SPOOL, 54" LONG
9	1	3" FLG STRAINER
10	1	3" FLANGE COUPLING ADAPTER
11	1	3" FLG x PE SPOOL, 15" LONG
12	1	3" BADGER E-SERIES G2 ULTRASONIC METER
13	1	3" FLG x FLG SPOOL, 15" LONG
14	2	3" DI STUB-OUT
15	2	GALVANIZED ALL-THREAD RETAINER ROD
16	3	ADJUSTABLE PIPE SUPPORTS
17	1	GRAVEL BED (BY OTHERS)
18	2	ALL JOINTS MADE WATER-TIGHT WITH PLASTIC FLEXIBLE GASKET (RAMNEK)
19	2	PIPE PENETRATION FILLED w/ NON-SHRINK GROUT
20	1	NAMEPLATE INDICATING: MFG: NUMBER: MODEL: DATE MANUFACTURED
21	7	MANHOLE STEPS
22	2	1" PVC PIPE FOR TRACER WIRE (TRACER WIRE PROVIDED BY OTHERS)
23	–	NOT USED
24	–	NOT USED
25	1	12"x12"x3" DEEP SUMP w/ CAST IRON GRATE (OPTIONAL KNOCKOUT TO DRAIN)



NAMEPLATE

SPECIFICATIONS

CONCRETE:
CLASS I/II CONCRETE WITH DESIGN STRENGTH OF 5000 PSI AT 28 DAYS. UNIT IS OF MONOLITHIC CONSTRUCTION AT FLOOR AND FIRST STAGE OF WALL WITH SECTIONAL RISER TO REQUIRED DEPTH. COMBINED ASSEMBLY WEIGHT OF APPROXIMATELY 46,000 LBS.

REINFORCEMENT:
GRADE 60 REINFORCED. STEEL REBAR CONFORMING TO ASTM A615 ON REQUIRED CENTERS OR EQUAL. BAR BENDING & PLACEMENT SHALL COMPLY WITH THE LATEST ACI STANDARDS FOR PRECAST CONCRETE. LIFTING INSERTS SHALL BE INSTALLED PER MANUFACTURER'S REQUIREMENTS.

HATCHWAY:
¼" ALUMINUM DIAMOND PLATE COVER, WITH ¼" EXTRUDED ALUMINUM FRAME. HATCH TO BE FURNISHED WITH 316 STAINLESS STEEL SNAP LOCK & BRASS HINGES.

ENGINEERING DATA:
FIELD EXCAVATION AND PREPARATION SHALL BE COMPLETED PRIOR TO DELIVERY OF ASSEMBLY. USE DIMENSIONAL DATA AS SHOWN. PIPE, VALVES AND FITTING OF THE ASSEMBLY ARE APPROVED BY ONE OR MORE OF THE FOLLOWING ASSOCIATIONS

STATEMENT OF USE

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NO.	DESCRIPTION	BY	APR.	DATE
1	HANSEN, ALLEN & LUCE	URH	CMT	9/12/25
2				
3				
4				

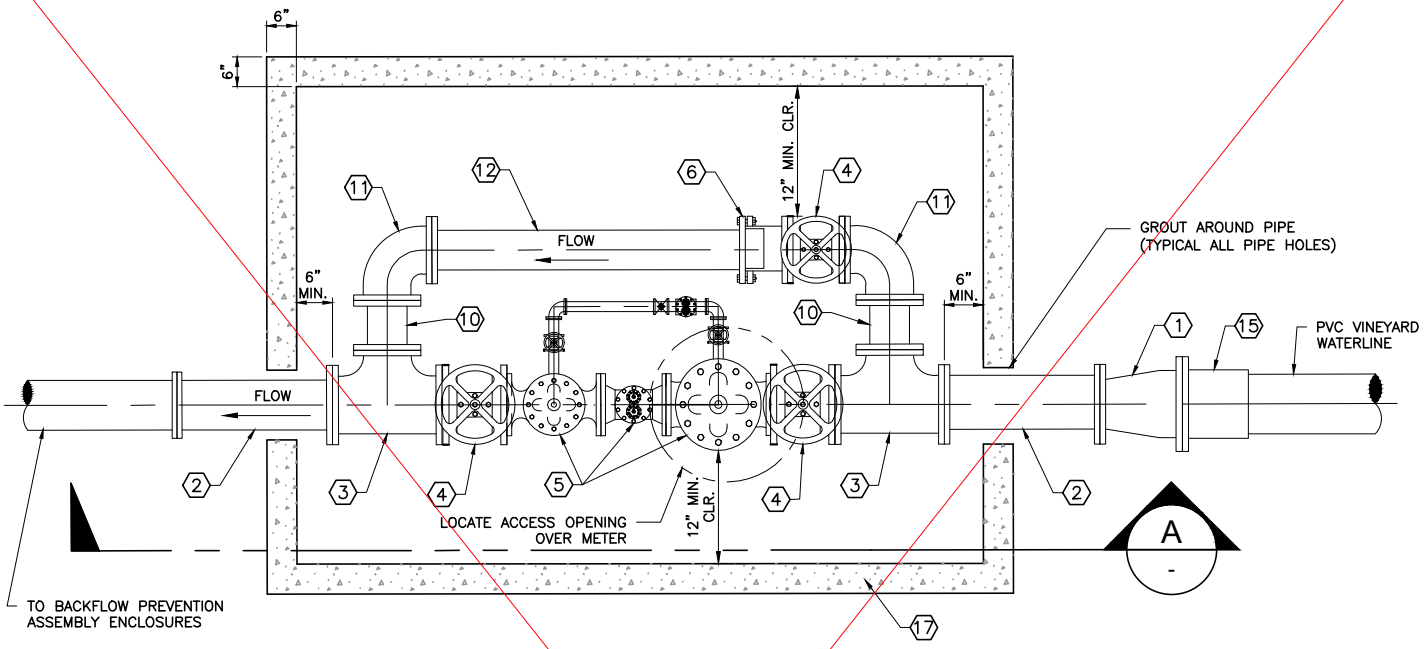
VINEYARD
STAY CONNECTED

LARGE METER ASSEMBLY

VINEYARD

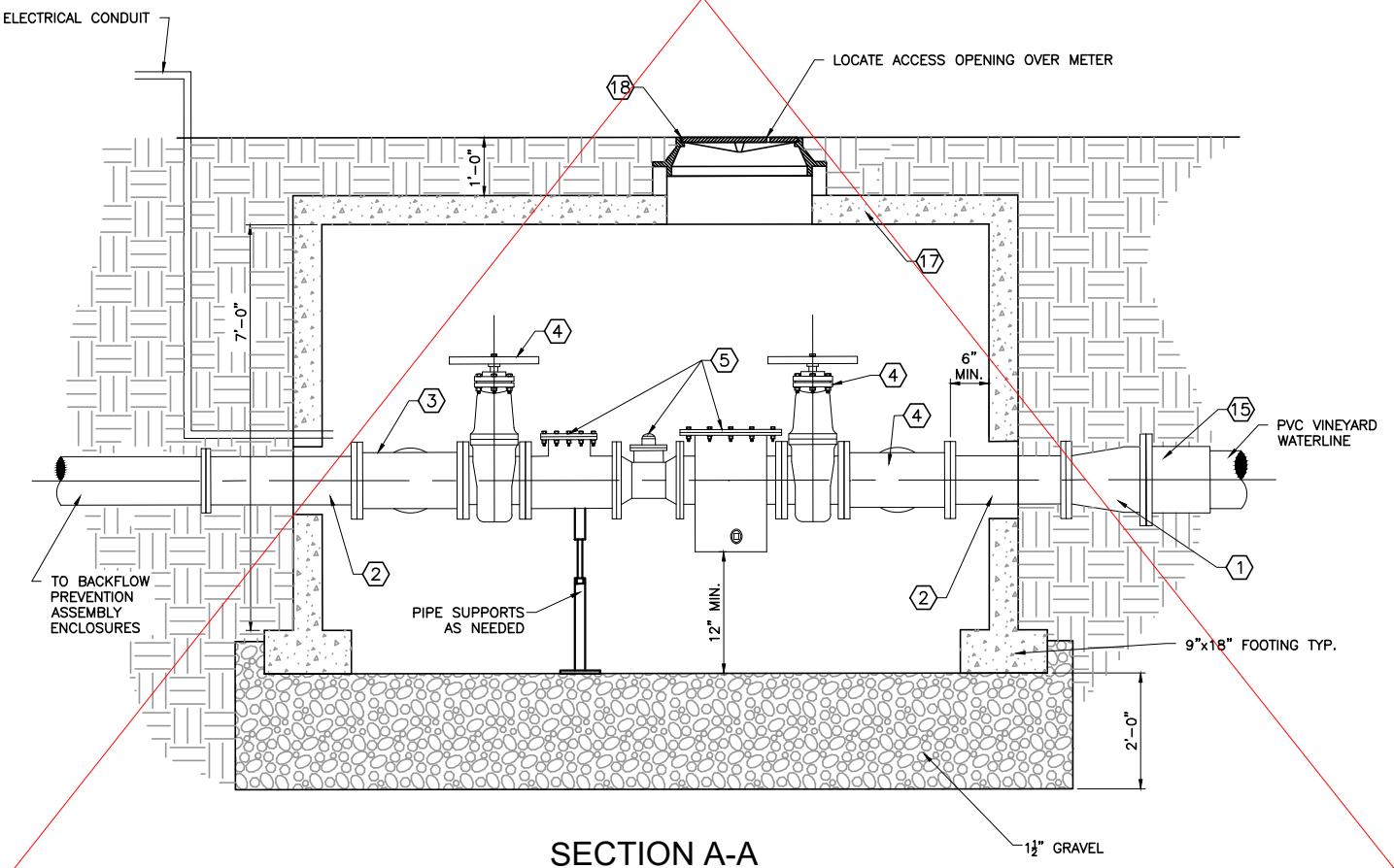
STANDARD DRAWING NUMBER:	25
CAD DWG:	STANDARD
PLOT SCALE:	DRAWING
DRAWN BY:	
DESIGN BY:	
CHECKED BY:	
ADOPTED DATE:	

NO PREVIOUS VERSION



METER ASSEMBLY VAULT

NOTES:
1. FOR LIST OF MATERIALS SEE STANDARD DRAWING 19A.
2. VAULT TO BE LOCATED OUTSIDE OF THE ROADWAY.



SECTION A-A

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REVISION

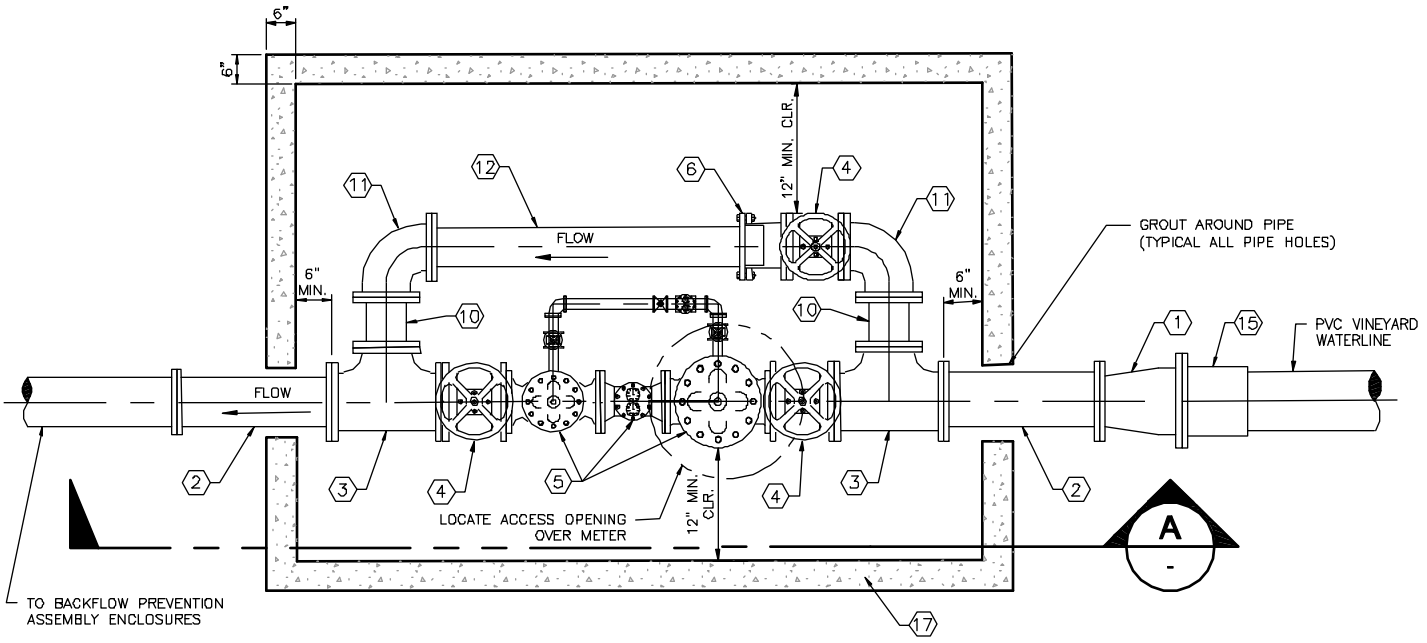
NO.	DESCRIPTION	BY	APR.	DATE
1	STANDARDS UPDATE	JMM	DEO	8/08/16
2	HANSEN, ALLEN & LUCE	DCL	CMT	9/12/25
3				
4				

VINEYARD
STAY CONNECTED

TYPICAL
METER ASSEMBLY

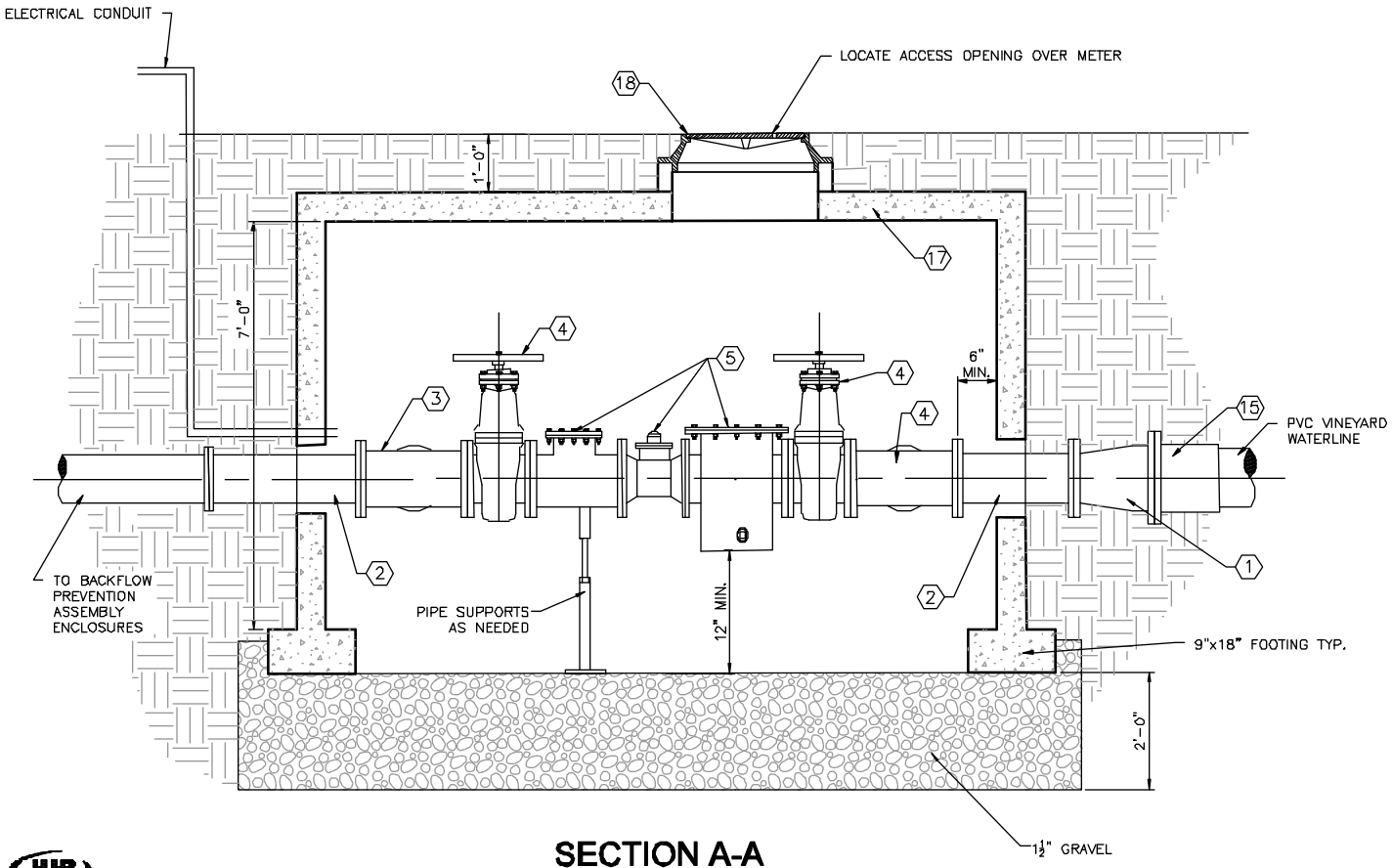
VINEYARD

STANDARD DRAWING NUMBER:	25A
CAD DWG:	STANDARD
PLOT SCALE:	DRAWING
DRAWN BY:	JMM
DESIGN BY:	CRW
CHECKED BY:	DEO
ADOPTED DATE:	SEPTEMBER 1, 2016



METER ASSEMBLY VAULT

NOTES:
1. FOR LIST OF MATERIALS SEE STANDARD DRAWING 19A.
2. VAULT TO BE LOCATED OUTSIDE OF THE ROADWAY.



SECTION A-A

JUB

STATEMENT OF USE

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REVISION

NO.	DESCRIPTION	BY	APR.	DATE
1	STANDARDS UPDATE	JMM	DEO	9/08/16
2				
3				
4				

VINEYARD
STAY CONNECTED

TYPICAL
METER ASSEMBLY

TOWN OF VINEYARD

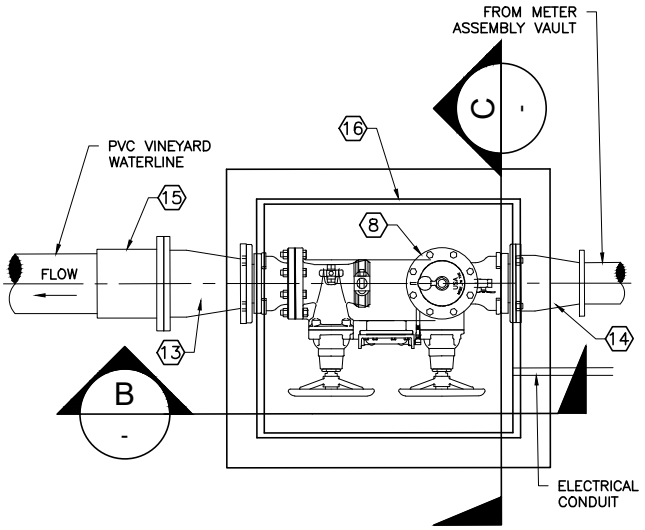
STANDARD DRAWING NUMBER:	19A
CAD DWG:	V_STD_DWGS
PLOT SCALE:	1.000
DRAWN BY:	JMM
DESIGN BY:	CRW
CHECKED BY:	DEO
ADOPTED DATE:	SEPTEMBER 1, 2016

LIST OF MATERIALS

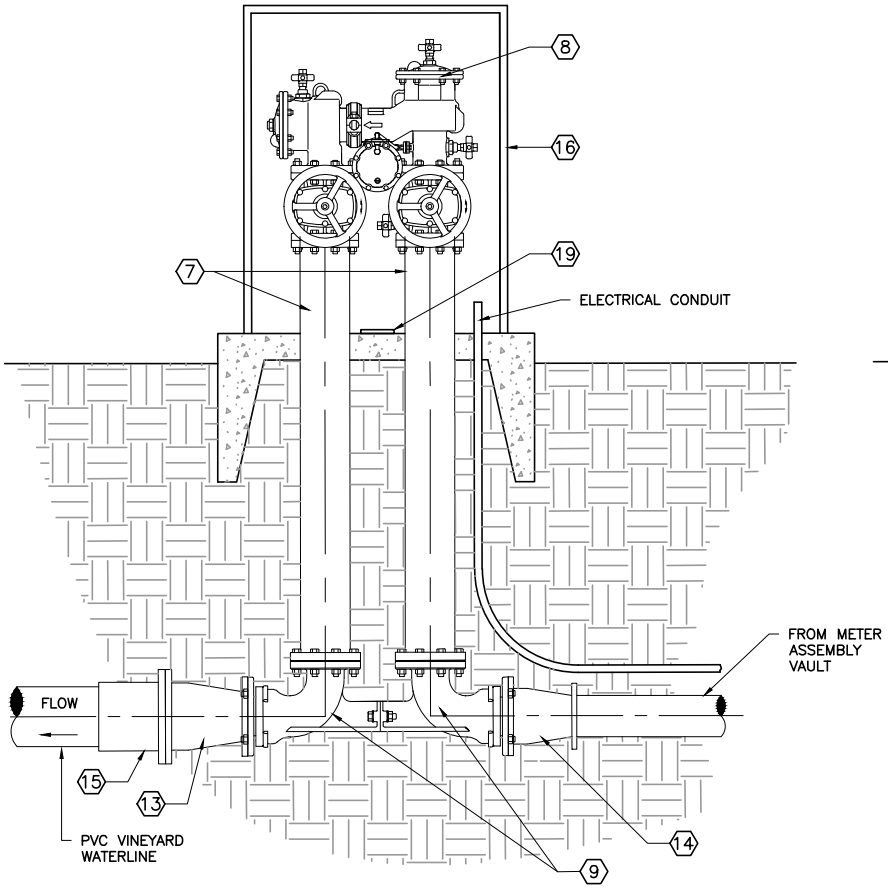
ITEM	QTY	SIZE	DESCRIPTION
1	1	A x B	MJ x FE DUCTILE IRON REDUCER
2	1	B x AS REQ'D	FLG x FLG DUCTILE IRON SPOOL
3	2	B x B	FLG x FLG DUCTILE IRON TEE
4	3	B	FLG x FLG GATE VALVE
5	1	B	BADGERMETER FSAA-01 FIRE SERIES METER W/SIZE ON SIZE BYPASS
6	1	B	DRESSER FLANGED ADAPTER STYLE 128
7	2	C x AS REQ'D	FLG x PE DUCTILE IRON PIPE
8	1	B	FEBCO MODEL LF880V (UP TO 8") OR FEBCO MODEL LF860V (FOR 10") OR EQUAL
9	1	C	FEBCO SERIES 611 VALVE SETTERS MJ x FLG OR EQUAL
10	2	B x 12"	FLG x FLG DUCTILE IRON SPOOL
11	2	B	FLG x FLG DUCTILE IRON 90° ELBOW
12	1	B x AS REQ'D	FLG x PE DUCTILE IRON PIPE W/ ALL THREAD
13	1	A x C	MJ x FLG DUCTILE IRON REDUCER
14	1	B x C	MJ x FLG DUCTILE IRON REDUCER
15	2	A	FLG x MJ C900 FLANGE ADAPTOR
16	1	ENCLOSURE	SAFE-T-COVER MODEL # 1000LU880-AL (UP TO 8") (OR EQUAL) SAFE-T-COVER MODEL # 1000-AL (10") (OR EQUAL)
17	1	VAULT	PRECAST VAULT SIZE SHALL MEET MINIMUM CLEARANCE REQ'D
18	1	30"	MANHOLE RING & COVER D&L SUPPLY # A-1181 W/ 6" GRADE RING
19	1	HEATER	SAFE-T-COVER MODEL NO. HCH2000-120 (OR EQUAL)

NOTE: ALL DUCTILE IRON PIPE AND FITTINGS TO BE POLYWRAPPED.

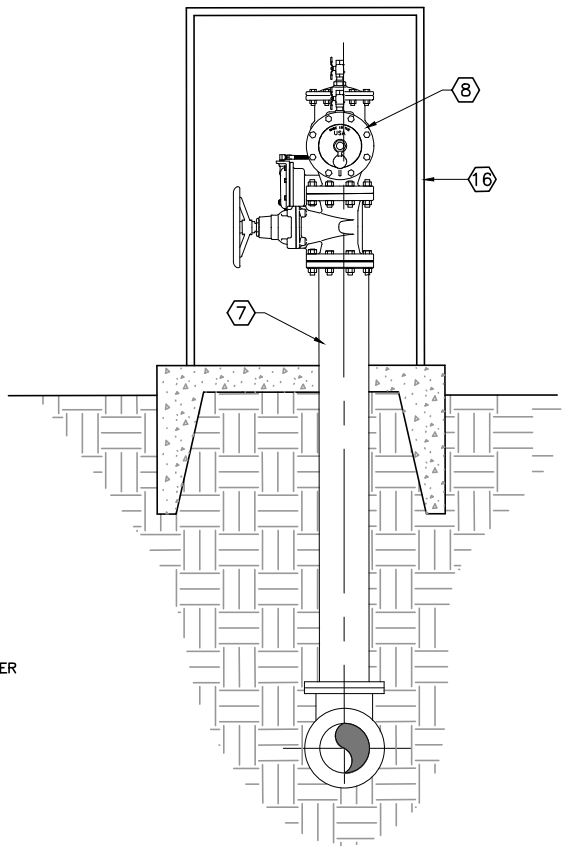
"A" = MAIN LINE SIZE.
"B" = REQ'D METER SIZE.
"C" = SIZE BACKFLOW ASSEMBLY TO MATCH METER FLOW (CFS).



BACKFLOW PREVENTION ASSEMBLY ENCLOSURES



SECTION B-B



SECTION C-C

STATEMENT OF USE

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REVISION

NO.	DESCRIPTION	BY	APR.	DATE
1	STANDARDS UPDATE	JMM	DEO	6/08/16
2	HANSEN, ALLEN & LUCE	DCL	CMT	9/12/25
3				
4				

VINEYARD
STAY CONNECTED

BACKFLOW PREVENTION ASSEMBLY

VINEYARD

STANDARD DRAWING NUMBER:	26
CAD DWG:	STANDARD
PLOT SCALE:	DRAWING
DRAWN BY:	JMM
DESIGN BY:	CRW
CHECKED BY:	DEO
ADOPTED DATE:	SEPTEMBER 1, 2016

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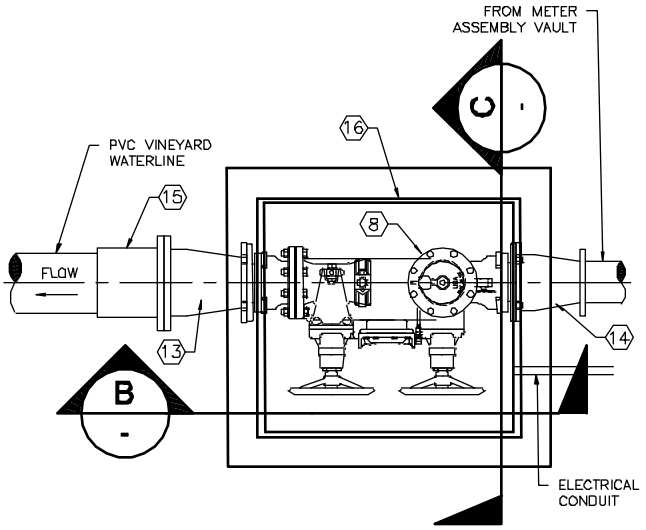
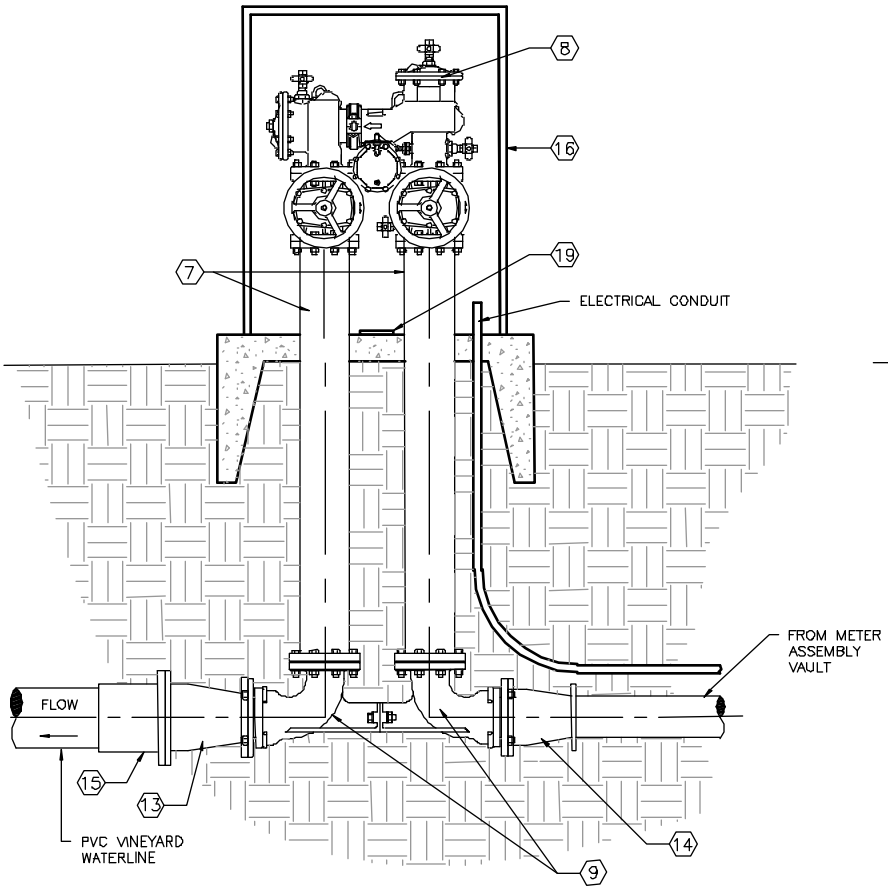
6	1	B	DRESSER FLANGED ADAPTER STYLE 128
7	2	C x AS REQ'D	FLG x PE DUCTILE IRON PIPE
8	1	B	FEBCO MODEL LF880V (UP TO 8") OR FEBCO MODEL LF860V (FOR 10") OR EQUAL
9	1	C	FEBCO SERIES 611 VALVE SETTERS MJ x FLG OR EQUAL
10	2	B x 12"	FLG x FLG DUCTILE IRON SPOOL
11	2	B	FLG x FLG DUCTILE IRON 90° ELBOW
12	1	B x AS REQ'D	FLG x PE DUCTILE IRON PIPE W/ ALL THREAD
13	1	A x C	MJ x FLG DUCTILE IRON REDUCER
14	1	B x C	MJ x FLG DUCTILE IRON REDUCER
15	2	A	FLG x MJ C900 FLANGE ADAPTOR
16	1	ENCLOSURE	SAFE-T-COVER MODEL # 1000LU880-AL (UP TO 8") (OR EQUAL) SAFE-T-COVER MODEL # 1000-AL (10") (OR EQUAL)
17	1	VAULT	PRECAST VAULT SIZE SHALL MEET MINIMUM CLEARANCE REQ'D
18	1	30"	MANHOLE RING & COVER D&L SUPPLY # A-1181 W/ 6" GRADE RING
19	1	HEATER	SAFE-T-COVER MODEL NO. HCH2000-120 (OR EQUAL)

NOTE: ALL DUCTILE IRON PIPE AND FITTINGS TO BE POLYWRAPPED.

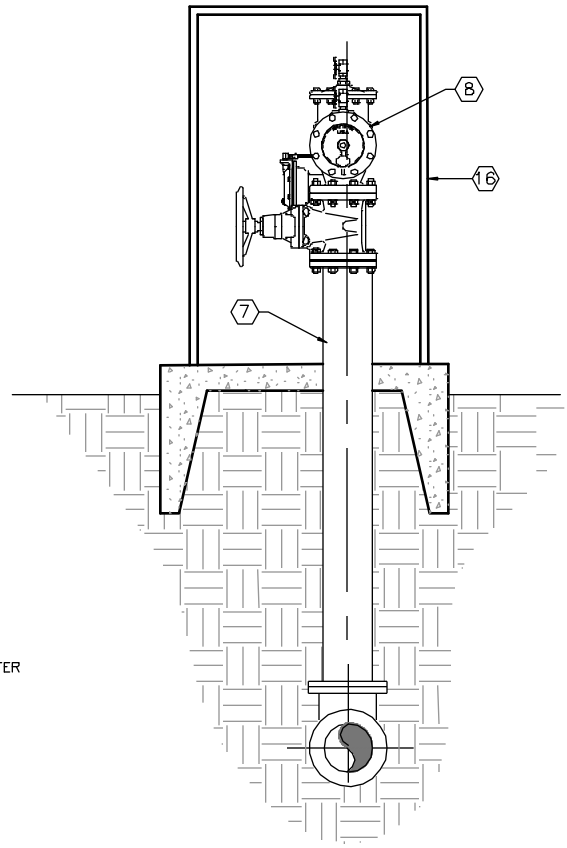
"A" = MAIN LINE SIZE.
"B" = REQ'D METER SIZE.
"C" = SIZE BACKFLOW ASSEMBLY TO MATCH METER FLOW (CFS).



BACKFLOW PREVENTION ASSEMBLY ENCLOSURES



SECTION B-B



SECTION C-C

JUB

STATEMENT OF USE

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REVISION

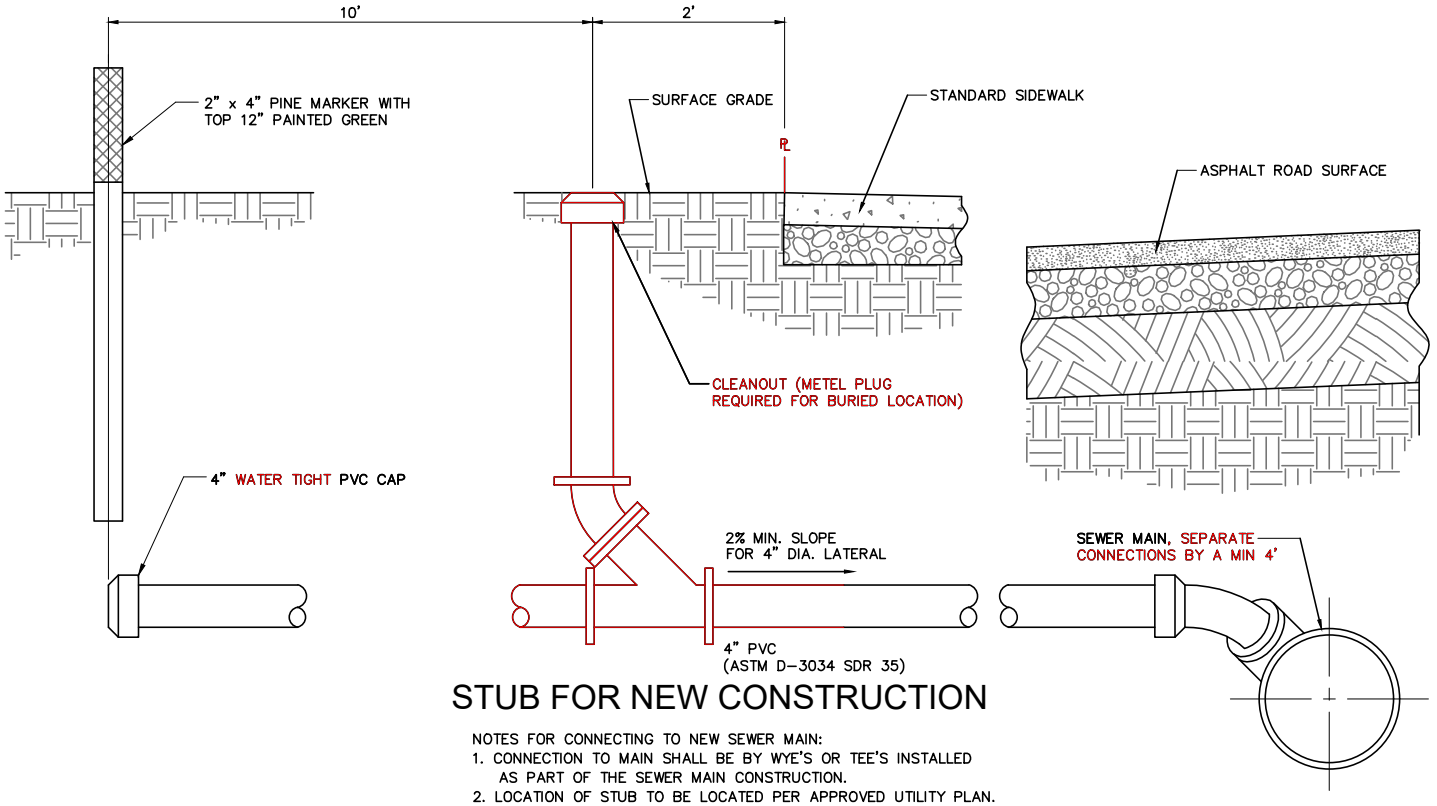
NO.	DESCRIPTION	BY	APR.	DATE
1	STANDARDS UPDATE	JMM	DEO	9/08/16
2				
3				
4				

VINEYARD
STAY CONNECTED

BACKFLOW PREVENTION ASSEMBLY

TOWN OF VINEYARD

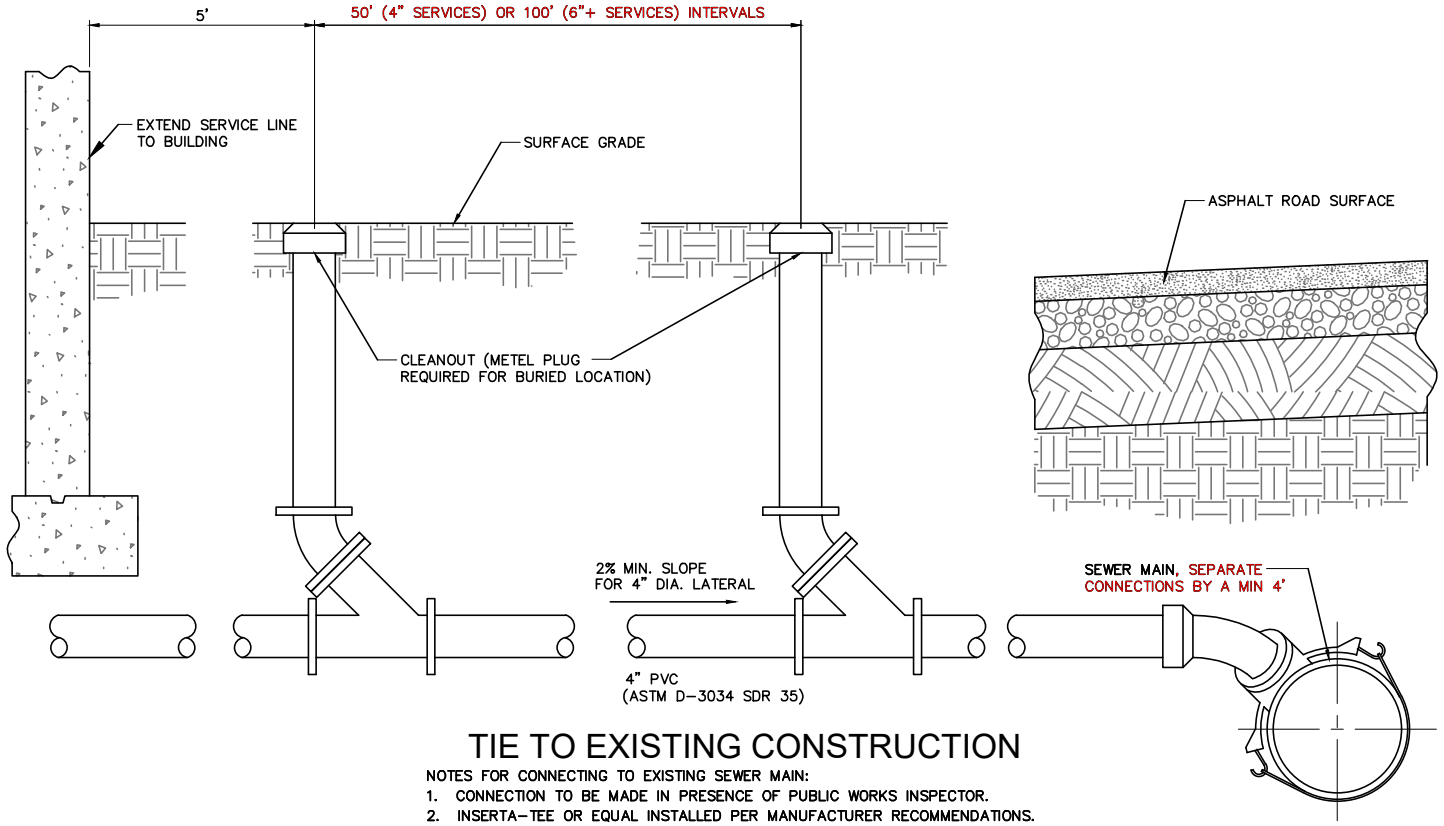
STANDARD DRAWING NUMBER:	19B
CAD DWG:	V_STD_DWGS
PLOT SCALE:	1.000
DRAWN BY:	JMM
DESIGN BY:	CRW
CHECKED BY:	DEO
ADOPTED DATE:	SEPTEMBER 1, 2016



STUB FOR NEW CONSTRUCTION

NOTES FOR CONNECTING TO NEW SEWER MAIN:

1. CONNECTION TO MAIN SHALL BE BY WYE'S OR TEE'S INSTALLED AS PART OF THE SEWER MAIN CONSTRUCTION.
2. LOCATION OF STUB TO BE LOCATED PER APPROVED UTILITY PLAN.
3. SHOW CENTERLINE STATION OF THE LATERAL FROM THE NEAREST DOWNSTREAM MANHOLE. USE SAME STATIONING USED FOR SEWER MAIN.
4. TRAFFIC RATED CLEANOUT LID REQ'D IF LOCATED IN TRAFFIC AREAS.



TIE TO EXISTING CONSTRUCTION

NOTES FOR CONNECTING TO EXISTING SEWER MAIN:

1. CONNECTION TO BE MADE IN PRESENCE OF PUBLIC WORKS INSPECTOR.
2. INSERTA-TEE OR EQUAL INSTALLED PER MANUFACTURER RECOMMENDATIONS.
3. TRAFFIC RATED CLEANOUT LID REQ'D IF LOCATED IN TRAFFIC AREAS.
4. CLEAN-OUTS REQUIRED AT PROPERTY LINE, EVERY 100' FOR 6" SERVICES AND 50' FOR 4" SERVICES AND AT EVERY COMBINATION OF BEND TOTALING 90°.

STATEMENT OF USE

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REVISION

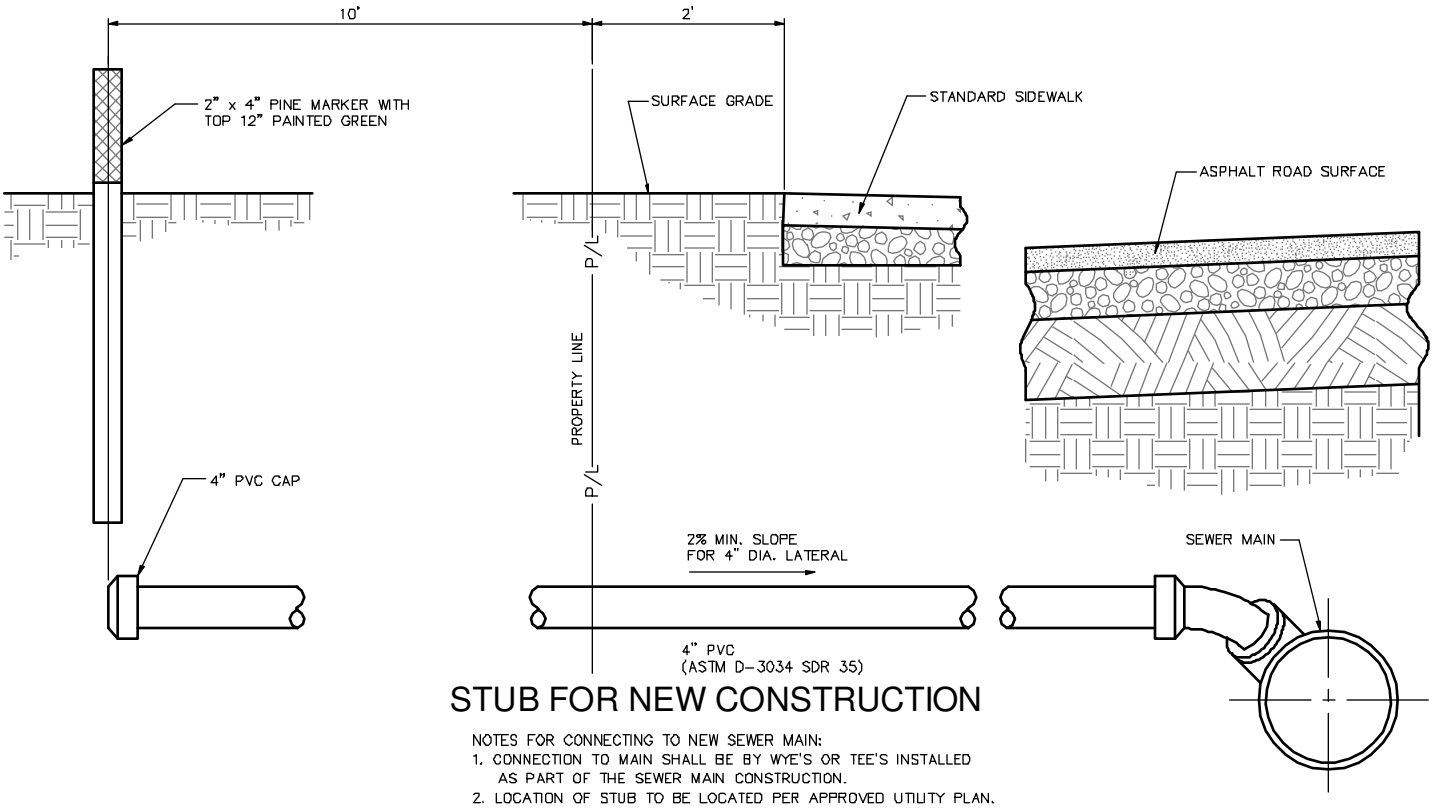
NO.	DESCRIPTION	BY	APR.	DATE
1	STANDARDS UPDATE	JMM	DEO	8/08/16
2	HANSEN, ALLEN & LUCE	LRH	CMT	9/12/25
3				
4				

VINEYARD
STAY CONNECTED

TYPICAL
SEWER LATERAL

VINEYARD

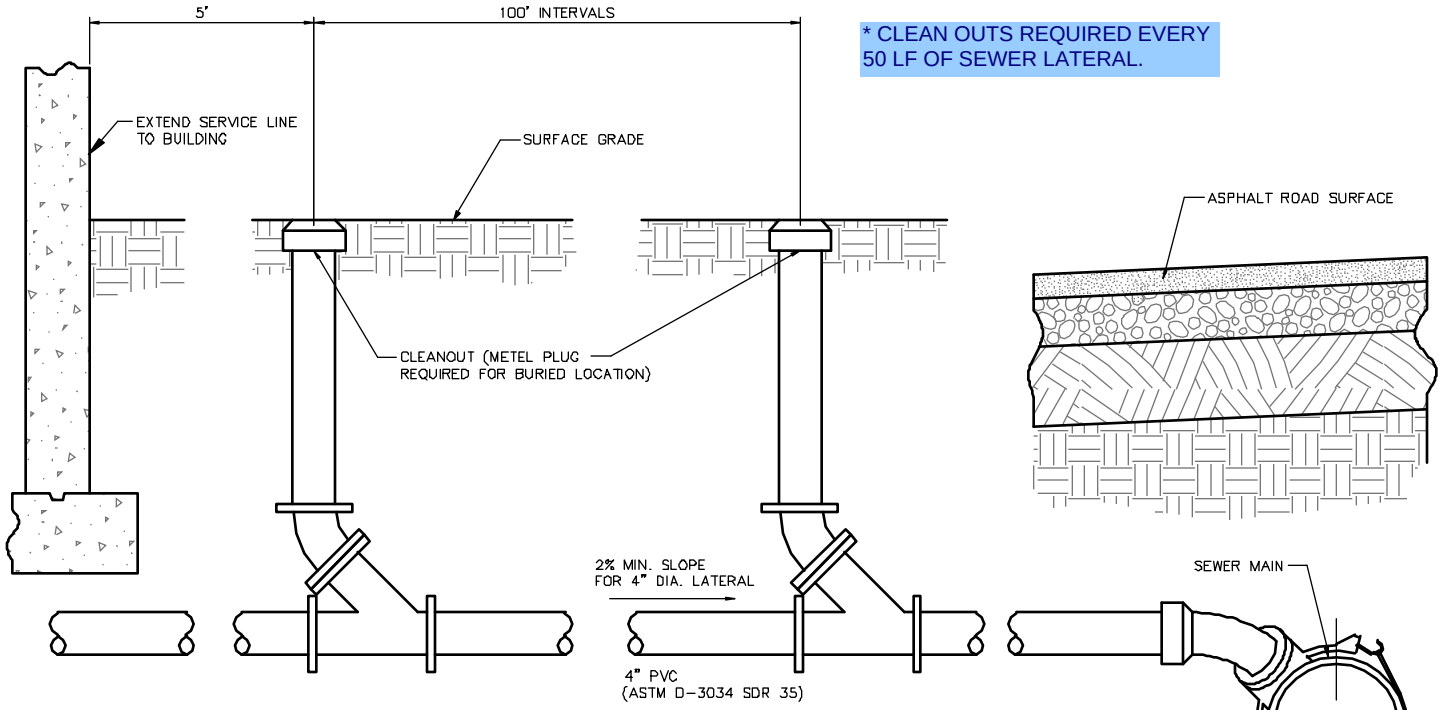
STANDARD DRAWING NUMBER:	27
CAD DWG:	STANDARD
PLOT SCALE:	DRAWING
DRAWN BY:	JMM
DESIGN BY:	CRW
CHECKED BY:	DEO
ADOPTED DATE:	SEPTEMBER 1, 2016



STUB FOR NEW CONSTRUCTION

NOTES FOR CONNECTING TO NEW SEWER MAIN:

1. CONNECTION TO MAIN SHALL BE BY WYE'S OR TEE'S INSTALLED AS PART OF THE SEWER MAIN CONSTRUCTION.
2. LOCATION OF STUB TO BE LOCATED PER APPROVED UTILITY PLAN.
3. SHOW CENTERLINE STATION OF THE LATERAL FROM THE NEAREST DOWNSTREAM MANHOLE. USE SAME STATIONING USED FOR SEWER MAIN.
4. TRAFFIC RATED CLEANOUT LID REQ'D IF LOCATED IN TRAFFIC AREAS.



* CLEAN OUTS REQUIRED EVERY 50 LF OF SEWER LATERAL.

TIE TO EXISTING CONSTRUCTION

NOTES FOR CONNECTING TO EXISTING SEWER MAIN:

1. CONNECTION TO BE MADE IN PRESENCE OF PUBLIC WORKS INSPECTOR.
2. INSERTA-TEE OR EQUAL INSTALLED PER MANUFACTURER RECOMMENDATIONS.
3. TRAFFIC RATED CLEANOUT LID REQ'D IF LOCATED IN TRAFFIC AREAS.

JUB

STATEMENT OF USE

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REVISION

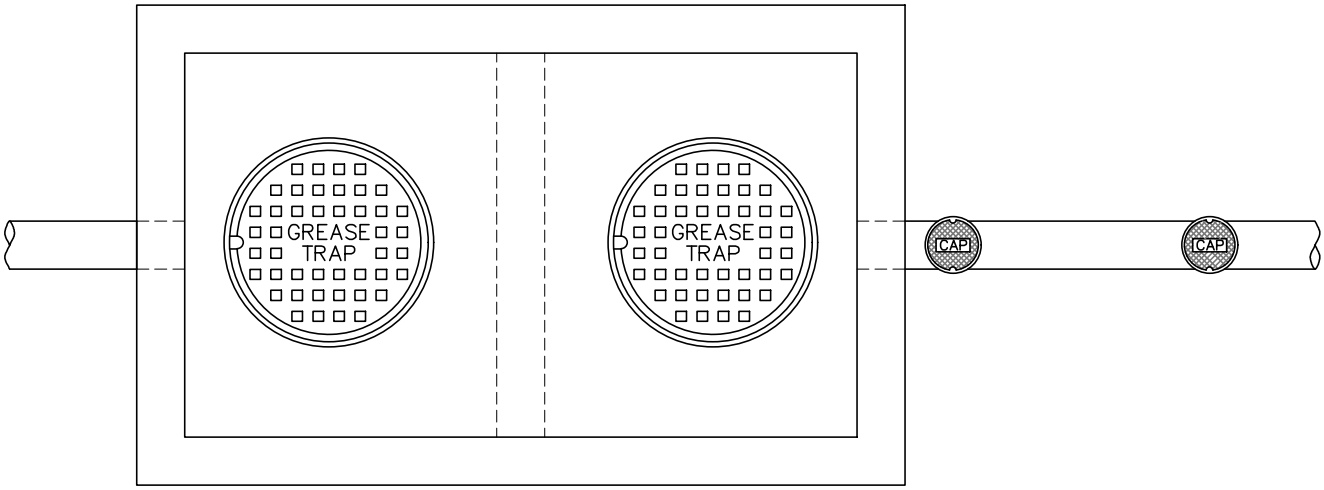
NO.	DESCRIPTION	BY	APR.	DATE
1	STANDARDS UPDATE	JMM	DEO	8/08/16
2				
3				
4				

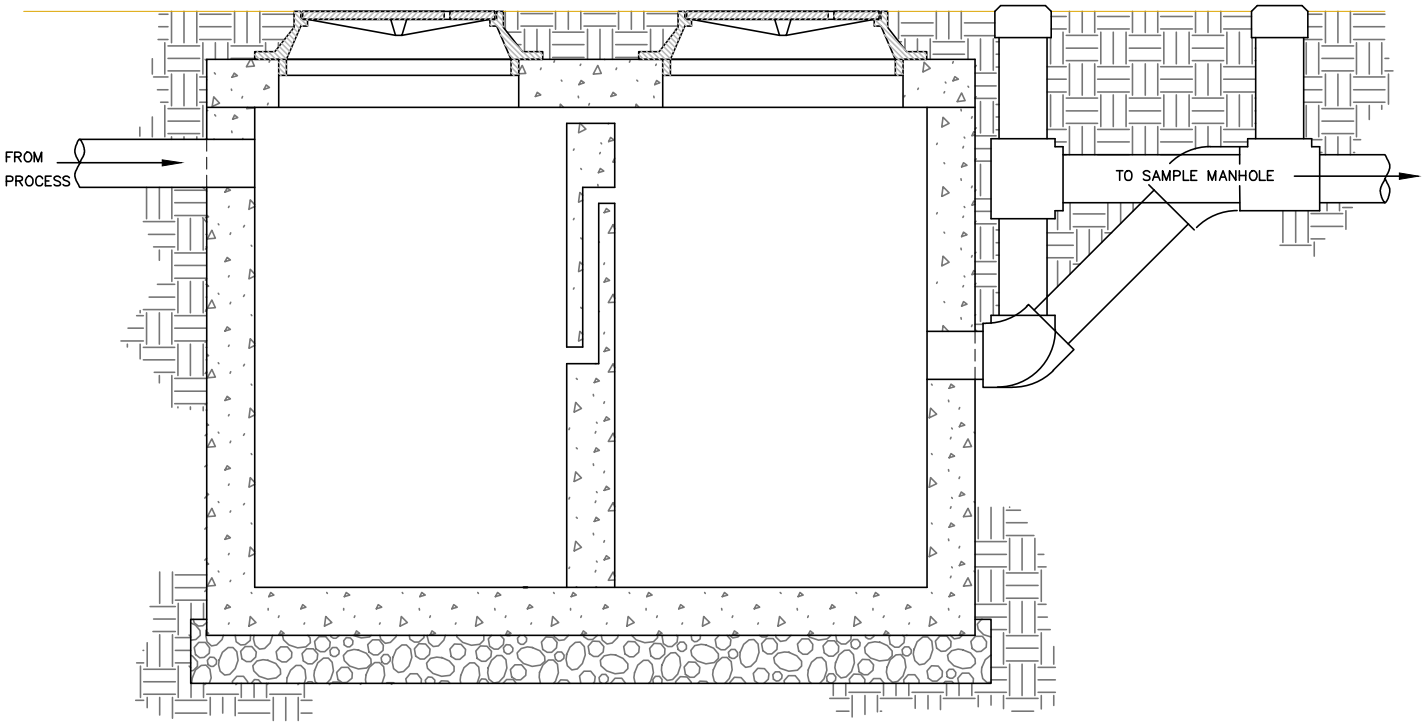
VINEYARD
STAY CONNECTED

TYPICAL SEWER LATERAL

TOWN OF VINEYARD

STANDARD DRAWING NUMBER:	20
CAD DWG:	V_STD_DWGS
PLOT SCALE:	1.000
DRAWN BY:	JMM
DESIGN BY:	CRW
CHECKED BY:	DEO
ADOPTED DATE:	SEPTEMBER 1, 2016





REFER TO LATEST TIMPANOGOS SPECIAL SERVICE DISTRICT (TSSD) WASTEWATER COLLECTION SYSTEM STANDARDS AND SPECIFICATIONS FOR GREASE TRAP SIZING AND DETAILS

STATEMENT OF USE

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REVISION

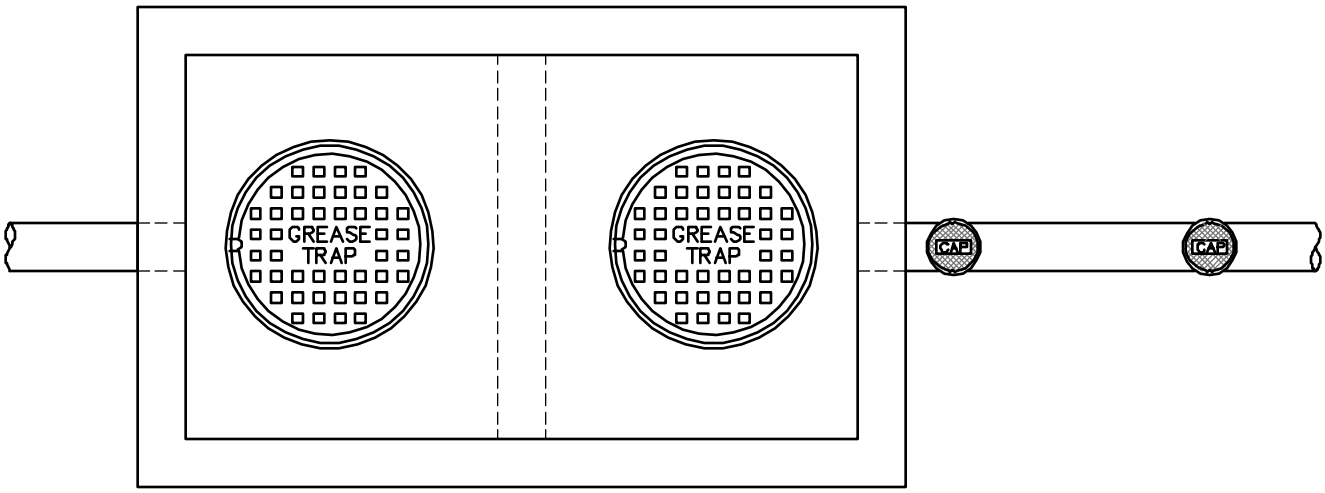
NO.	DESCRIPTION	BY	APR.	DATE
1	STANDARDS UPDATE	JMM	DEO	8/08/16
2	HANSEN, ALLEN & LUCE	DCL	CMT	9/12/25
3				
4				

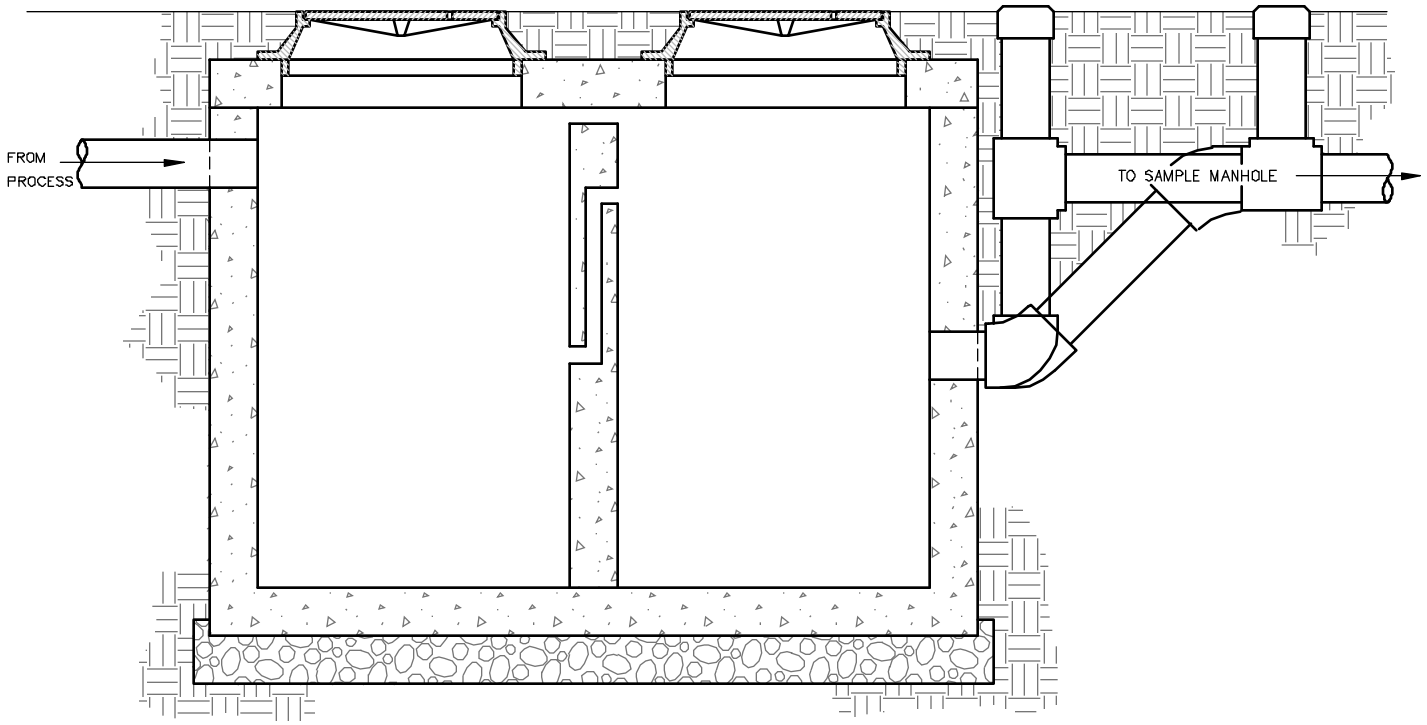
VINEYARD
STAY CONNECTED

TYPICAL
GREASE TRAP

VINEYARD

STANDARD DRAWING NUMBER: 28
CAD DWG: STANDARD
PLOT SCALE: DRAWING
DRAWN BY: JMM
DESIGN BY: CRW
CHECKED BY:
ADOPTED DATE: SEPTEMBER 1, 2016





REFER TO LATEST TIMPANOGOS SPECIAL SERVICE DISTRICT (TSSD) WASTEWATER COLLECTION SYSTEM STANDARDS AND SPECIFICATIONS FOR GREASE TRAP SIZING AND DETAILS

JUB

STATEMENT OF USE

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REVISION

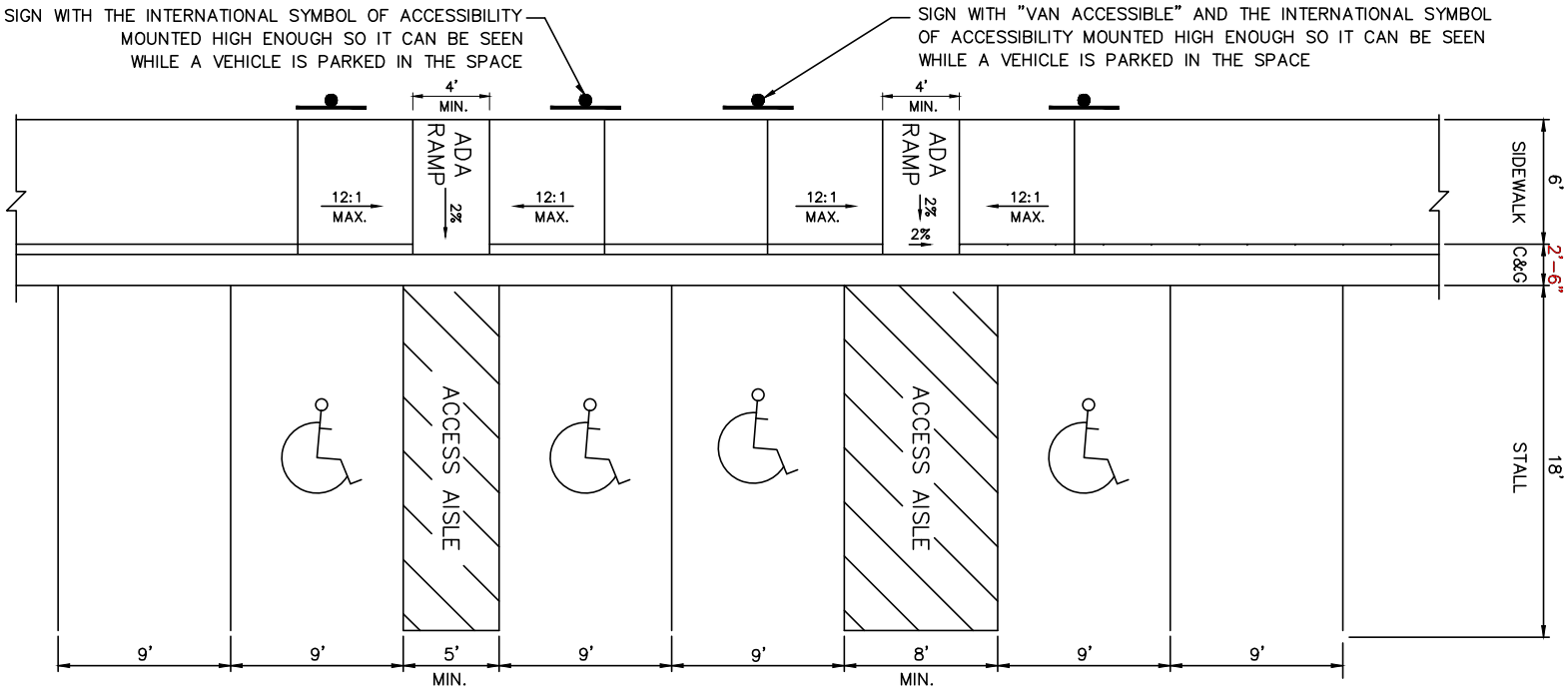
NO.	DESCRIPTION	BY	APR.	DATE
1	STANDARDS UPDATE	JMM	DEO	8/08/16
2				
3				
4				

VINEYARD
STAY CONNECTED

TYPICAL
GREASE TRAP

TOWN OF VINEYARD

STANDARD DRAWING NUMBER:	21
CAD DWG:	V_STD_DWGS
PLOT SCALE:	1.000
DRAWN BY:	JMM
DESIGN BY:	CRW
CHECKED BY:	DEO
ADOPTED DATE:	SEPTEMBER 1, 2016



NOTES:

1. ACCESSIBLE PARKING SPACES MUST BE LOCATED ON THE SHORTEST ROUTE OF TRAVEL TO AN ACCESSIBLE FACILITY ENTRANCE.
2. DESIGNATED RESERVED SIGN BY EACH SPACE.
3. EACH PARKING LOT SHALL HAVE A MINIMUM OF ONE (1) "VAN ACCESSIBLE" SPACE
4. ONE IN EVERY EIGHT (8) ACCESSIBLE SPACES SHALL HAVE AN ACCESS AISLE 8'-0" WIDE AND SHALL BE SIGNED " VAN ACCESSIBLE".
5. SIGNS SHALL HAVE THE "ACCESSIBLE SYMBOL" WITH "VAN ACCESSIBLE" INDICATED BELOW.
6. RAMP MAXIMUM SLOPE 12:1.
7. OTHER AS REQUIRED BY ADA STANDARDS.

MINIMUM NUMBER OF ACCESSIBLE PARKING SPACES
ADA STANDARD FOR ACCESSIBLE DESIGN 4.1.2(5)

TOTAL NUMBER OF PARKING SPACES PROVIDED (PER LOT)	TOTAL MINIMUM NUMBER OF ACCESSIBLE PARKING SPACES (60" & 96" AISLES	VAN ACCESSIBLE PARKING SPACES WITH MIN. 96" WIDE ACCESS AISLE	ACCESSIBLE PARKING SPACES WITH MIN. 60" WIDE ACCESS AISLE
1 TO 25	COLUMN A 1	1	0
26 TO 50	2	1	1
51 TO 75	3	1	2
76 TO 100	4	1	3
101 TO 150	5	1	4
151 TO 200	6	1	5
201 TO 300	7	1	6
301 TO 400	8	1	7
401 TO 500	9	2	7
501 TO 1000	2% OF TOTAL PARKING PROVIDED IN EACH LOT	1/8 OF COLUMN A *	7/8 OF COLUMN A **
1001 AND OVER	20 PLUS 1 FOR EACH 100 OVER 1000	1/8 OF COLUMN A *	7/8 OF COLUMN A **

* ONE OUT OF EVERY ACCESSIBLE SPACES ** 7 OUT OF EVERY 8 ACCESSIBLE PARKING SPACES

STATEMENT OF USE
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NO.	DESCRIPTION	BY	APR.	DATE
1	STANDARDS UPDATE	JMM	DEO	1/26/16
2	HANSEN, ALLEN & LUCE	DOL	CRW	9/12/25
3				
4				
5				

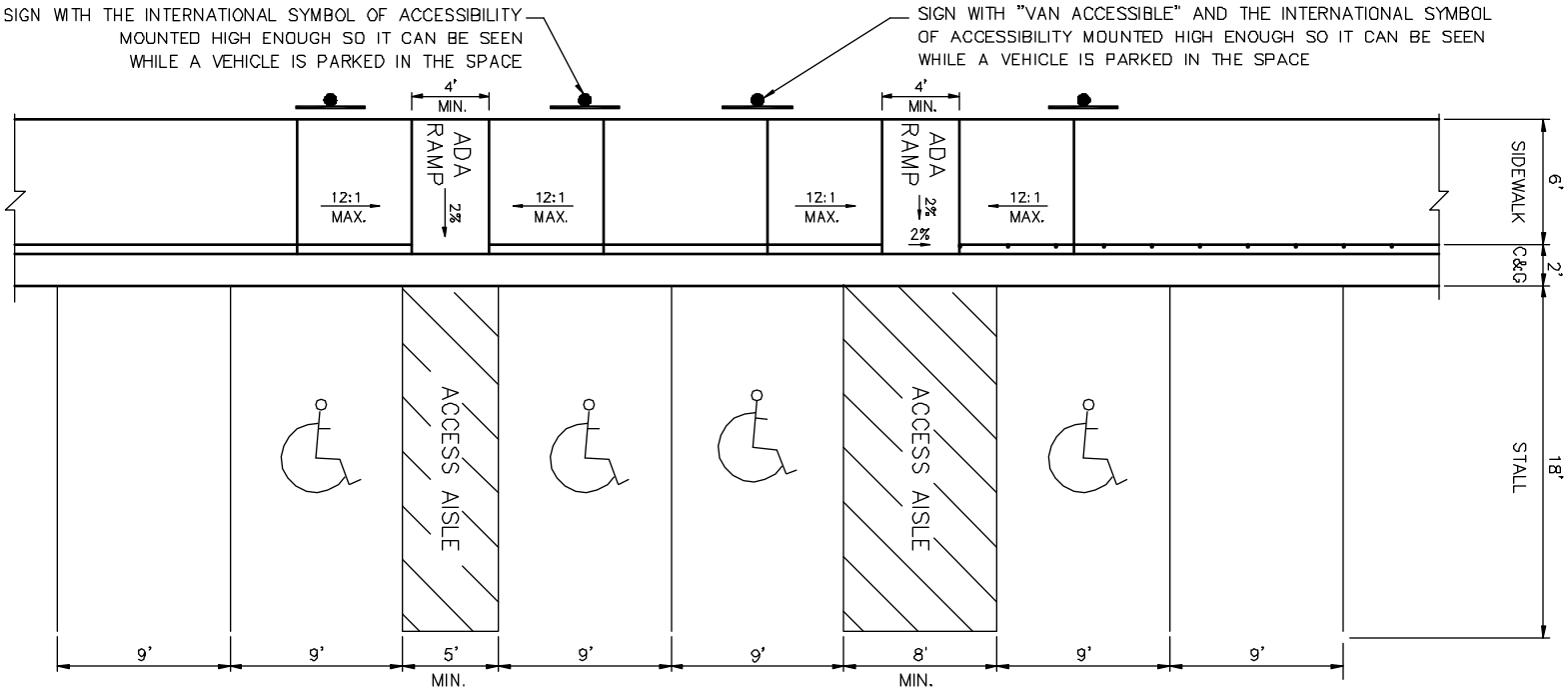
REVISION

VINEYARD
STAY CONNECTED

ADA PARKING AND PASSENGER LOADING ZONE

VINEYARD

STANDARD DRAWING NUMBER: 29
CAD DWG: STANDARD DRAWING
PLOT SCALE: DRAWING
DRAWN BY: JMM
DESIGN BY: CRW
CHECKED BY: DEO
ADOPTED DATE: SEPTEMBER 1, 2016



NOTES:

1. ACCESSIBLE PARKING SPACES MUST BE LOCATED ON THE SHORTEST ROUTE OF TRAVEL TO AN ACCESSIBLE FACILITY ENTRANCE.
2. DESIGNATED RESERVED SIGN BY EACH SPACE.
3. EACH PARKING LOT SHALL HAVE A MINIMUM OF ONE (1) "VAN ACCESSIBLE" SPACE
4. ONE IN EVERY EIGHT (8) ACCESSIBLE SPACES SHALL HAVE AN ACCESS AISLE 8'-0" WIDE AND SHALL BE SIGNED " VAN ACCESSIBLE".
5. SIGNS SHALL HAVE THE "ACCESSIBLE SYMBOL" WITH "VAN ACCESSIBLE" INDICATED BELOW.
6. RAMP MAXIMUM SLOPE 12:1.
7. OTHER AS REQUIRED BY ADA STANDARDS.

MINIMUM NUMBER OF ACCESSIBLE PARKING SPACES
ADA STANDARD FOR ACCESSIBLE DESIGN 4.1.2(5)

TOTAL NUMBER OF PARKING SPACES PROVIDED (PER LOT)	TOTAL MINIMUM NUMBER OF ACCESSIBLE PARKING SPACES (60" & 96" AISLES	VAN ACCESSIBLE PARKING SPACES WITH MIN. 96" WIDE ACCESS AISLE	ACCESSIBLE PARKING SPACES WITH MIN. 60" WIDE ACCESS AISLE
1 TO 25	COLUMN A 1	1	0
26 TO 50	2	1	1
51 TO 75	3	1	2
76 TO 100	4	1	3
101 TO 150	5	1	4
151 TO 200	6	1	5
201 TO 300	7	1	6
301 TO 400	8	1	7
401 TO 500	9	2	7
501 TO 1000	2% OF TOTAL PARKING PROVIDED IN EACH LOT	1/8 OF COLUMN A *	7/8 OF COLUMN A **
1001 AND OVER	20 PLUS 1 FOR EACH 100 OVER 1000	1/8 OF COLUMN A *	7/8 OF COLUMN A **

* ONE OUT OF EVERY ACCESSIBLE SPACES ** 7 OUT OF EVERY 8 ACCESSIBLE PARKING SPACES

STATEMENT OF USE
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NO.	DESCRIPTION	BY	APPR.	DATE
1	STANDARD UPDATE	JMM	DSD	12/09/16
2				
3				
4				

REVISION

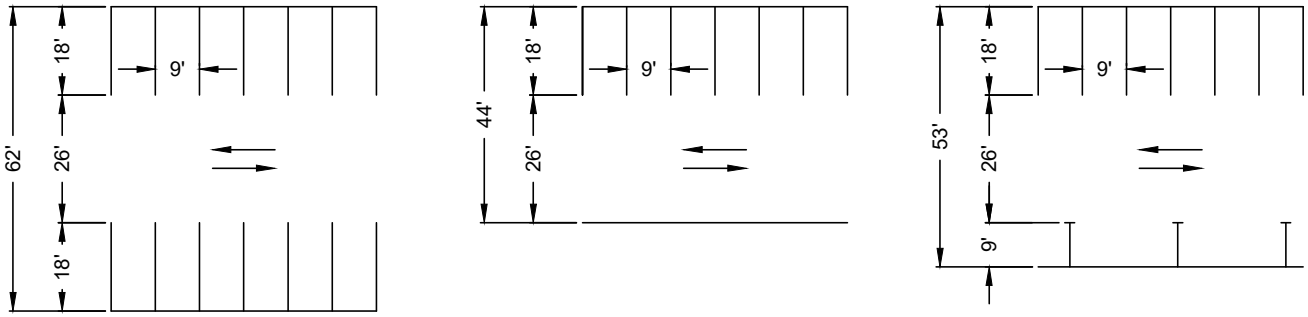
VINEYARD
STAY CONNECTED

ADA PARKING AND PASSENGER LOADING ZONE

TOWN OF VINEYARD

STANDARD DRAWING NUMBER 22

CAD DWG: V_STD_DWGS
PLOT SCALE: 1.000
DRAWN BY: JMM
DESIGNED BY: JMM
CHECKED BY: DSD
ADOPTED DATE: SEPTEMBER 1, 2016

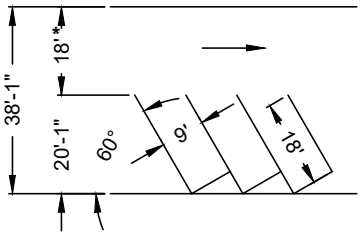


RIGHT ANGLE PARKING

PARALLEL PARKING

30 DEGREE ANGLE PARKING
MUST HAVE 20' TRAVEL LANE FOR 2 WAY TRAFFIC

45 DEGREE ANGLE PARKING
MUST HAVE 22' TRAVEL LANE FOR 2 WAY TRAFFIC



60 DEGREE ANGLE PARKING
MUST HAVE 24' TRAVEL LANE FOR 2 WAY TRAFFIC

STATEMENT OF USE

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REVISION

NO.	DESCRIPTION	BY	APR.	DATE
1	HANSEN, ALLEN & LUCE	URH	CWT	9/12/25
2				
3				
4				

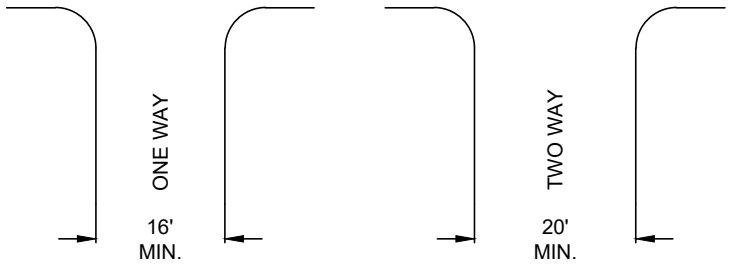
VINEYARD
STAY CONNECTED

PARKING LOT

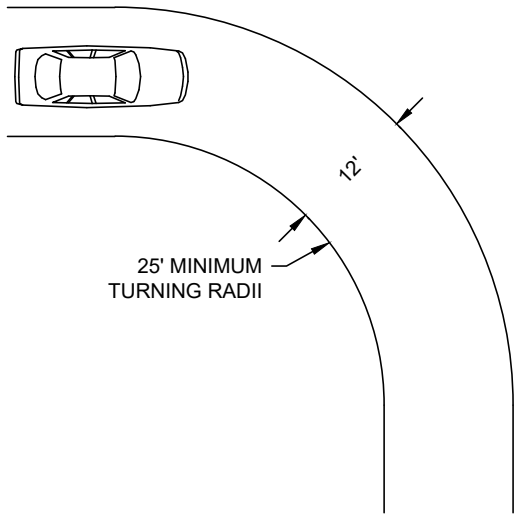
VINEYARD

STANDARD DRAWING NUMBER: 30A

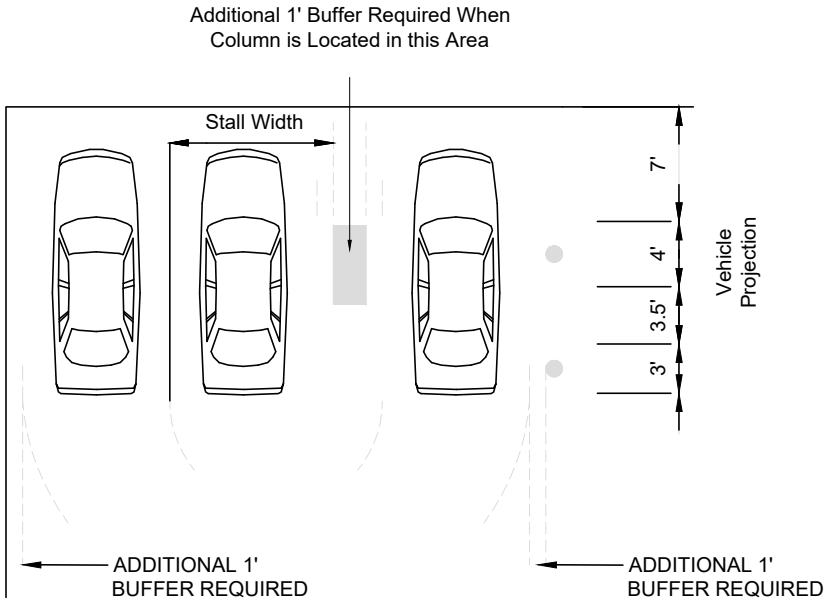
CAD DWG:	STANDARD
PLOT SCALE:	DRAWING
DRAWN BY:	
DESIGN BY:	
CHECKED BY:	
ADOPTED DATE:	



DRIVEWAY WIDTHS



MINIMUM TURNING RADIUS



PARKING STRUCTURE

STATEMENT OF USE

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REVISION

NO.	DESCRIPTION	BY	APR.	DATE
1	HANSEN, ALLEN & LUCE	URH	CMT	9/12/25
2				
3				
4				

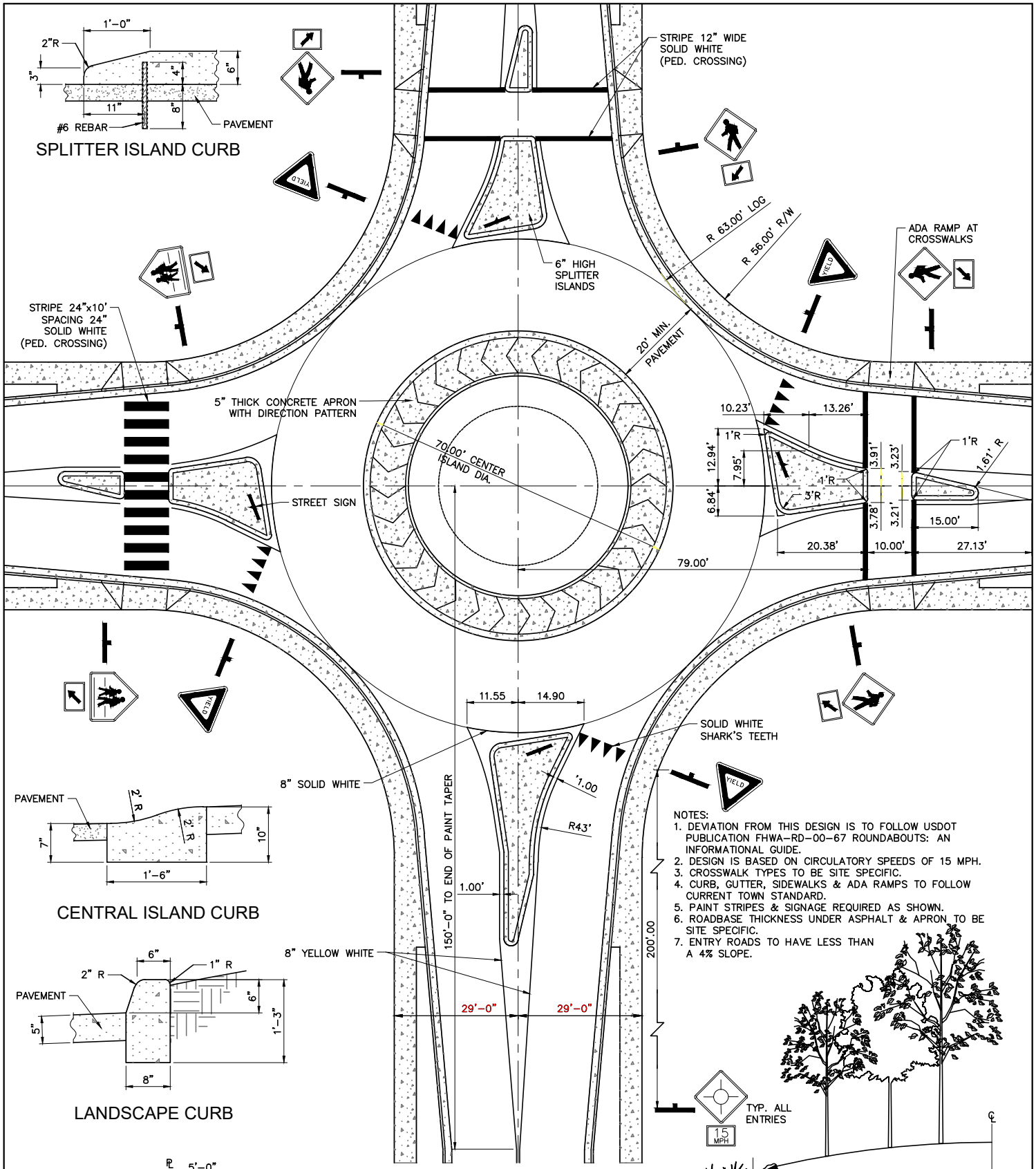
VINEYARD
STAY CONNECTED

PARKING LOT

VINEYARD

STANDARD DRAWING NUMBER: 30B
CAD DWG: STANDARD
PLOT SCALE: DRAWING
DRAWN BY:
DESIGN BY:
CHECKED BY:
ADOPTED DATE:

NO PREVIOUS VERSION



HALF CROSS SECTION

STATEMENT OF USE

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REVISION

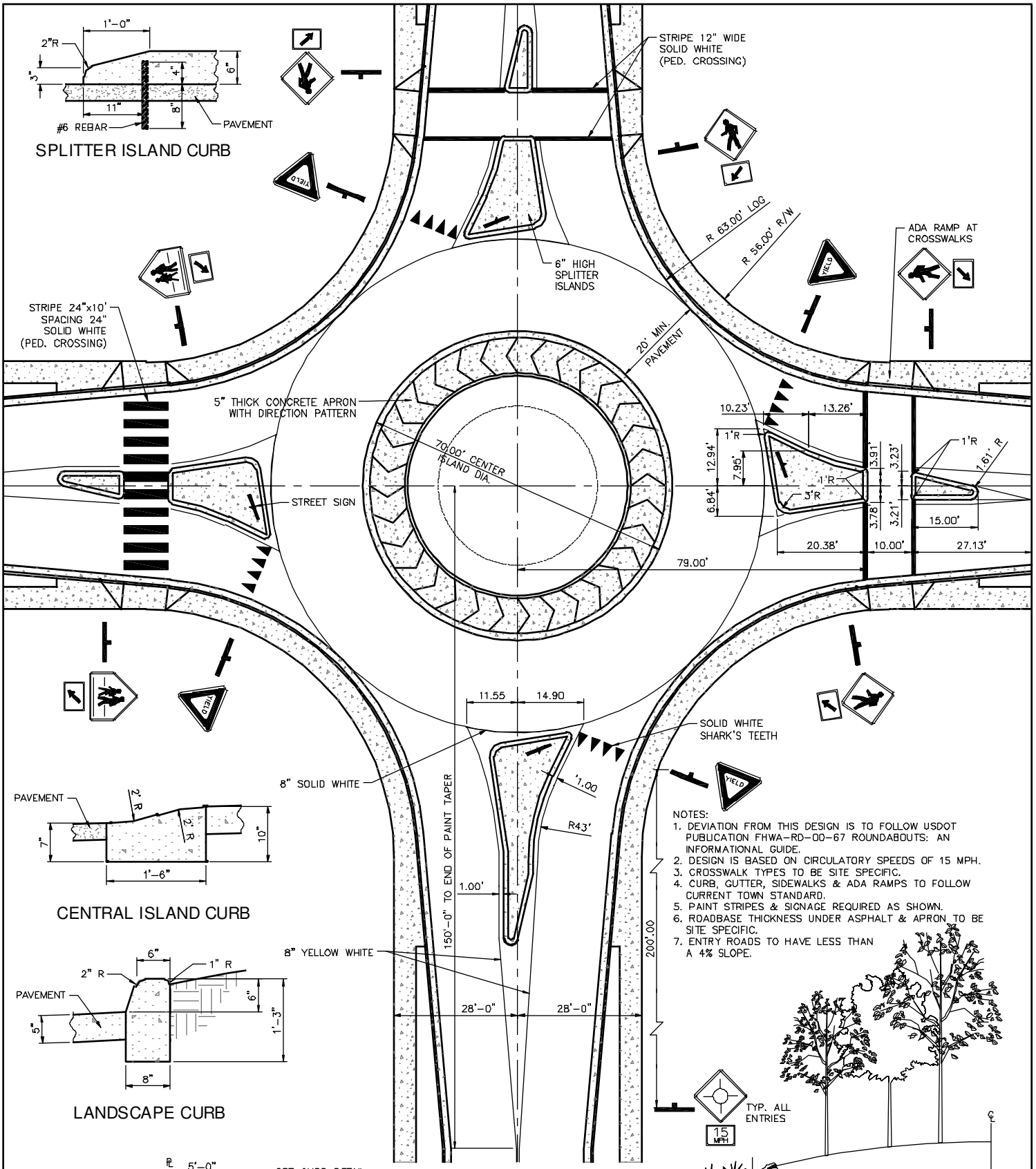
NO.	DESCRIPTION	BY	APR.	DATE
1	STANDARDS UPDATE	JMM	DEO	8/08/16
2	HANSEN, ALLEN & LUCE	LRH	CMT	9/12/25
3				
4				

VINEYARD
STAY CONNECTED

110-FOOT ROUNDABOUT FOR LOCAL STREET INTERSECTION

VINEYARD

STANDARD DRAWING NUMBER:	31
CAD DWG:	STANDARD
PLOT SCALE:	DRAWING
DRAWN BY:	JMM
DESIGN BY:	CRW
CHECKED BY:	DEO
ADOPTED DATE:	SEPTEMBER 1, 2016



STATEMENT OF USE

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REVISION

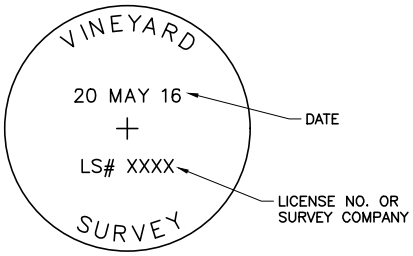
NO.	DESCRIPTION	BY	APR.	DATE
1	STANDARDS UPDATE	JMM	DEO	8/08/16
2				
3				
4				

VINEYARD
STAY CONNECTED

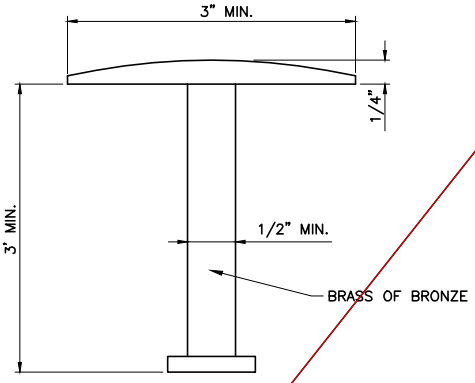
110-FOOT ROUNDABOUT FOR LOCAL STREET INTERSECTION

TOWN OF VINEYARD

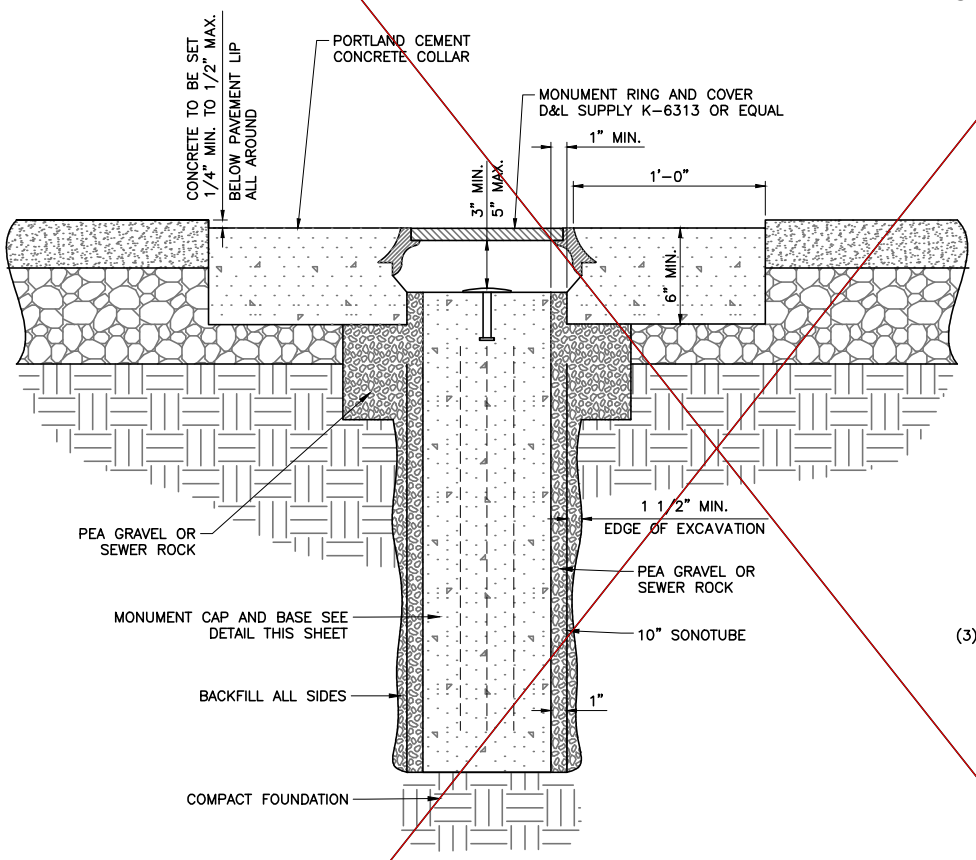
STANDARD DRAWING NUMBER:	23
CAD DWG:	V_STD_DWGS
PLOT SCALE:	1.000
DRAWN BY:	JMM
DESIGN BY:	CRW
CHECKED BY:	DEO
ADOPTED DATE:	SEPTEMBER 1, 2016

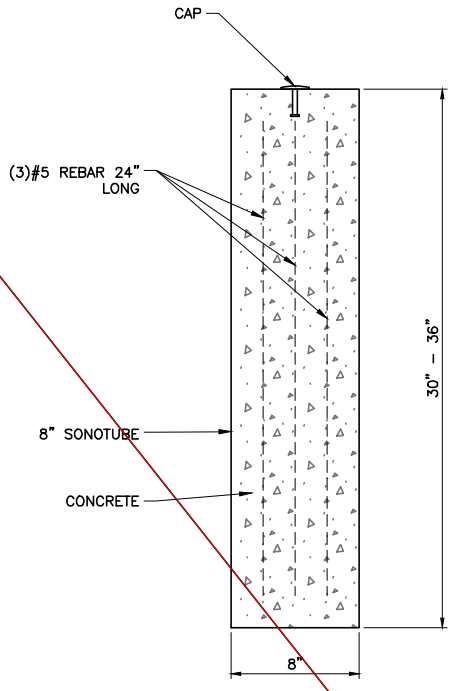


CAP PLAN



CAP SECTION





SECTION OF BASE
(TYPICAL SETTING)

NOTES:
1. THE INSTALLED MONUMENT MUST BE INDEPENDENT OF THE ROADWAY PAVEMENT. VIBRATIONS OF THE PAVEMENT SURFACE MUST BE TRANSMITTED TO THE UNDERLYING SOILS AND NOT TO THE MONUMENT. THIS WILL ASSURE THE MONUMENT REMAINS UNDISTURBED.
2. MONUMENTS TO BE INSTALLED AT THE LOCATION SHOWN ON THE APPROVED SUBDIVISION PLAT.

STATEMENT OF USE

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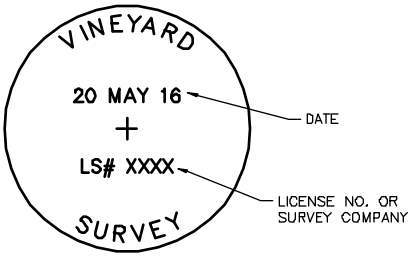
NO.	DESCRIPTION	BY	APR.	DATE
1	STANDARDS UPDATE	JMM	DEO	8/08/16
2	HANSEN, ALLEN & LUCE	DCL	CMT	9/12/25
3				
4				

VINEYARD
STAY CONNECTED

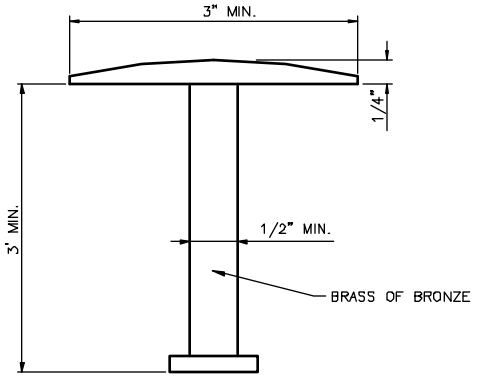
SURVEY MONUMENT PLACEMENT IN PAVEMENT

VINEYARD

STANDARD DRAWING NUMBER:	31A
CAD DWG:	STANDARD
PLOT SCALE:	DRAWING
DRAWN BY:	JMM
DESIGN BY:	CRW
CHECKED BY:	DEO
ADOPTED DATE:	SEPTEMBER 1, 2016



CAP PLAN



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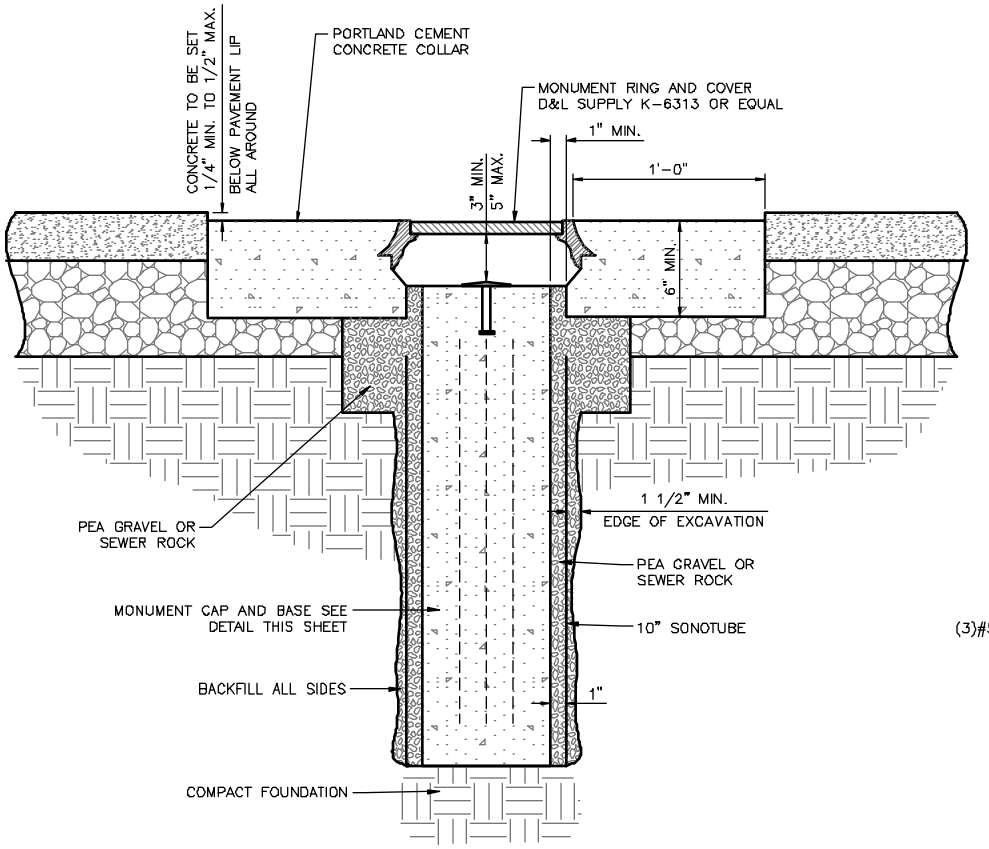

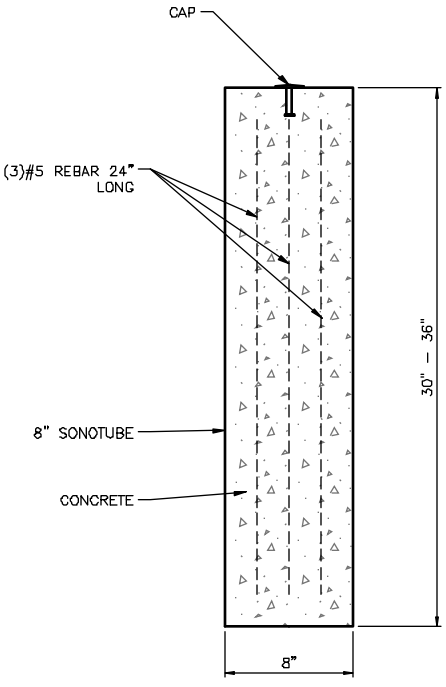

SECTION OF BASE
(TYPICAL SETTING)

NOTES:
1. THE INSTALLED MONUMENT MUST BE INDEPENDENT OF THE ROADWAY PAVEMENT. VIBRATIONS OF THE PAVEMENT SURFACE MUST BE TRANSMITTED TO THE UNDERLYING SOILS AND NOT TO THE MONUMENT. THIS WILL ASSURE THE MONUMENT REMAINS UNDISTURBED.
2. MONUMENTS TO BE INSTALLED AT THE LOCATION SHOWN ON THE APPROVED SUBDIVISION PLAT.

JUB

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REVISION

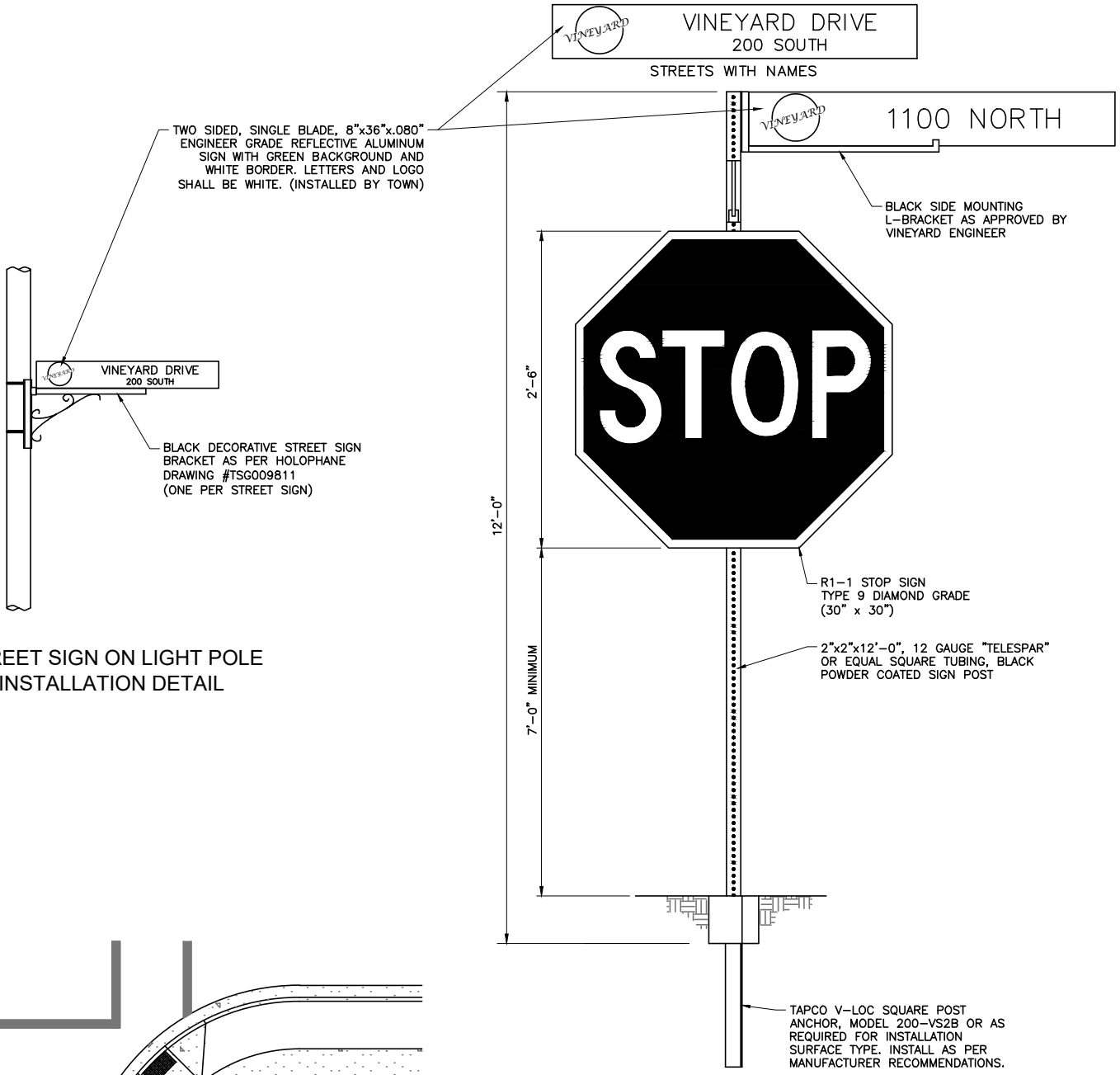
NO.	DESCRIPTION	BY	APR.	DATE
1	STANDARDS UPDATE	JMM	DEO	8/08/16
2				
3				
4				

VINEYARD
STAY CONNECTED

SURVEY MONUMENT PLACEMENT IN PAVEMENT

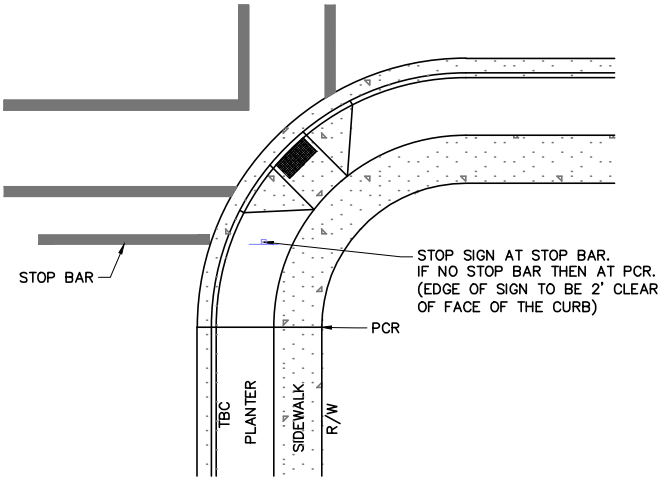
TOWN OF VINEYARD

STANDARD DRAWING NUMBER:	24
CAD DWG:	V_STD_DWGS
PLOT SCALE:	1.000
DRAWN BY:	JMM
DESIGN BY:	CRW
CHECKED BY:	DEO
ADOPTED DATE:	SEPTEMBER 1, 2016



STREET SIGN ON LIGHT POLE INSTALLATION DETAIL

TYPICAL STREET/STOP SIGN INSTALLATION



TYPICAL STREET/STOP SIGN LOCATION PLAN VIEW

NOTES:
1. STREET SIGNS SHALL BE INSTALLED ON LIGHT POLES OR ABOVE STOP SIGNS. IF THE STREET HAS A NAME, THE NAME SHALL BE PLACED ABOVE AND THE NUMBER UNDERNEATH.
2. SIGN POSTS SHALL BE "TELESPAR" OR EQUAL 2" SQUARE TUBING MANUFACTURED PRODUCTS INSTALLED IN V-LOC BREAK AWAY ANCHORS.
3. ALL REGULATORY SIGN SHALL BE SIZED AND INSTALLED PER CURRENT MUTCD STANDARDS.

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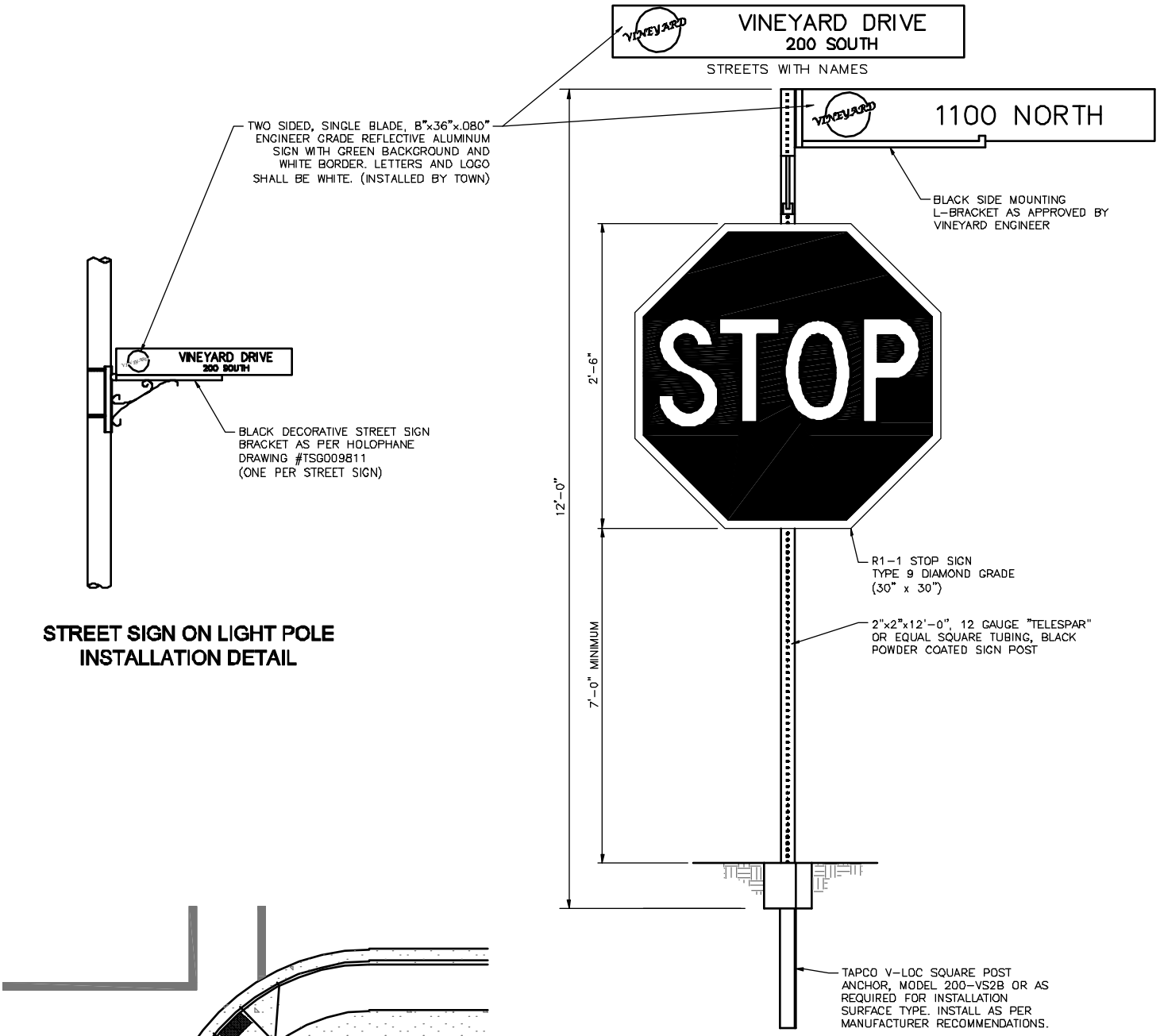
1	STANDARDS UPDATE	JMM	DEO	8/08/16
2	HANSEN, ALLEN & LUCE	DCL	CMT	9/12/25
3				
4				

VINEYARD
STAY CONNECTED

TYPICAL STREET / STOP SIGN INSTALLATION DETAIL

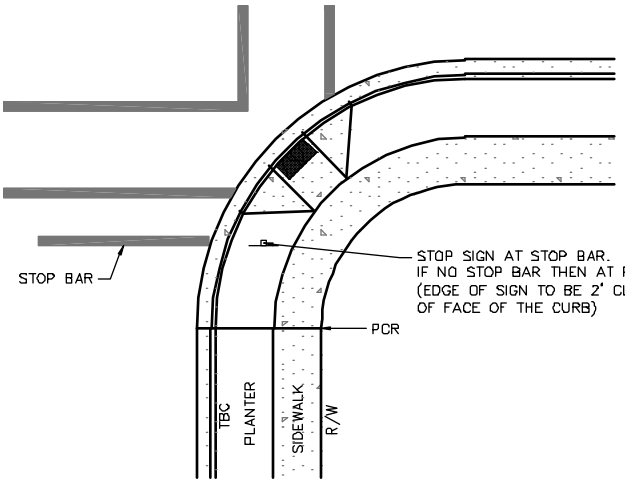
VINEYARD

STANDARD DRAWING NUMBER:	32
CAD DWG:	STANDARD
PLOT SCALE:	DRAWING
DRAWN BY:	JMM
DESIGN BY:	CRW
CHECKED BY:	DEO
ADOPTED DATE:	SEPTEMBER 1, 2016



STREET SIGN ON LIGHT POLE INSTALLATION DETAIL

TYPICAL STREET/STOP SIGN INSTALLATION



TYPICAL STREET/STOP SIGN LOCATION PLAN VIEW

NOTES:
1. STREET SIGNS SHALL BE INSTALLED ON LIGHT POLES OR ABOVE STOP SIGNS. IF THE STREET HAS A NAME, THE NAME SHALL BE PLACED ABOVE AND THE NUMBER UNDERNEATH.
2. SIGN POSTS SHALL BE "TELESPAR" OR EQUAL 2" SQUARE TUBING MANUFACTURED PRODUCTS INSTALLED IN V-LOC BREAK AWAY ANCHORS.
3. ALL REGULATORY SIGN SHALL BE SIZED AND INSTALLED PER CURRENT MUTCD STANDARDS.

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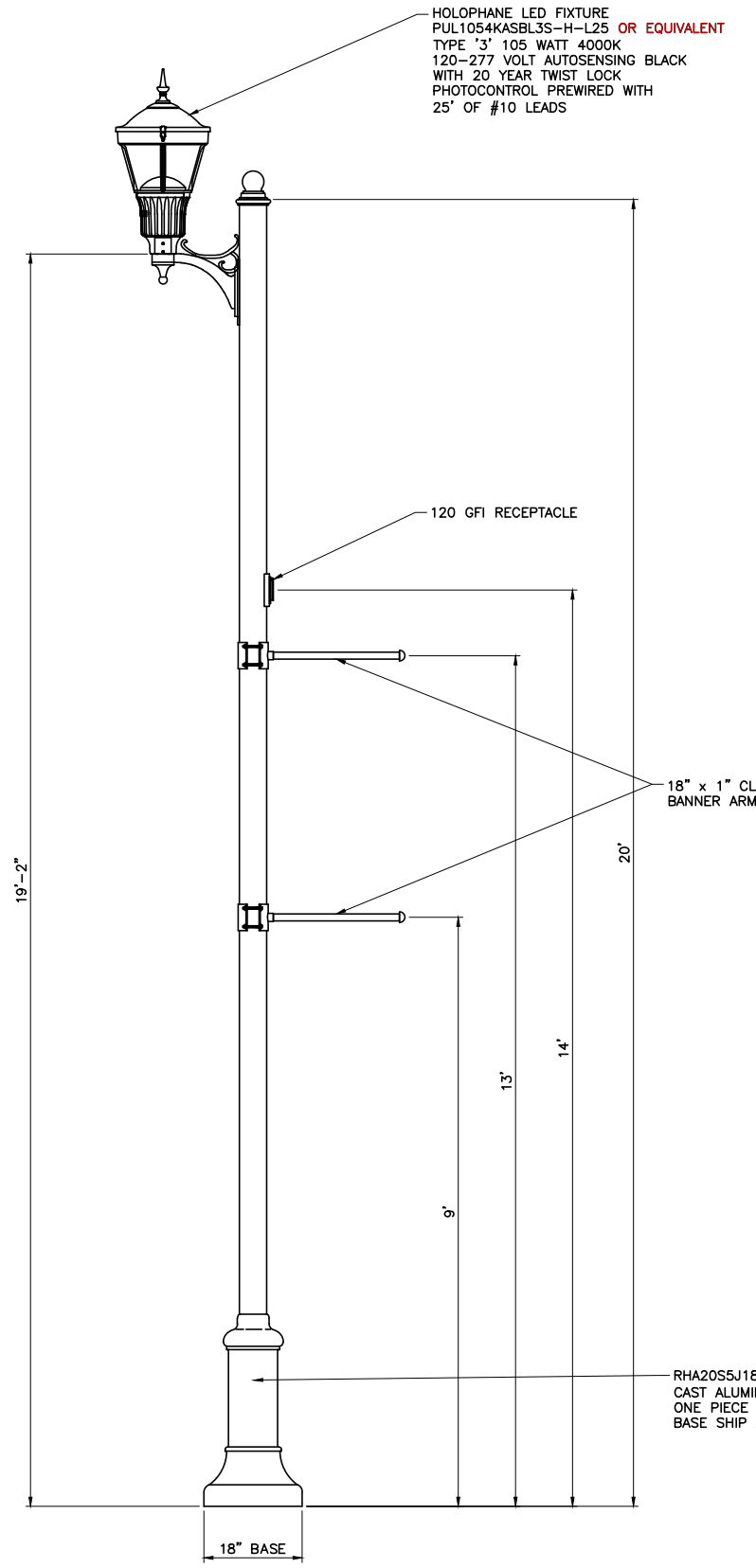
1	STANDARDS UPDATE	JMM	DEO	8/08/16
2				
3				
4				

VINEYARD
STAY CONNECTED

TYPICAL STREET / STOP SIGN INSTALLATION DETAIL

TOWN OF VINEYARD

STANDARD DRAWING NUMBER:	25
CAD DWG:	V_STD_DWGS
PLOT SCALE:	1.000
DRAWN BY:	JMM
DESIGN BY:	CRW
CHECKED BY:	DEO
ADOPTED DATE:	SEPTEMBER 1, 2016



NOTES:

1. SUPPLIED BY HOLOPHANE OR EQUIVALENT.

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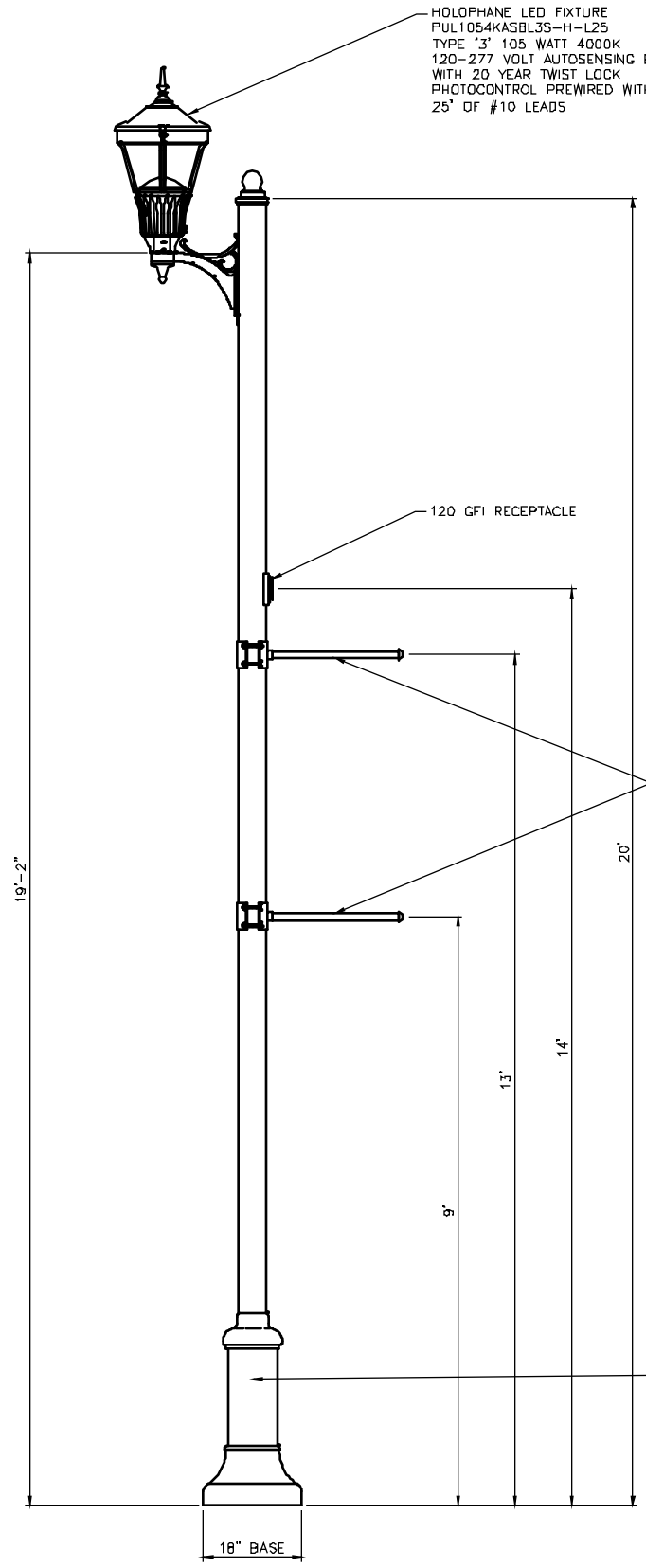
1	STANDARDS UPDATE	JMM	DEO	8/08/16
2	HANSEN, ALLEN & LUCE	DCL	CMT	9/12/25
3				
4				

VINEYARD
STAY CONNECTED

TYPICAL STREET LIGHT 1

VINEYARD

STANDARD DRAWING NUMBER:	33
CAD DWG:	STANDARD
PLOT SCALE:	DRAWING
DRAWN BY:	JMM
DESIGN BY:	CRW
CHECKED BY:	DEO
ADOPTED DATE:	SEPTEMBER 1, 2016



NOTES:

1. SUPPLIED BY HOLOPHANE.

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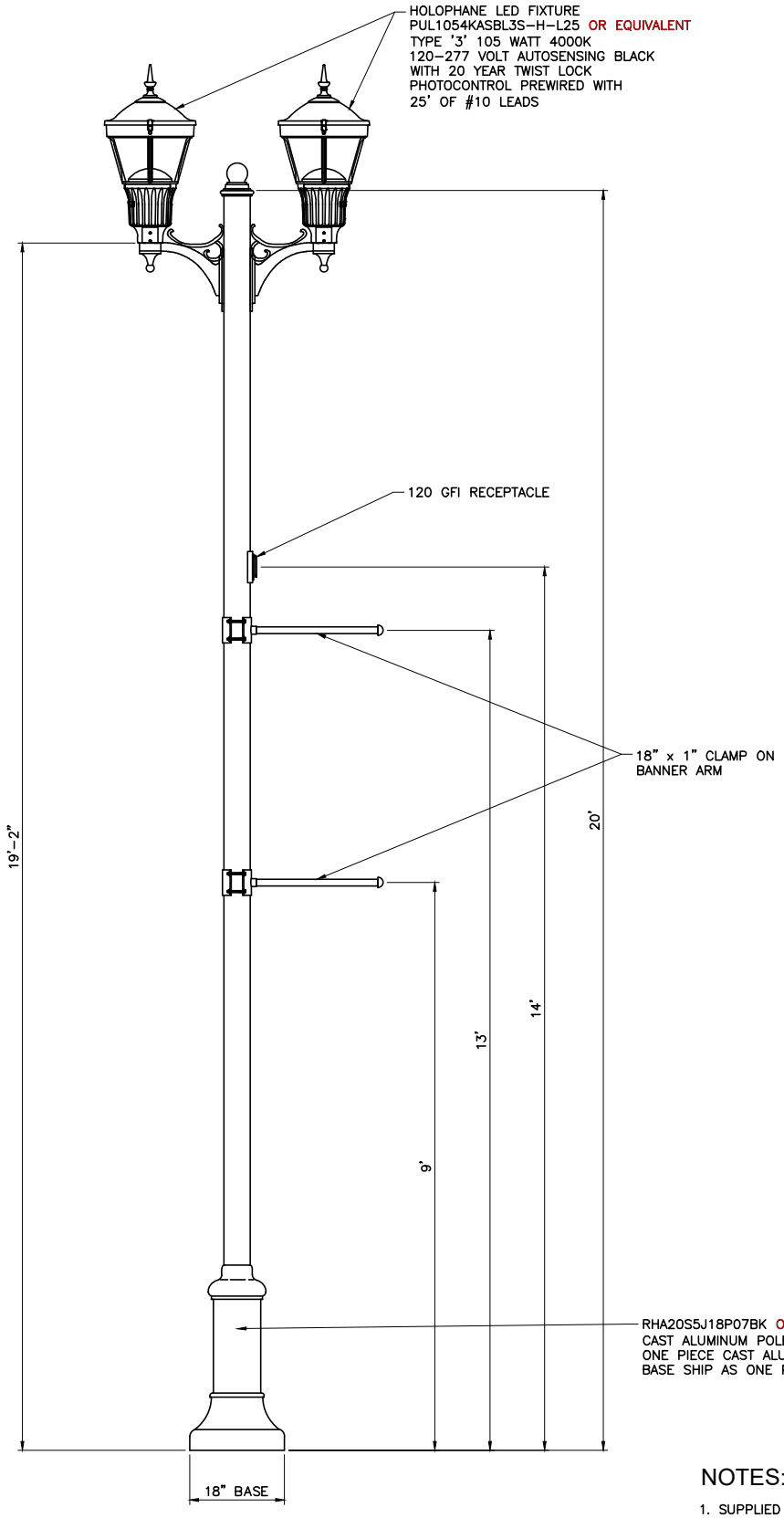
NO.	DESCRIPTION	BY	APR.	DATE
1	STANDARDS UPDATE	JMM	DEO	8/08/16
2				
3				
4				

VINEYARD
STAY CONNECTED

TYPICAL STREET LIGHT 1

TOWN OF VINEYARD

STANDARD DRAWING NUMBER:	26
CAD DWG:	V_STD_DWGS
PLOT SCALE:	1.000
DRAWN BY:	JMM
DESIGN BY:	CRW
CHECKED BY:	DEO
ADOPTED DATE:	SEPTEMBER 1, 2016



NOTES:

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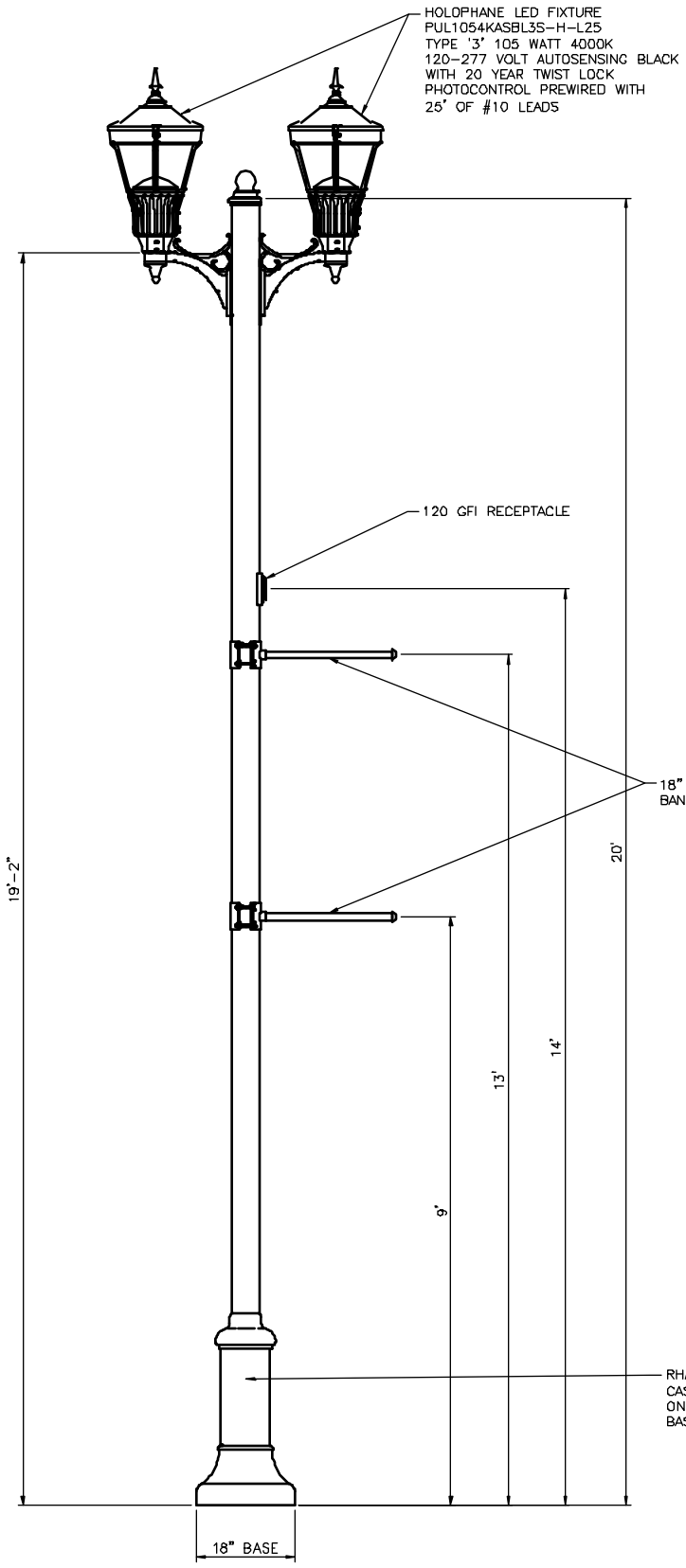
1	STANDARDS UPDATE	JMM	DEO	8/08/16
2	HANSEN, ALLEN & LUCE	DCL	CMT	9/12/25
3				
4				

VINEYARD
STAY CONNECTED

TYPICAL STREET LIGHT 2

VINEYARD

STANDARD DRAWING NUMBER:	34
CAD DWG:	STANDARD
PLOT SCALE:	DRAWING
DRAWN BY:	JMM
DESIGN BY:	CRW
CHECKED BY:	DEO
ADOPTED DATE:	SEPTEMBER 1, 2016



NOTES:

1. SUPPLIED BY HOLOPHANE.

JUB

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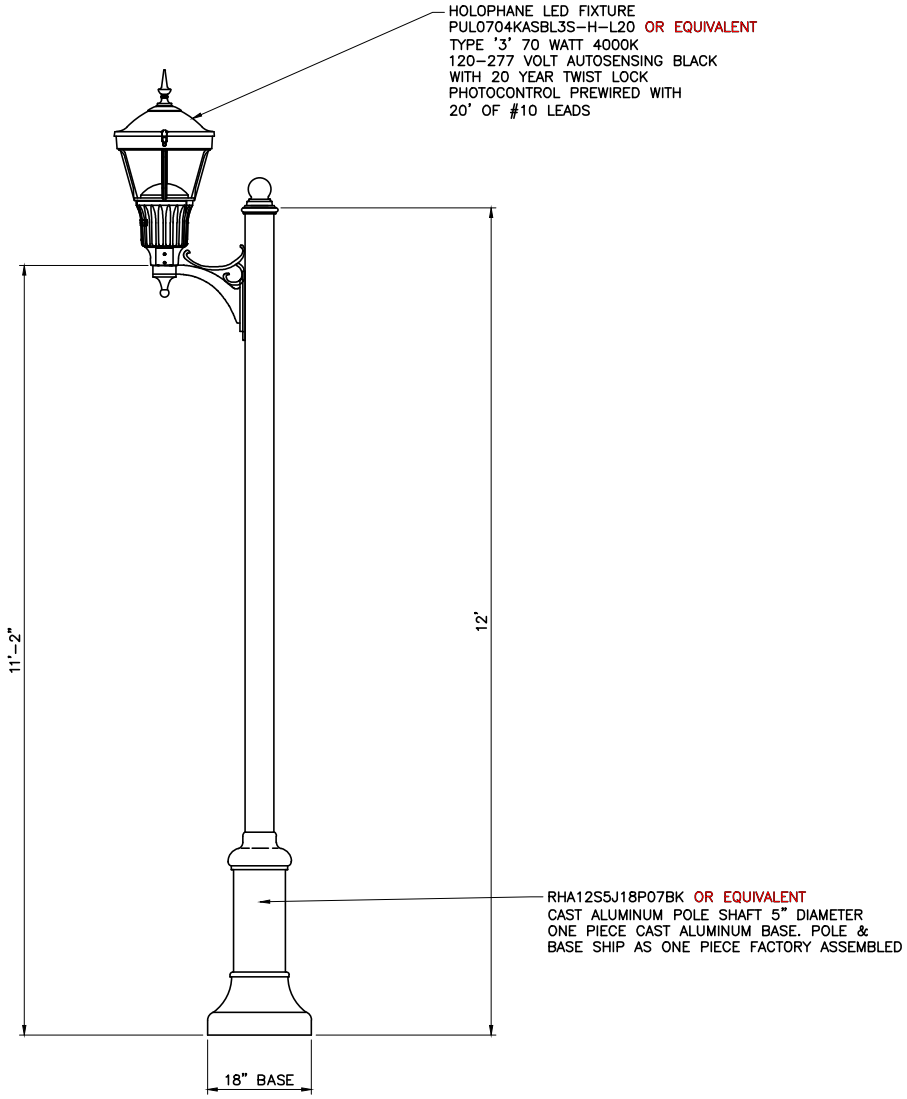
NO.	DESCRIPTION	BY	APR.	DATE
1	STANDARDS UPDATE	JMM	DEO	9/08/16
2				
3				
4				

VINEYARD
STAY CONNECTED

TYPICAL STREET LIGHT 2

TOWN OF VINEYARD

STANDARD DRAWING NUMBER:	27
CAD DWG:	V_STD_DWGS
PLOT SCALE:	1.000
DRAWN BY:	JMM
DESIGN BY:	CRW
CHECKED BY:	DEO
ADOPTED DATE:	SEPTEMBER 1, 2016



NOTES:

1. SUPPLIED BY HOLOPHANE OR EQUIVALENT.

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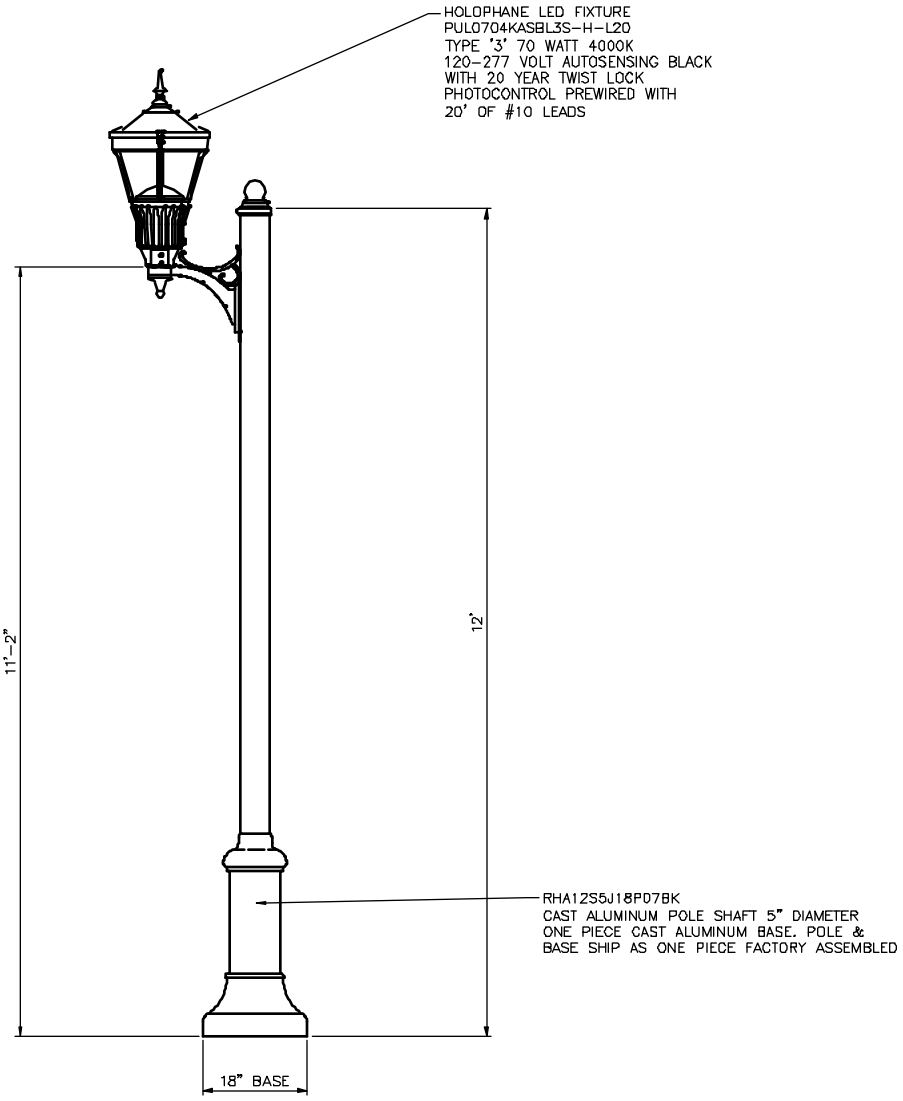
NO.	DESCRIPTION	BY	APR.	DATE
1	STANDARDS UPDATE	JMM	DEO	8/08/16
2	HANSEN, ALLEN & LUCE	DCL	CMT	9/12/25
3				
4				

VINEYARD
STAY CONNECTED

TYPICAL STREET LIGHT 3

VINEYARD

STANDARD DRAWING NUMBER:	35
CAD DWG:	STANDARD
PLOT SCALE:	DRAWING
DRAWN BY:	JMM
DESIGN BY:	CRW
CHECKED BY:	DEO
ADOPTED DATE:	SEPTEMBER 1, 2016



NOTES:

1. SUPPLIED BY HOLOPHANE.

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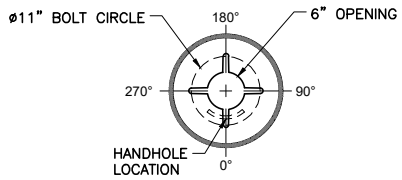
1	STANDARDS UPDATE	JMM	DEO	8/08/16
2				
3				
4				

VINEYARD
STAY CONNECTED

TYPICAL STREET LIGHT 3

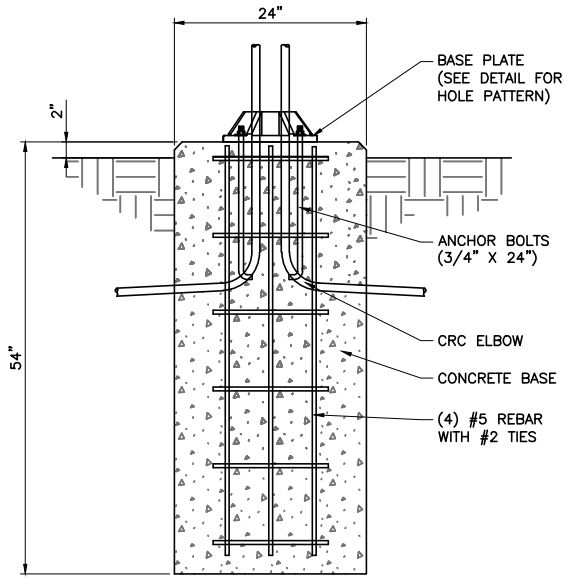
TOWN OF VINEYARD

STANDARD DRAWING NUMBER:	28
CAD DWG:	V_STD_DWGS
PLOT SCALE:	1.000
DRAWN BY:	JMM
DESIGN BY:	CRW
CHECKED BY:	DEO
ADOPTED DATE:	SEPTEMBER 1, 2016



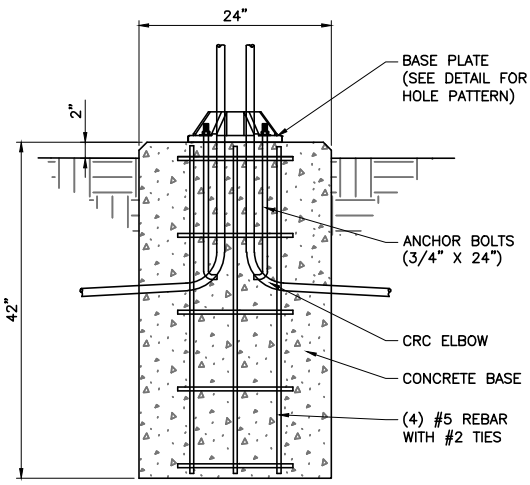
BOTTOM VIEW

(INDICATED POLE IS LAYING DOWN WITH ACCESS COVER FACING UP)



CONCRETE POLE BASE TYPE A

CONCRETE BASE FOR TYPICAL STREET LIGHT 1 AND 2



CONCRETE POLE BASE TYPE B

CONCRETE BASE FOR TYPICAL STREET LIGHT 3

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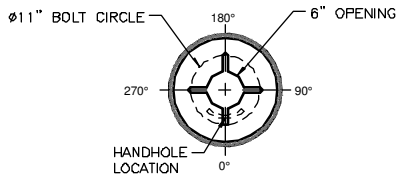
NO.	DESCRIPTION	BY	APR.	DATE
1	STANDARDS UPDATE	JMM	DEO	8/08/16
2	HANSEN, ALLEN & LUCE	DCL	CMT	9/12/25
3				
4				

VINEYARD
STAY CONNECTED

CONCRETE POLE BASE (STREET LIGHT)

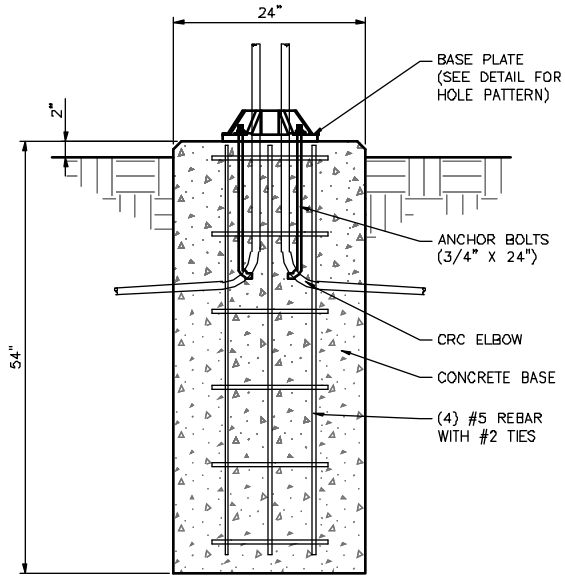
VINEYARD

STANDARD DRAWING NUMBER:	36
CAD DWG:	STANDARD
PLOT SCALE:	DRAWING
DRAWN BY:	JMM
DESIGN BY:	CRW
CHECKED BY:	DEO
ADOPTED DATE:	SEPTEMBER 1, 2016



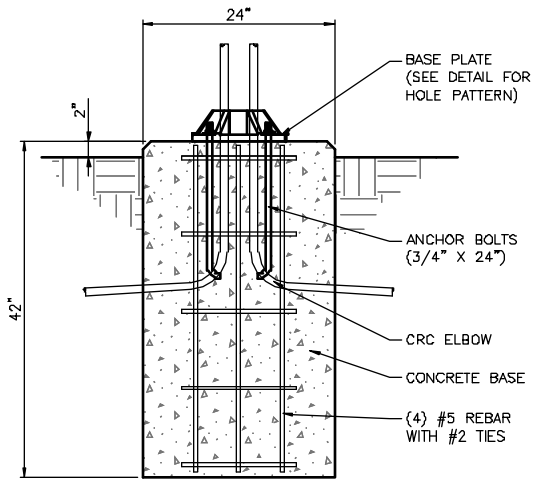
BOTTOM VIEW

(INDICATED POLE IS LAYING DOWN WITH ACCESS COVER FACING UP)



CONCRETE POLE BASE TYPE A

CONCRETE BASE FOR TYPICAL STREET LIGHT 1 AND 2



CONCRETE POLE BASE TYPE B

CONCRETE BASE FOR TYPICAL STREET LIGHT 3

JUB

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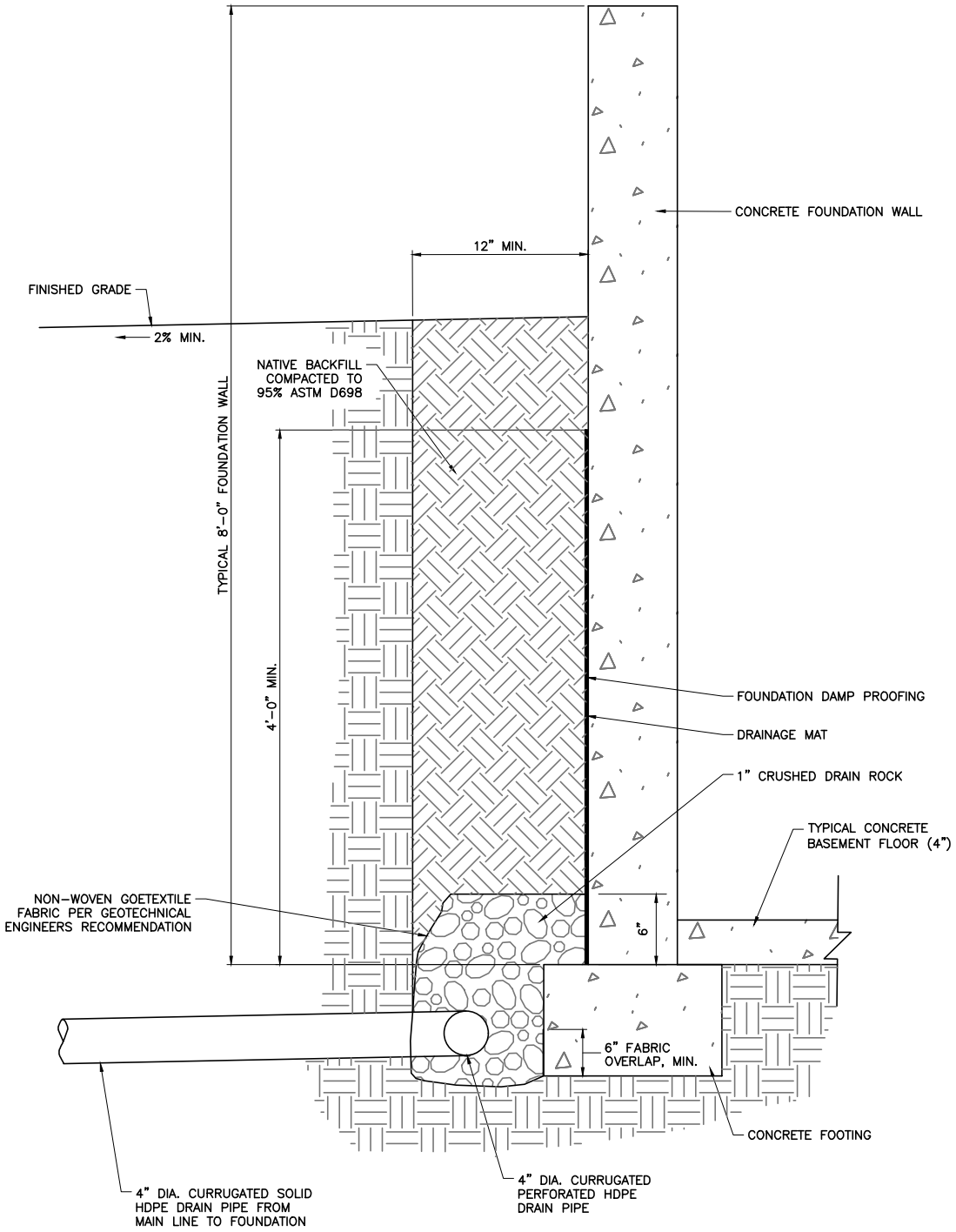
2				
3				
4				

VINEYARD
STAY CONNECTED

CONCRETE POLE BASE (STREET LIGHT)

TOWN OF VINEYARD

STANDARD DRAWING NUMBER:	29
CAD DWG:	V_STD_DWGS
PLOT SCALE:	1.000
DRAWN BY:	JMM
DESIGN BY:	CRW
CHECKED BY:	DEO
ADOPTED DATE:	SEPTEMBER 1, 2016



4" FOUNDATION DRAIN DETAIL

STATEMENT OF USE

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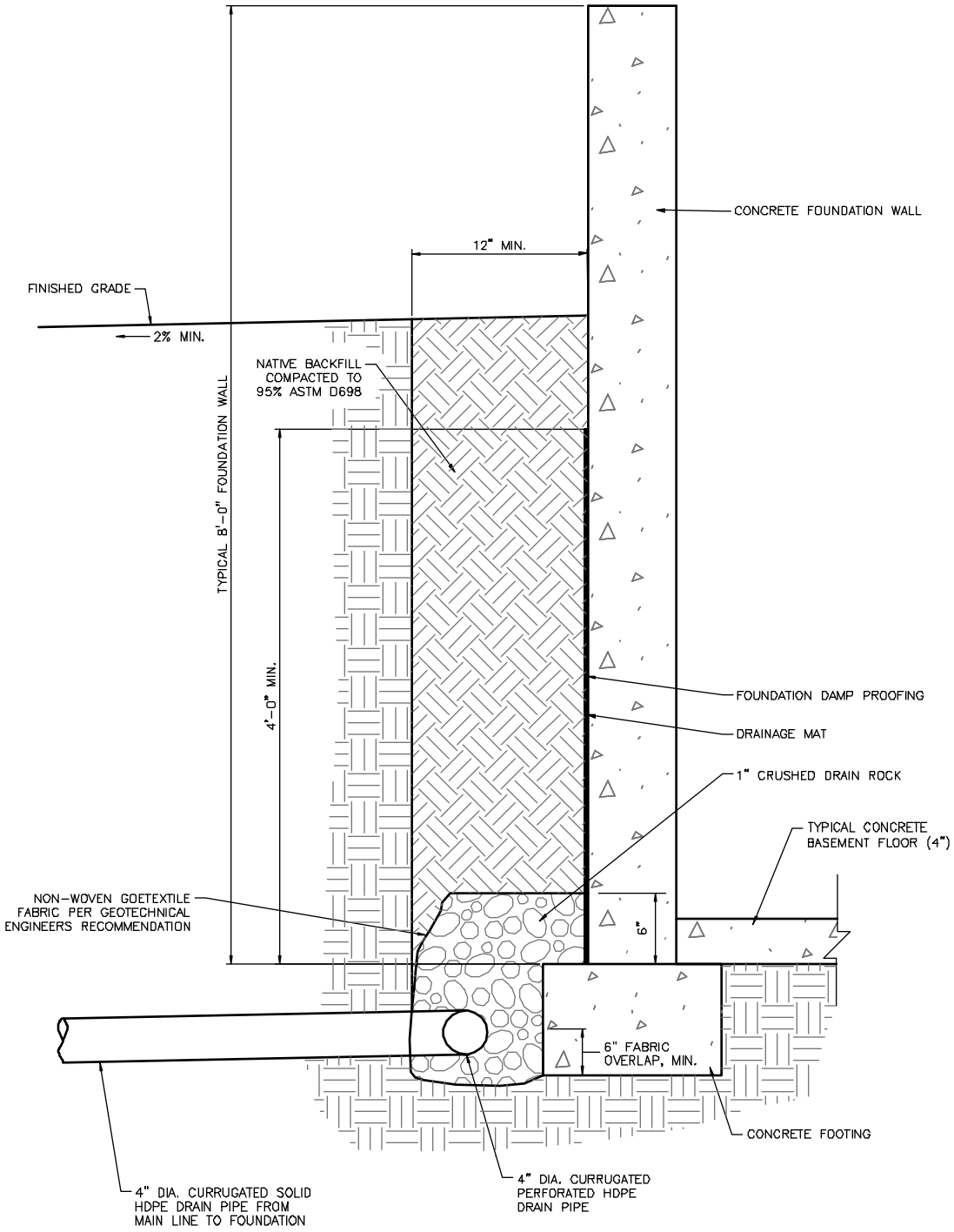
NO.	DESCRIPTION	BY	APR.	DATE
1	STANDARDS UPDATE	JMM	DEO	8/08/16
2	HANSEN, ALLEN & LUCE	DCL	CMT	9/12/25
3				
4				

VINEYARD
STAY CONNECTED

4-INCH FOUNDATION DRAIN DETAIL

VINEYARD

STANDARD DRAWING NUMBER:	37
CAD DWG:	STANDARD
PLOT SCALE:	DRAWING
DRAWN BY:	JMM
DESIGN BY:	CRW
CHECKED BY:	DEO
ADOPTED DATE:	SEPTEMBER 1, 2016



4" FOUNDATION DRAIN DETAIL

JUB

STATEMENT OF USE

THIS DOCUMENT AND ANY ILLUSTRATIONS HEREON ARE PROVIDED AS STANDARD CONSTRUCTION DETAILS WITHIN THE TOWN OF VINEYARD. DEVEATION FROM THIS DOCUMENT REQUIRES APPROVAL FROM THE TOWN OF VINEYARD. THE TOWN OF VINEYARD CORPORATION CAN NOT BE HELD LIABLE FOR MISUSE OR CHANGES REGARDING THIS DOCUMENT.

REVISION

NO.	DESCRIPTION	BY	APR.	DATE
1	STANDARDS UPDATE	JMM	DEO	8/08/16
2				
3				
4				

VINEYARD
STAY CONNECTED

4-INCH FOUNDATION DRAIN DETAIL

TOWN OF VINEYARD

STANDARD DRAWING NUMBER:	30
CAD DWG:	V_STD_DWGS
PLOT SCALE:	1.000
DRAWN BY:	JMM
DESIGN BY:	CRW
CHECKED BY:	DEO
ADOPTED DATE:	SEPTEMBER 1, 2016

VINEYARD CITY COUNCIL STAFF REPORT

Meeting Date: December 10, 2025
Agenda Item: Amendment to Governing Documents for Utah City West PID Nos. 1-5 (Resolution 2025-70)
Department: Administration
Presenter: Jayme Blakesley

Background/Discussion:
The Utah City West Public Infrastructure District Nos. 1–5 were created as independent political subdivisions of the State of Utah by Resolution No. 2023-58 of the Vineyard City Council adopted on December 27, 2023, in accordance with the Public Infrastructure District Act, Title 17D, Chapter 4, Utah Code, and the Limited Purpose Local Government Entities – Special Districts provisions of Title 17B, Utah Code. The Utah City West Public Infrastructer District Nos. 1-5 now wish to amend and restate their governing documents as presented in exhibit A

Fiscal Impact:
None

Recommendation:
Staff recommends approval of the amended and restated documents are presented.

Sample Motion:
"I move to adopt Resolution 2025-70 as presented."

Attachments:
1. Resolution to Amend Governing Document, Utah City West PIDs 2025-12-10
2. 2025-12-09 Amended and Restated Governing Document Utah City West PID Nos. 1-5 (FINAL)

RESOLUTION NO. 2025-70

A RESOLUTION OF THE CITY COUNCIL OF VINEYARD, UTAH APPROVING AN AMENDED AND RESTATED GOVERNING DOCUMENT FOR THE UTAH CITY WEST PUBLIC INFRASTRUCTURE DISTRICT NOS. 1–5 AND RELATED MATTERS.

WHEREAS, the Utah City West Public Infrastructure District Nos. 1–5 (each a "**District**" and collectively the "**Districts**") were created as independent political subdivisions of the State of Utah by Resolution No. 2023-58 (the "**Creation Resolution**") of the Vineyard City Council (the "**Council**") adopted on December 27, 2023, in accordance with the Public Infrastructure District Act, Title 17D, Chapter 4, Utah Code (the "**PID Act**"), and the Limited Purpose Local Government Entities – Special Districts provisions of Title 17B, Utah Code (together with the PID Act, the "**Act**"); and

WHEREAS, pursuant to the Creation Resolution, the Districts are governed by that certain Governing Document approved by the Council and recorded following the Lieutenant Governor's issuance of Certificates of Creation; and

WHEREAS, Section V.E of the Governing Document provides that amendments to the Governing Document may be made upon the passage of a resolution by both (i) the City Council and (ii) the Boards of Trustees of the applicable Districts; and

WHEREAS, on December 4, 2025, the Boards of Trustees of the Districts adopted a Joint Resolution approving certain amendments to the Governing Document, as reflected in the Amended and Restated Governing Document for Utah City West Public Infrastructure District Nos. 1–5 (the "**Amended and Restated Governing Document**"), attached hereto as **Exhibit A**, including:

1. Adding a procedure for the Boards to fill vacancies, consistent with Utah Code §§ 17D-4-202 and 17D-4-203(1)(c);

2. Eliminating the requirement for quarterly reporting, while retaining the annual reporting requirement as permitted under the Act; and

3. Authorizing the Districts to impose an operations and maintenance mill levy, consistent with Utah Code § 17D-4-203(2)(e), to pay for the costs of operating and maintaining public infrastructure owned or operated by the Districts; and

WHEREAS, the Council finds that the proposed Amended and Restated Governing Document is consistent with the Act, is in the best interests of the City and the Districts, and promotes the efficient administration and financial management of the Districts; and

WHEREAS, the Council desires to approve the Amended and Restated Governing Document and authorizes the Districts to record and implement the same.

DRAFT

NOW, THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF VINEYARD, UTAH, AS FOLLOWS:

Section 1. Approval of Amendments. The amendments to the Governing Document for the Utah City West Public Infrastructure District Nos. 1–5, as adopted by the Boards of Trustees in their Joint Resolution dated December 4, 2025, including (i) the vacancy-appointment procedure, (ii) elimination of quarterly reporting, and (iii) authorization for an operations and maintenance mill levy, are hereby approved pursuant to Section V.E of the Governing Document and applicable provisions of the Act and reflected in the Amended and Restated Governing Document.

Section 2. Authorization to Implement and Record. The City Recorder, City Attorney, Mayor, or City Manager is hereby authorized to take all actions necessary or desirable to implement this Resolution, including coordinating with the Districts to ensure that the Amended and Restated Governing Document is properly recorded in the official records of Utah County.

Section 3. Supersede. The Governing Document shall be superseded in all respects by the Amended and Restated Governing Document.

Section 4. Severability. If any provision of this Resolution is determined to be invalid or unenforceable, such invalidity shall not affect the validity of the remaining provisions.

Section 5. Effective Date. This Resolution shall take effect immediately upon adoption.

Passed and dated this 10th day of December 2025.

_____
Julie Fullmer, Mayor

Attest:

_____
Tony Lara, Deputy City Recorder

DRAFT

EXHIBIT A
Amended and Restated Governing Document

DRAFT

AMENDED AND RESTATED

GOVERNING DOCUMENT

FOR

UTAH CITY WEST PUBLIC INFRASTRUCTURE DISTRICT NOS. 1-5

VINEYARD, UTAH

Prepared By:

WBA
Local Government Law

350 East 400 South, Suite 2301
Salt Lake City, UT 84111
(303) 858-1800

APPROVED ON DECEMBER 10, 2025

(Original Governing Document Approved December 27, 2023)

LIST OF EXHIBITS

EXHIBIT A Legal Descriptions

EXHIBIT B Initial District's Boundaries Map and Annexation Area Boundary Map

EXHIBIT C Estimated Public Improvement Costs

I. INTRODUCTION

A. Purpose and Intent. The Districts are independent units of local government, separate and distinct from the City, and, except as may otherwise be provided for by State or local law or this Governing Document, their activities are subject to review by the City only insofar as they may deviate in a material matter from the requirements of the Governing Document. It is intended that the Districts will provide a part or all of the Public Improvements for the use and benefit of all anticipated inhabitants and taxpayers of the Districts. The primary purpose of the Districts will be to finance the construction of these Public Improvements.

B. Objective of the City Regarding Districts' Governing Document. The City's objective in approving the Governing Document for the Districts is to authorize the Districts to provide for the planning, design, acquisition, construction, installation, relocation and redevelopment of the Public Improvements from the proceeds of Debt to be issued by the Districts. All Debt is expected to be repaid by a tax mill levy no higher than the Maximum Debt Mill Levy for commercial and residential properties, and/or repaid by Assessments. Debt which is issued within these parameters will insulate property owners from excessive tax burdens to support the servicing of the Debt and will result in a timely and reasonable discharge of the Debt.

This Governing Document is intended to establish a limited purpose for the Districts and explicit financial constraints that are not to be violated under any circumstances. The primary purpose is to provide for the Public Improvements associated with development and regional needs. Operational activities are allowed, but only by agreement with the City by amending this Governing Document or through an Interlocal Agreement, and as provided through a relevant public entity or by the Districts if statutory changes occur subsequent to approval of this Governing Document that allow the Districts to directly provide for operational activities.

It is the intent of the Districts to dissolve upon payment or defeasance of all Debt incurred or upon a determination that adequate provision has been made for the payment of all Debt, and if the Districts has authorized operating functions, to retain only the power necessary to impose and collect taxes or Fees to pay for these costs.

C. Limitation on Applicability. This Governing Document is not intended to and does not create any rights or remedies in favor of any party other than the City. Failure of the Districts to comply with any terms or conditions of this Governing Document shall not relieve any party of an obligation to the Districts or create a basis for a party to challenge the incorporation or operation of the Districts, or any Debt issued by the Districts.

II. DEFINITIONS

In this Governing Document, the following terms shall have the meanings indicated below, unless the context hereof clearly requires otherwise:

Annexation Area: means the property shown in **Exhibit B**.

Assessment: means assessments levied in an assessment area created within the Districts.

Board: means the Board of Trustees of a District.

Bond, Bonds or Debt: means bonds or other obligations, including loans of any property owner, for the payment of which any District has promised to impose an *ad valorem* property tax mill levy, and/or collect Assessments.

City: means Vineyard, Utah.

City Code: means the City Code of Vineyard, Utah.

City Council: means the City Council of Vineyard, Utah.

District: means the Utah City Public Infrastructure Districts.

Districts: means two or more Utah City West Public Infrastructure Districts.

Districts' Area: means the Qualified Property within the boundaries depicted in the Initial Districts' Boundary Maps and the Annexation Area Boundary Map.

Fees: means any fee imposed by any District for administrative or operational services provided by such District.

General Obligation Debt: means a Debt that is directly payable from and secured by ad valorem property taxes that are levied by the Districts and does not include Limited Tax Debt.

Governing Document: means this Amended and Restated Governing Document for the Districts approved by the City Council.

Governing Document Amendment: means an amendment to the Governing Document approved by the City Council in accordance with the City's ordinance and the applicable state law and approved by the Boards in accordance with applicable state law.

Initial Districts' Boundaries: means the boundaries of the Districts described in the Initial Districts' Boundaries Map.

Initial Districts' Boundaries Map: means the map(s) attached hereto as **Exhibit B**, describing the initial boundaries of the Districts.

Limited Tax Debt: means a debt that is directly payable from and secured by ad valorem property taxes that are levied by the Districts which may not exceed the Maximum Debt Mill Levy.

Local Districts Act: means Title 17B of the Utah Code, as amended from time to time.

Maximum Debt Mill Levy: means the maximum mill levy the Districts are permitted to impose for payment of Debt as set forth in Section VI.C below.

Municipal Advisor: means a consultant that: (i) advises Utah governmental entities on matters relating to the issuance of securities by Utah governmental entities, including

matters such as the pricing, sales and marketing of such securities and the procuring of bond ratings, credit enhancement and insurance in respect of such securities; (ii) shall be an underwriter, investment banker, or individual listed as a public finance advisor in the Bond Buyer's Municipal Market Place; and (iii) is not an officer or employee of the Districts and has not been otherwise engaged to provide services in connection with the transaction related to the applicable Debt.

Net Proceeds: means the gross proceeds of the sale of bonds, less any of the following: (1) amounts applied or to be applied to pay transaction and administrative expenses, including underwriting discount, (2) amounts to pay cost of issuance, and (3) amounts to pay capitalized interest and to fund any reserves deemed necessary or appropriate by the Districts, not including any investment earnings realized thereon.

Project: means the development or property known as Utah City.

PID Act: means Title 17D, Chapter 4 of the Utah Code, as amended from time to time and any successor statute thereto.

Public Improvements: means a part or all of the improvements authorized to be planned, designed, acquired, constructed, installed, relocated, redeveloped and financed as generally described in the Local District Act, except as specifically limited in Section V below to serve the future taxpayers and inhabitants of the Districts' Area as determined by the Board.

Qualified Property: means all commercial property, including all multi-family residential property. The term "Qualified Property" excludes all residential units that are developed for sale to individual buyers and are owner-occupied.

State: means the State of Utah.

Taxable Property: means real or personal property within the Districts Area subject to ad valorem taxes imposed by the Districts.

Trustee: means a member of a Board.

Utah Code: means the Utah Code Annotated 1953, as amended.

III. BOUNDARIES

The combined area of the Initial Districts' Boundaries and the Annexation Area includes approximately 292 acres. A legal description of the Initial Districts' Boundaries is attached hereto as **Exhibit A**. It is anticipated that the Districts' boundaries may change from time to time as they undergo annexations and withdrawals pursuant to Section 17B-4-201, Utah Code, subject to Article V below. The project is expected to consist of approximately 191 acres of residential property, 28 acres of commercial property and 73 acres of civic/open space and parks.

IV. BENEFITS OF DISTRICTS

The Districts anticipate providing many benefits to the City and surrounding areas including: storm drainage improvements, a potable water system, sanitary sewer improvements, streets, sidewalks, landscaping and irrigation improvements, traffic and street lighting improvements, public parking facilities, public parks and a public trail system.

V. DESCRIPTION OF PROPOSED POWERS, IMPROVEMENTS AND SERVICES

A. Powers of the Districts and Governing Document Amendment. The Districts shall have the power and authority to provide the Public Improvements within and without the boundaries of the Districts as such power and authority is described in the PID Act, and other applicable statutes, common law and the Constitution, subject to the limitations set forth herein. The estimated cost of the public improvements are set for in **Exhibit C**.

B. Operations and Maintenance Limitation. The purpose of the Districts is to plan for, design, acquire, construct, install, relocate, redevelop and finance the Public Improvements. Where required, the Districts shall dedicate the Public Improvements to the City or other appropriate public entity in a manner consistent with the rules, regulations and City Code of the City or consistent with the applicable rules and regulations of another public entity. The Districts shall be authorized, but not obligated, to own, operate and maintain Public Improvements not otherwise required to be dedicated to the City or other public entity, including, but not limited to street improvements (including roads, curbs, gutters, culverts, sidewalks, bridges, parking facilities, paving, lighting, grading, landscaping, and other street improvements), traffic and safety controls, retaining walls, park and recreation improvements and facilities, trails, open space, landscaping, drainage improvements (including detention and retention ponds, trickle channels, and other drainage facilities), irrigation system improvements (including wells, pumps, storage facilities, and distribution facilities), and all necessary equipment and appurtenances incident thereto.

C. Construction Standards Limitation. Pursuant to Section 17D-4-204(3)(a)(ii), Utah Code, to the extent the Districts construct any Public Improvements, they will ensure that the Public Improvements are designed and constructed in accordance with the standards and specifications of the City, as are duly enacted by ordinance or established by a development agreement between a developer and the City, and of other governmental entities having proper jurisdiction. The Districts will obtain applicable permits for construction and installation of Public Improvements prior to performing such work. Land easements, or improvements to be conveyed or dedicated to the City and any other local government entity shall be conveyed in accordance with the related standards at no cost to the City. All public infrastructure within the Districts, which will be connected to and owned by another public entity, shall be subject to all design and inspection requirements and other standards of such public entity. The Districts shall be subject to City zoning, subdivision, building codes, and all other applicable City ordinances and regulations. Approval of the Governing Document shall not bind the City to approve other matters which the Districts or developer may request. The Districts shall pay all fees and expenses as provided in the Governing Document.

The Districts shall be subject to the State of Utah's procurement statutes and regulations. At a minimum, the acquisition of completed or partially completed improvements shall be for fair market value, as reasonably determined by a surveyor or engineer.

D. Annexation and Withdrawal.

(a) The City, by approval of this Governing Document, has consented to the annexation of any area within the Districts' Area into any District. Such area may only be annexed after obtaining consent of all property owners and registered voters, if any, within the area proposed to be annexed and the passage of a resolution of the Board of the District approving the annexation. The Districts shall not annex within their boundaries any property outside the Districts' Area without the prior written consent of the City.

(b) The City, by approval of this Governing Document, has consented to the withdrawal from the Districts of any property within the Districts' Area. Such area may only be withdrawn from the District after obtaining consent of all property owners and registered voters, if any, within the area proposed to be withdrawn and the passage of a resolution of the Board of the District approving the withdrawal.

(c) Any annexation or withdrawal shall be in accordance with the requirements of the PID Act.

(d) Upon any annexation or withdrawal, the Districts shall provide the City a description of the revised Districts' Boundaries.

(e) Annexation or withdrawal of any area in accordance with this section shall not constitute an amendment of this Governing Document.

E. Governing Document Amendment Requirement. This Governing Document has been designed with sufficient flexibility to enable the Districts to provide required facilities under evolving circumstances without the need for numerous amendments. Subject to the limitations and exceptions contained herein, this Governing Document may be amended by passage of a resolution of the City and the applicable Districts approving such amendment.

F. Total Debt Issuance Limitation. The Districts shall not issue Debt in excess of an aggregate amount of One Billion Dollars ($1,000,000,000). This amount excludes any portion of bonds issued to refund a prior issuance of debt by the Districts.

G. Bankruptcy Limitation. All of the limitations contained in this Governing Document, including, but not limited to, those pertaining to the Maximum Debt Mill Levy, have been established under the authority of the City to approve a Governing Document with conditions pursuant to Section 17D-4-201(5), Utah Code. It is expressly intended that such limitations:

(a) Shall not be subject to set-aside for any reason or by any court of competent jurisdiction, absent a Governing Document Amendment; and

(b) Are, together with all other requirements of Utah law, included in the "political or governmental powers" reserved to the State under the U.S. Bankruptcy Code (11 U.S.C.) Section 903, and are also included in the "regulatory or electoral approval necessary under applicable non-bankruptcy law" as required for confirmation of a Chapter 9 Bankruptcy Plan under Bankruptcy Code Section 943(b)(6).

Any Debt, issued with a pledge or which results in a pledge, that exceeds the Maximum Debt Mill Levy, shall be deemed a material modification of this Governing Document and shall not be an authorized issuance of Debt unless and until such material modification has been approved by the City as part of a Governing Document Amendment.

H. Alternative District Types. If it is determined, in the sole discretion of the Board of any District, that the particular District is not adequately serving the project, the Board may convert or replace the District with an alternative type of local district, special service district or other statutorily created governmental entity whether in existence at the time of approval of this Governing Document or established subsequent to the approval of this Governing Document. At the direction of a Board, any District may, in accordance with applicable law and after obtaining consent from the City, be converted from a public infrastructure district to an alternative governmental entity.

I. Multiple District Structure. It is anticipated that the Districts, collectively, will undertake the financing and construction of the Public Improvements. The nature of the functions and services to be provided by each District may be clarified in an interlocal agreement between and among one or more of the Districts. All such agreements will be designed to help assure the orderly development of the Public Improvements and essential services in accordance with the requirements of this Governing Document.

VI. THE BOARD OF TRUSTEES

A. Board Composition. The Board shall be composed of five (5) Trustees, who shall be appointed by the City Council pursuant to the PID Act. All Trustees shall be at large seats. Trustee terms for each District shall be staggered with initial terms as follows: Trustees 3, 4, and 5 shall serve an initial term of 4 years; Trustees 1 and 2 shall serve an initial term of 6 years. All terms shall commence on the date of issuance of a certificate of creation by the Office of the Lieutenant Governor of the State of Utah. In accordance with the PID Act, appointed Trustees shall not be required to be residents of such District. Upon any annexation or withdrawal in accordance with this Governing Document, any affected District may adjust its anticipated residential certificates of occupancy to reflect such boundary change.

B. Vacancy. Any vacancy on the Board shall be filled by the remaining members on the Board in accordance with all qualifying and eligibility requirements set forth in Section 17D-4-202, Utah Code. In the event a vacancy on the Board is not filled within sixty (60) days of the occurrence of the vacancy, the approving authority may appoint a member or member(s) to fill the

vacancies. The appointed Trustee shall meet all qualifying and eligibility requirements set forth in Section 17D-4-202, Utah Code.

VII. FINANCIAL PLAN

A. General.

The Districts shall be authorized to provide for the planning, design, acquisition, construction, installation, relocation and/or redevelopment of the Public Improvements from their revenues and by and through the proceeds of Debt to be issued by the Districts.

B. Maximum Voted Interest Rate and Maximum Underwriting Discount.

The interest rate on any Debt is expected to be the market rate at the time the Debt is issued. In the event of a default, the proposed maximum interest rate on any Debt is not expected to exceed eighteen percent (18%). The proposed maximum underwriting discount will be five percent (5%). Debt, when issued, will comply with all relevant requirements of this Governing Document, State law and Federal law as then applicable to the issuance of public securities. The maximum term for the bonds will be 40 years, not including refundings.

C. Operations and Maintenance Mill Levy.

Each District is authorized to impose a mill levy, in addition to the Maximum Debt Mill Levy permitted under this Governing Document, to pay for the costs of operating and maintaining public infrastructure and improvements owned or operated by a District, including improvements acquired or financed by a District. Any such levy shall be imposed only against Qualified Property legally subject to taxation by the District, shall comply with all applicable requirements of the Act, and shall not exceed any limits established under this Governing Document or state law.

D. Maximum Debt Mill Levy.

a. The "Maximum Debt Mill Levy" shall be the maximum mill levy the Districts are permitted to impose upon the taxable property within such Districts for payment of Limited Tax Debt shall be $0.015 per dollar of taxable value of taxable property in such District; provided that such levy shall be subject to adjustment as provided in Section 17D-4-301(8), Utah Code. The Districts may only impose a mill levy against the Qualified Property.

b. Such Maximum Debt Mill Levy may only be amended pursuant to a Governing Document Amendment and as provided in Section 17D-4-202, Utah Code.

E. Debt Instrument Disclosure Requirement.

In the text of each Bond and any other instrument representing and constituting Debt, the Districts shall set forth a statement in substantially the following form:

> By acceptance of this instrument, the owner of this Bond agrees and consents to all of the limitations in respect of the payment of the principal of and interest on this Bond contained herein, in the resolution of the Districts authorizing the issuance of this Bond and in the Governing Document for creation of the Districts.

Similar language describing the limitations in respect of the payment of the principal of and interest on Debt set forth in this Governing Document shall be included in any document used for the offering of the Debt for sale to persons, including, but not limited to, a developer of property within the boundaries of the Districts.

F. Security for Debt.

The Districts shall not pledge as security any land, assets, funds, revenue or property of the City, or property to be conveyed to the City, as security for the indebtedness set forth in this Governing Document. Approval of this Governing Document shall not be construed as a guarantee by the City of payment of any of the Districts' obligations; nor shall anything in the Governing Document be construed so as to create any responsibility or liability on the part of the City in the event of default by the Districts in the payment of any such obligation. All debt issued by the Districts for which a tax is pledged to pay the debt service shall meet the requirements of all applicable statutes.

G. Bond and Disclosure Counsel; Municipal Advisor.

It is the intent of the City that the Districts shall use competent and nationally recognized bond counsel, disclosure counsel and a Municipal Advisor with respect to the Districts' Bonds to ensure proper issuance and compliance with this Governing Document. The forgoing requirement may be waived by written agreement by the City.

H. Conversion of Qualified Property.

If any Qualified Property is subsequently converted to owner-occupied residential units, then, prior to the sale of a unit to a unit owner: (i) the Districts shall pay off all Limited Tax Debt secured by a mill levy imposed against such owner-occupied units, if any; and (ii) withdraw the individual residential units from the applicable District.

VIII. ANNUAL REPORT

A. General. In addition to all reporting requirements required by state law, the Districts shall be responsible for submitting an annual report to the City Recorder's Office no later than 210 days following the end of the Districts' fiscal year, beginning with fiscal year 2024.

B. Reporting of Significant Events. The annual report shall include information as to any of the following:

1. Names and terms of Board members and officers;

2. Districts' office contact information, if changed;

3. A summary of any litigation which involves the Districts as of the last day of the prior fiscal year, if any;

4. A summary of the total debt authorized and total debt issued by the Districts as well as any presently planned debt issuances;

5. Notice of any uncured events of default by the Districts, which continue beyond a ninety (90) day period, under any Debt instrument; and

6. Any inability of the Districts to pay its obligations as they come due, in accordance with the terms of such obligations, which continue beyond a ninety (90) day period.

C. Notice of Action. If state law requires that the Districts provide public notice prior to taking any action, the Districts shall provide the City with notice of such potential action at least seven (7) days prior to the date the Districts are required to provide public notice under state law.

IX. DISSOLUTION

Upon an independent determination of the City Council that the purposes for which the District were created have been accomplished, the Districts agree to file petitions for dissolution, pursuant to the applicable State statutes. In no event shall a dissolution occur until such Districts have provided for the payment or discharge of all of their outstanding indebtedness and other financial obligations as required pursuant to State statutes.

X. DISCLOSURE TO PURCHASERS

Within thirty (30) days of the Office of the Lieutenant Governor of the State of Utah issuing a certificate of creation for the Districts, the Board shall record a notice with the recorder of Utah County and provide a copy of the notice to the City. Such notice shall (a) contain a description of the boundaries and annexation area of the Districts, (b) state that a copy of this Governing Document is on file at the office of the City, (c) if applicable, state that the debt may convert to general obligation debt and outlining the provisions relating to conversion, and state that the Districts may finance and repay infrastructure and other improvements through the levy of a property tax; (d) state the maximum rate the Districts may levy; (e) provide notice that a mill levy may be imposed only against Qualified Property; and (f) include the substantially the following language in bold:

"Under the maximum property tax rate of the Districts, a primary residence valued at $[insert average anticipated residential property value] would have an additional annual property tax of $_____ for the duration of the Districts' Bonds. A business property valued at $[insert average anticipated commercial property value] would have an additional annual property tax of $_____ for the duration of the Districts' Bonds."

Failure to provide any disclosures required by this Section shall not relieve any property owner of the obligation to pay taxes imposed by the Districts.

XI. ENFORCEMENT.

In accordance with Section 17D-4-201(5) of the Utah Code, the City may impose limitations on the powers of the Districts through this Governing Document. The City shall have the right to enforce any of the provision, limitations or restrictions in this Governing Document against the Districts, through any and all legal or equitable means available to the City, including, but not limited to, injunctive relief.

VINEYARD
STAY CONNECTED

VINEYARD CITY COUNCIL STAFF REPORT

Meeting Date: December 10, 2025
Agenda Item: Vac Truck Purchase ($492,500.41) (Resolution 2025-58)
Department: Public Works
Presenter: Naseem Ghandour

Background/Discussion:
The City's current 2018 Van-Con Vac Truck has provided seven years of service but has reached the end of its effective operational life. The dual-engine ("pony motor") configuration has been a persistent source of mechanical problems, leading to increased repair costs, fuel inefficiency, and reduced reliability.

Currently, Timpanogos Special Service District (TSSD) provides 21 days per year of Vac Truck service under contract; however, this service is limited to portions of the City's sewer system that discharge directly to TSSD. Vineyard's system is partially connected to Orem City's collection network, which is not covered under the TSSD service agreement. As the City continues to grow, the limited contract hours are insufficient to maintain both systems or respond quickly to sewer emergencies.

In addition, contracting Vac Truck services outside of TSSD costs approximately $400 per hour for non-emergency work, with higher rates for emergency calls. These contracted services often result in scheduling delays during critical response events.

Owning a Vac Truck will allow City crews to maintain the entire sewer and storm drain network proactively, respond immediately to blockages or backups, and perform hydro-excavation for utility exposure and infrastructure work. Having in-house capability will also reduce the City's liability exposure and lower the cost of claims related to sewer backup events by enabling faster response and prevention.

This equipment replacement has been identified in prior-year budgets and is funded in the FY 2025 approved budget Sewer Capital Equipment Fund. The FY 2025 budget allocates $680,000 for the purchase and assumes a $150,000 trade-in value for the existing unit.

This equipment will serve as a critical tool for maintaining the City's sanitary sewer and storm drain systems, performing hydro-excavation, and providing emergency response capabilities during sewer backups and blockages. The purchase supports the City Council's priorities of Sustainable Infrastructure and Public Safety by improving system reliability, reducing operational costs, and minimizing potential property damage claims.

After obtaining three competitive quotes, the CATE Equipment proposal for the Vac-Con Single Engine PD3612N/1500 was selected as the best combination of performance, reliability, and long-term value.
Key advantages include:
- Single-engine configuration: Eliminates the secondary pony motor, improving fuel efficiency, reliability, and reducing maintenance.
- Enhanced sewer and storm drain cleaning capability: 80 GPM at 3,000 PSI jetting system and

8” vacuum hose for efficient debris removal and hydro-excavation.
- Comprehensive service plan: The City intends to purchase a two-year prepaid service plan, with unused funds credited back to the City at the end of the term.
- Warranty coverage: Includes 12-month standard warranty, 5-year debris tank warranty, and 10-year water tank warranty.
- Operational flexibility: Supports storm drain cleaning, sanitary system maintenance, hydro-excavation, and emergency response operations.

The Vac-Con single-engine design is now an industry standard for efficiency and reliability. It significantly reduces mechanical complexity and the maintenance challenges associated with dual-engine units, such as the City’s 2018 Van-Con.

Fiscal Impact:
Net cost of approximately $492,500.41.
The cost of the Vac-Con Single Engine PD3612N/1500 from CATE Equipment is $662,500.41. CATE has offered a $170,000 trade-in for the City’s existing 2018 Van-Con Vac Truck.

The FY 2025 approved budget includes $680,000 for this equipment purchase and anticipates a $150,000 trade-in value.

Recommendation:
Staff recommends that the City Council authorize the following actions:
1. Approve the purchase of one (1) Vac-Con Single Engine PD3612N/1500 Vacuum Truck from CATE Equipment of $662,500.41 under Utah State Contract #MA4814.
2. Authorize the trade-in of the City’s existing 2018 Van-Con Vac Truck to CATE Equipment for $170,000, resulting in a net purchase cost of approximately $492,500.41.
3. Authorize the purchase of a two-year prepaid service plan, with any unused funds credited back to the City.

Sample Motion:
"I move to adopt Resolution 2025-58, to approve the purchase of a Vac-Con Single Engine PD3612N/1500 Vacuum Truck from Cate Equipment in the amount of $662,500.41 under Utah State Contract #MA4814, authorize the trade-in of the City’s existing 2018 Van-Con unit for $170,000, and approve the purchase of a two-year pre-paid service plan."

Attachments:
1. (Draft) RES 2025-58 Vac Truck Purchase
2. CATE Quote - Vineyard City Single Engine PD Pro Reel
3. Vac-Con Brochure 2025 - Combo

RESOLUTION 2025-58

A RESOLUTION OF THE VINEYARD CITY COUNCIL AUTHORIZING THE CITY MANAGER TO ENTER INTO A PURCHASE AGREEMENT WITH CATE EQUIPMENT FOR THE PURCHASE OF VAC TRUCK

WHEREAS, the City Council finds that the City of Vineyard ("City") is a municipal corporation duly organized and existing under the laws of Utah; and

WHEREAS, the City Council finds that in conformance with Utah Code ("UC") § 10- 3-717 the governing body of the city may exercise all administrative powers by resolution including, but not limited to regulating the use and operation of municipal property and programs; and,

WHEREAS, the City Council finds it necessary to address certain Vehicle needs within the city; and,

WHEREAS, the City Council of Vineyard has determined that the purchase of a Vac Truck, utilizing State Contract Pricing, as attached in Exhibit A and entering into a purchase agreement with CATE Equipment is for a valid public purpose and is essential to the operations of the City;

NOW THEREFORE BE IT RESOLVED BY THE GOVERNING BODY OF VINEYARD AS FOLLOWS:

Section 1. That the City Manager is hereby authorized and directed to enter into a purchase agreement with CATE Equipment, utilizing State Contract Pricing as attached in Exhibit A

Section 3. This resolution shall take effect upon passing.

Passed and dated this 10th day of December 2025.

_____
Julie Fullmer, Mayor

Attest:

_____
Tony Lara, Deputy Recorder

VINEYARD SEAL UTAH

DRAFT

Cate Equipment

2055 South Pioneer Road

Salt Lake City, Ut 84104

Date 7/18/2025
Number 112705
Type of Quote SingleEngineCombination
PO

Quote

Retail Purchaser **Vinyard City State Contract # MA4814**
Retail ID #23661
Comments

Ship To Cate Equipment 2055 S Pioneer Rd SLC, UT 84104

Price excludes any applicable sales taxes, tag, title or registration fees.
Price excludes any applicable F.E.T., tag, title or registration fees.
Price excludes any applicable tag, title or registration fees.

Price excludes any applicable F.E.T., sales taxes, tag, title or registration fees.
Option content is subject to engineering approval.

This quotation is valid for 30 **days** from the quotation date

Vac-Con module pricing on customer supplied chassis is valid for 120 days from date of purchase order.
Please consult factory if chassis ETA will surpass 120 days for pricing confirmation.

Model Number - V PD3612N/1500 (824 at 18" or Equivalent) L H P

Standard Equipment Includes:
Vacuum System (as specii¬ ed by Model Number)
Cyclone Separator - Fan and PD Systems
Transfer Case with Hydrostatic Blower Drive - 98% Operating Efficiency
1/4" Corten Steel Debris Tank - (size as specii¬ ed by model number)
Flat Style Rear Door with hydraulic door locks - Including open/close
5" Butterfly valve and 10' of layi¬,at hose
Debris tank Dumping: minimum 50 deg., hydraulic telescopic lift Cylinder - power up/power down
60" Dump Height - Not Available with 15 cubic yard debris tank
Rear Bumper - Does Not Include Tow Hooks
Front Tow Hooks
Hinge type / Body Prop Permanently mount debris body prop
Debris Body Flushout - 8 Jet
Automatic Vacuum Breaker with Float Arm Assemby/Level Indicator and overi¬ ll protection
Behind Cab Boom Support and Bumper Mounted Docking Station
8" vacuum intake hose
4 Way Hydraulic Boom with 270 Degree Rotation with Joystick Controls
Front mounted 600' capacity (1" hose) - Hydraulic Fixed Hose Reel
400' high pressure jet rodder hose
Two (2) Emergency Stop Button Locations: Operator Station and Mid-Body

Water pump drive: Hydrsotaic via FEPTO
80 gpm/3000 psi water pump system
Water Pump Remote Oil Drain - Quick disconnects
Cross-Linked Polyethylene Water Tanks
Full Length Steps on Lower Water Tanks for Maintenance Access
Water Tank Drain - 1/4 Turn Ball Valve
Heavy Duty Manual Hose Rewind Guide with Dual Aluminum Rollers
Hose guide (Tiger Tail)
10' Leader Hose
20 gpm at 750 psi wash down hand gun with 25' of hose and nozzle - 50' Capacity Hand Gun Hose will replace this standard options if selected.
Storage Box Behind Cab 16" x42" x 96" - Standard on all models except 3yd
1) each Sanitary and Penetrator Nozzles
Cooling Package - Air to Oil Heat Exchanger for Hydraulics and Transfer Case, if applicable
Remote Lube Bank for Boom Rotator and Boom Lift Cylinders - Ground Level
20.5' aluminum intake pipe(1-3', 1-5', 1-6', and 1-6.5' nozzle)
LED/ICC lighting
Sherwin Williams Fast Clad High Solids Zinc Rich Primed, Sealed with Sherwin Williams Duraspar Epoxy Primer. Sherwin Williams Duraspar Polyurethane Single Stage Gloss and Textured Paint
5# Fire Extinguisher - In Cab
Set of Triangles
12 month standard warranty - see certiï¬ cate for details
5 year debris tank warranty - see certiï¬ cate for details
10 year water tank warranty - see certiï¬ cate for details
Note: PD Blower will include a Final Filter - Steel Mesh

Main Information

Model	PD3612N/1500 (824 at 18" or Equivalent)	$401,821.00
Blower	Hydrostatic Drive	$0.00
Boom	10' Aluminum Telescoping Boom with Pendant Control Station	$21,434.00
Hose Reel	PRO Reel (Precision Reel Operation) Articulating to driver's and curb side (800 x 1" Capacity) Includes 12VDC Auxiliary hydraulic pump. Transfer case selection required for Dual Engine builds. Singe Eng units with PRO Reel select Winter Recirc.	$43,835.00
Jet Rodder Hose	600' x 1" Jet Rodder Hose	$1,395.00
Water System	**80gpm/3000psi**, FMC STANDARD OFFERING	$0.00
Water Pump	0	
Auxiliary Engine	0	
Hose Brand	**Cobra Hose Brand**	**$0.00**

Debris Body Options

Qty	Description	Cost	Total
1	6" Knife Valve with Center Post and Handle, in Lieu of the 5" Butterfly Valve (662-0125)	$1,151.00	$1,151.00
1	Rear splash guard (2 - 10 O'clock) - tank mounted	$4,137.00	$4,137.00
1	Rear, Hydraulic Pump Off System, 200 GPM w/20' lay flat Hose	$12,391.00	$12,391.00

Water System Options

Qty	Description	Cost	Total
1	Air Purge System	$1,309.00	$1,309.00
1	Artic Winter Recirculating System Rodder Hose (No Insulation), includes plumbing to upper water tanks.	$2,934.00	$2,934.00
1	Hydroexcavation Package Includes: 50 foot handgun hose reel with 1/2" hose, 711-53686 72" 1/2" schedule 80 lance with single forward spray nozzle, Storage tubes for lances, Heavy duty unloader valve, Main control ball valve, Variable flow valve	$10,068.00	$10,068.00
1	Winter Recirculating connection for low pressure hand-gun	$408.00	$408.00

Misc Machine Options

Qty	Description	Cost	Total
1	Cone Rack, Between Bogies, Tandem	$868.00	$868.00
1	Cone Storage Rack (Choose position below)	$653.00	$653.00

Misc Accessories

Qty	Description	Cost	Total
4	Vac-con Module Extended Warranty per year (5 year totals)	$5,615.64	$22,462.56

Lighting Options

Qty	Description	Cost	Total
1	LED 4 Strobes - (2) front bumper / (2) rear bumper - Whelen 500 Series TIR6 01-0663507129E - Amber	$2,994.00	$2,994.00
1	LED Arrow Board, Rear Debris Tank Door Mounted - Whelen TA1251NF1 Traffic Arrow	$5,836.00	$5,836.00
1	LED Boom Mounted Flood Lights with Limb Guard - Whelen NP6BB Worklight	$1,152.00	$1,152.00
1	LED Lighting for Tool Box	$1,397.00	$1,397.00
1	LED strobe with Limb Guard, Rear Debris Tank Mounted - Whelen L31HAF LED Beacon with Whelen BGH Branch Guard	$1,452.00	$1,452.00
1	Mirror Mounted LED Beacon/Strobe Light with Limb Guard - Whelen L31HAF LED Beacon with Whelen BGH Branch Guard	$1,452.00	$1,452.00

Pipe Storage Racks

Qty	Description	Cost	Total
1	Lazy Susan Pipe Rack (Holds 5 Pipes)	$4,020.00	$4,020.00

Paint

Qty	Description	Cost	Total
1	Paint: To be advised	$0.00	$0.00

Truck Chassis Information

Pool Truck Chassis Model **Select a Model** *Pool Trucks are subject to availability.* $0.00

Qty	Description	Cost	Total
			$0.00
	Customer Supplied Chassis		0.00

Make
Model
Engine Make and Model
Engine HP and RPM

Transmission Make and Model
CA/CT Measurement
Est Date of Arrival at Vac-Con 1/1/1900
Dealership Providing Chassis/Phone/Contact

Mounting	$8,500.00
Subtotal	**$551,669.56**
Less Discount	- $62,484.84
Unit Total	**$489.184.72**
Chassis Total	$145,230.00
Machine Total	$466,722.16
Delivery Cost	$9,100.00
Total	**$643,514.72**
Trade-in Credit	-
Total with Credit	**$170,000.00**
	$473,514.72
Year 1 Service & Parts Credit (Optional)	**$8,000.00**
Year 2 Service & Parts Credit (Optional)	**$10,000.00**
Year 3 Service & Parts Credit (Optional)	**$12,000.00**
Year 4 Service & Parts Credit (Optional)	**$12,000.00**
Year 5 Service & Parts Credit (Optional)	**$12,000.00**

Service and parts Credit to be applied to Vineyard City's account and will rollover to the following year if the entire credit is not used in the calendar year.

. Effective **November 30, 2025**, we will implement a **3.5% price increase** on all **truck- and trailer-mounted units**, as well as **manufactured and purchased parts**. **Purchase orders received prior to November 30, 2025**, will be honored at current pricing. **Orders received after this date**, must reflect the updated pricing

Offered by: Jeff Johnson

Accepted by:_____

VAC-CON

www.vac-con.com

COMBINATION SEWER PRODUCT GUIDE

At Vac•Con we develop products that clean and dig smarter through innovative design and manufacturing

WELCOME

At Vac•Con, we care deeply about the protection of the environment and our communities. That's one reason we build the equipment that we do.

Our machines assist public and private entities in maintaining collection systems and treatments facilities, flood remediation and prevention, and non-destructive excavation. With proper maintenance and training, Vac•Con machines help protect the world's potable water supply and other important resources for future generations.

At Vac•Con, we aim to increase our customers' efficiencies and cost-savings by providing machine solutions that bring value to the job site... and the bottom line.

Vac•Con has been making a positive impact on communities and environments around the world for over four decades.

WHY VAC•CON

Vac•Con rises above the competition for the following reasons:

Tailored Innovation – Vac•Con has a reputation of innovation that is cultivated by a mission to exceed customer expectations. We've developed many firsts in the industry such as the dual engine machine, 3-stage fan, hydrostatic drive systems, hi-dump, Omnibus Precision Power, the articulating hose reel, plastic water tanks, the Aeroboost Fan, and the Precision Reel Operation (PRO) hose reel. We are committed to introducing new and improved products each year to better improve operator ergonomics, machine performance, and overall aesthetics.

Delivery – Vac•Con is known for the ability to build and turn a machine around faster than any other competitor. When a customer has a rush order or needs a unit by a certain date, Vac•Con will have 'wheels on the ground' before or by that date. We can meet these deadlines due to exceptional relationships with vendors and suppliers as well as a plentiful stock of pool chassis available on-site at the manufacturing facility.

Support – From engineering, sales, parts, and technical service, once a Vac•Con customer, always a Vac•Con customer. Our teams provide personal, unparalleled product and sales support with expert knowledge from the field and the manufacturing facility. In addition, Vac•Con is supported by a worldwide network of dealers that provide front line parts, service, and sales support daily.

Product Offering – Vac•Con offers a complete portfolio of combination, hydro-excavation, and jetter equipment in truck, trailer, and skid-mounted configurations. We boast one of the most comprehensive offerings on the market and continue to evolve and add products each year to meet customer needs and fill product gaps.

Experienced – Vac•Con started in 1986 with 12 employees and a network of representatives in the sewer and wastewater industry. We're proud of our roots and the people that have grown us to where we are today.

From engineering, sales, parts, and technical service, once a Vac•Con customer, always a Vac•Con customer.

100% Employee-Owned – Vac•Con employees have ownership in the operation, ensuring a culture of accountability and quality that can be seen in every unit. Our jobs are more than just a paycheck – they are an investment in our future, and we strive to be the best in the industry.

THE DNA OF VAC•CON COMBO MACHINES

Vacuum – At the heart of our combination machines, Vac•Con has perfected the vacuum system. We offer positive displacement blowers and fan configurations to meet any requirement or application.

Water – Capacity and power are the most important factors regarding water for combination machines. We offer a range of water tank capacities and jetting settings specifically tailored for the applications of every unit. We also understand the importance of reusing water and offer the most reliable, highest performing water recycling system on the market.

Payload – Bringing value and efficiency to our customers' operations is the mission of our equipment. For that reason, we offer a range of debris tank sizes and will work with you to custom configure a machine that legally meets your payload expectations.

Filtration – If the heart of our machines is the vacuum, then the circulatory system is filtration. To offer the most reliable, highest performing machines on the market, we have engineered filtration systems that effectively collect and separate particles before they can reach the vacuum system. In addition, we promote wet/vac operations to reduce dust production, extending the life of the vacuum system.

Operation – We know a machine is idle without an operator. For this reason, we prioritize improving operator efficiencies and ease-of-use across all our product lines. We're proud to be the innovators of some of the most user-friendly components on the market.

THE INNOVATIONS BEHIND OPERATOR SATISFACTION

PRO Reel – This revolutionary, patent-pending hose reel is like nothing ever before seen in the market. With 16-feet of side-to-side traversing motion across the front of the cab, PRO increases work area by approximately 270% as compared to traditional articulating hose reels. That's almost 70 square feet of flexible work area. An in-cab camera manhole placement systems and monitor reduce setup time by 50%. Operators will find the controls to be easy and conveniently adjustable to various heights and angles. There are no other products that compete against the PRO Reel on the market!

Articulating Hose Reel – Vac•Con was the first to develop the standard articulating hose reel, which articulates 180 degrees towards the driver's side of the cab. A hydraulically operated outrigger leg provides additional stability and support to the system. A standard configuration that's proven and trusted by operators in the field!

Wireless Operation – All Vac•Con machines are available with wireless remote-control operations, increasing operator efficiency and unit ease-of-use. Our wireless remotes offer operation at an extreme range and are designed to withstand the harshest conditions, water, dirt, and debris. An integrated battery ensures that your power source is protected from the elements and recharges by magnetics on your machine.

Remote Transfer Case Engagement – This feature is located on the front of the hose reel and allows operators to start and stop the engine as well as engage and disengage the transfer case in one convenient location. Operators no longer need to return to the cab and add extra steps to the process to get their work started.

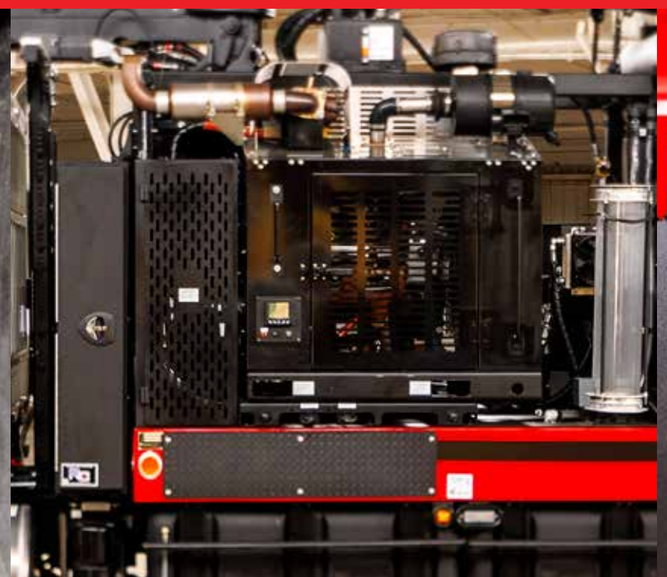
DUAL ENGINE COMBO

The combination sewer cleaner that has been setting industry standards since 1986.

The Vac•Con line of combination machines were designed, tested, and built by the sewer cleaning experts at Vac•Con with feedback from our operators in the field. Our latest models offers a wider range of size configurations.

Vac•Con combines the flexibility of a two-engine design to get the toughest jobs done right. Our efficient design, allowing the chassis engine to drive either the 3-stage fan or positive displacement blower vacuum system, actually saves you fuel and general wear and tear in the long run. Using a standard hydrostatic drive, this design can engage the industry's most powerful vacuum. Offering a wide array of options, this is truly a "go anywhere, do anything" machine.

- Gas or diesel auxiliary engines available
- Single axle or tandem axle
- PD blower or Aeroboost fan
- Variety of debris tank and fresh water capacity options
- Hydro excavation package available



SINGLE ENGINE COMBO

Our single engine combination machines stand out amongst a crowded field of “me too” offerings.

The Vac•Con line of combination machines were designed, tested, and built by the sewer cleaning experts at Vac•Con with feedback from our operators in the field. Our latest models offers a wider range of size configurations.

Vac•Con uses the simplicity of a hydrostatic drive to power both the vacuum and water systems with a single engine. Both systems can be independently operated for multiple applications, while allowing for maximum flexibility. Looking for your single-engine machine in a sea of single-engine machines? Vac•Con’s unique design offers the best value without sacrificing performance, power or ease of operation.

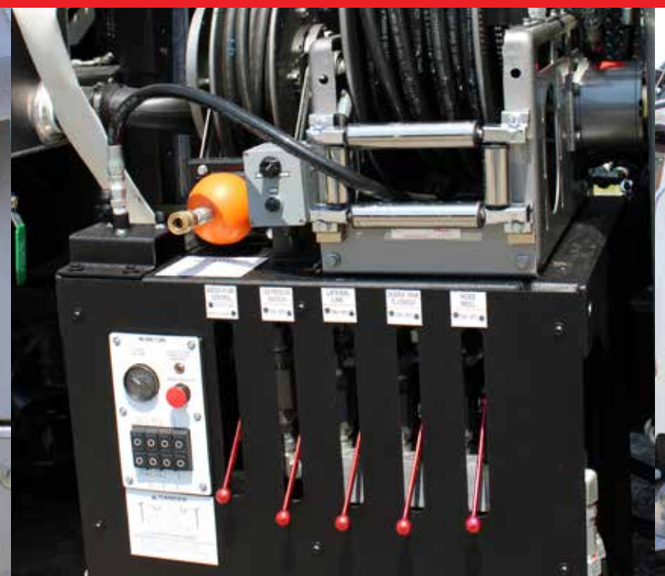
- Single axle or tandem axle
- PD blower or Aeroboost fan
- Variety of debris tank and fresh water capacity options
- Hydro excavation package available

NON-CDL COMBO

A Truly non-CDL truck designed for optimal performance and minimal footprint.

This Non-CDL version of our combination machine provides the performance you'd expect from a Vac•Con with minimal footprint. This is an ideal option for smaller organizations and those who need to have anyone on the team jump in the truck and go, no CDL required.

- No CDL license required to operate
- 3 yard weighs under 26,000 GVWR with full freshwater capacity
- 3.5-yards of capacity in the debris tank
- Simple operating system designed for all skill levels
- Hydro excavation package available
- 5 yard debris tank also available
- Flat-style rear door is available (will affect overall weight)



TOUGH, INNOVATIVE, AND EFFECTIVE COMBINATION MACHINES BUILT TO MEET YOUR NEEDS.

** ITEM ON DRIVER'S SIDE OF VEHICLE*

AS SHOWN:

1. 180-degrees Articulating Hose Reel
2. PRO Reel Contols
3. Winter Recirculation
4. Cross-Linked Polyethylene Water Tanks
5. Gas Auxiliary Engine *
6. Aeroboost Fan with Centrifugal Separator *
7. Hydraulic Reservoir
8. Aluminum Tool Boxes
9. Positive Seal Vacuum Breaker
10. 10-ft. Telescopic Boom with 270-degree rotation
11. Hinged Boom Tie Down
12. Debris Body Dump Controls
13. Corten Steel Debris Tank
14. External Load Level Indicator
15. Lateral Line Cleaning Kit
16. Water Pump with Suction Strainer

REAR DOOR:

17. 5-in. Butterfly Decant Valve
18. Full-opening Rear Door with Hydraulic Locks
19. Splash Shield
20. Arrow Stick Lighting
21. Strobe Light

OPTIONS:

A. PRO Reel, Advanced Controls, or Hardwired
B. PD Blower
C. Centrifugal Compressor Quiet "Q" Drive (With Aeroboost Fan Only)
D. Wireless Remote
E. Hydro Excavation Package
F. Saftey Light Packages
G. 3-yd to 15-yd Debris Tank
H. 500 to 1,500-gal. Water Capacity

REAR DOOR

Operator friendly rear door features 5-in. butterfly decant valve, hydraulic locks, and splash shield.

PRO Reel

The Precision Reel Operation (PRO) hose reel controls provide complete control of machine functions from one centralized location, all with real-time diagnostics.

PD BLOWER

PD blower with multiple ratings up to 27" Hg and 6,000 CFM.

AEROBOOST FAN

Vac•Con's scientifically redesigned intake and fan housing results in a balanced airflow, decreasing turbulence and noise while increasing power, and reliability.

WIRELESS REMOTE

An integrated, enhanced control system that vastly improves usability and efficiency.

SOME COMPONENTS SHOWN ARE NON-STANDARD

RECYCLER

Bringing you the industry's best, most productive work day your water and sewer operations have ever experienced.

The combination machine you trust is available with the recycling system you need for endurance and performance. Designed from proven European technology and the durability to keep you on the job working longer, the Vac•Con Recycler has made its mark on the industry. The Vac•Con Recycler boasts features providing operators with functional flexibility saving you time and increasing your efficiency.

- 73% (or higher) reduction in freshwater usage
- Increased production and better line cleaning without stopping to refill water
- Hydro excavation package available

NEPTUNE

A powerful and simple to operate combination water and vacuum system on a trailer-mounted steel frame.

The Neptune was purpose built for the trailer market with the power of portability of a Vac•Con combination machine. These machines combine a high-pressure water jet system with a high-performance industrial vacuum and provide the same rugged construction, quality and field-tested durability that Vac•Con owners have relied upon for decades.

- Simple design and operation
- Strongest trailer frame on the market, with structural steel tubing
- Standard, tandem axle dually wheels
- Tier 4 diesel auxiliary engine
- Hydro excavation package available

COMBINATION SPECIFICATIONS

At Vac•Con we pride ourselves on building machines that are custom built to fit the needs of our customers. As a result, Vac•Con wins out on value, performance, and reliability every single time.

Dual Engine *Combination Sewer Cleaning Truck*

Axle Setup	Auxiliary Engine	Hose Reel Type	Vacuum Type / Drive	Filtration Type	Water Capacity / Pump	Debris Capacity
Single or Tandem	Gas or Diesel	Standard, Advanced, or PRO Reel	Aeroboost Fan or PD Blower — Hydrostatic	Cyclonic Separator — PD Blowers Include Final Filter	800–1,500 Gallons — 30–100 GPM Up to 1,000 PSI	5, 10, 12, and 15 (Cubic Yards)

Rear Door Type / Locks	Dump Angle / Height	Boom Type / Rotation	Excavation Package	Wireless Remote	Dimensions Height / Length	Additional Options
Flat Industrial — Hydraulic Wedge Locks	50° Angle — 60" Height *	6' or 10' Telescopic — 270° Rotation	Available	Available	Max Height: 12' * — Max Length: 40'	Safety lighting package, Safety camera package, Anti-freeze water pump system, Winter recirculation, On-board storage, Mainframe deck coating, Lateral line kit, Pump-off system, Nozzle storage box, Diamond plate package, Additional high-pressure hand gun hose reel, Cone rack storage, Additional pipe storage, Air excavation

** 60" dump height not available on 15-yard models / 15-yard model exceeds 12-ft max height.*

Single Engine *Combination Sewer Cleaning Truck*

Axle Setup	Auxiliary Engine	Hose Reel Type	Vacuum Type / Drive	Filtration Type	Water Capacity / Pump	Debris Capacity
Single or Tandem	N / A	Standard, Advanced, or PRO Reel	Aeroboost Fan or PD Blower — Hydrostatic	Cyclonic Separator — PD Blowers Include Final Filter	800–1,500 Gallons — 30–100 GPM Up to 1,000 PSI	5, 10, 12, and 15 (Cubic Yards)

Rear Door Type / Locks	Dump Angle / Height	Boom Type / Rotation	Excavation Package	Wireless Remote	Dimensions Height / Length	Additional Options
Flat Industrial — Hydraulic Wedge Locks	50° Angle — 60" Height *	6' or 10' Telescopic — 270° Rotation	Available	Available	Max Height: 12' * — Max Length: 40'	Safety lighting package, Safety camera package, Anti-freeze water pump system, Winter recirculation, On-board storage, Mainframe deck coating, Lateral line kit, Pump-off system, Nozzle storage box, Diamond plate package, Additional high-pressure hand gun hose reel, Cone rack storage, Additional pipe storage, Air excavation

** 60" dump height not available on 15-yard models / 15-yard model exceeds 12-ft max height.*

Non-CDL *Combination Sewer Cleaning Truck*

Axle Setup	Auxiliary Engine	Hose Reel Type	Vacuum Type / Drive	Filtration Type	Water Capacity / Pump	Debris Capacity
Single	N / A	Rotating	PD Blower — Transfer Case	Cyclonic Separator — PD Blowers Include Final Filter	500 Gallons — 30–40 GPM Up to 3,000 PSI	3 or 5 * (Cubic Yards)

Rear Door Type / Locks	Dump Angle / Height	Boom Type / Rotation	Excavation Package	Wireless Remote	Dimensions Height / Length	Additional Options
Round — Hydraulic Cam Locks	50° Angle — 60" Height *	5' Extendable — 200° Rotation	Available	Available	Max Height: 11' 5" — Max Length: 28'	Flat rear door*, Safety lighting package, Safety camera package, Anti-freeze water pump system, Winter recirculation, Mainframe deck coating, Lateral line kit, Pump-off system, Cone rack storage, Additional pipe storage

** 5-yard debris tank / flat rear door may affect CDL weight requirements.*

Recycler *Combination Sewer Cleaning Truck*

Axle Setup	Auxiliary Engine	Hose Reel Type	Vacuum Type / Drive	Filtration Type	Water Capacity / Pump	Debris Capacity
Tandem	N / A	Standard or Advanced	3-Stage Fan — Hydrostatic	Cyclonic Separator — 2-Stage Water Recycling System	1,000 Gallons — 50–80 GPM 2,000–3,000 PSI	10, 12, and 15 (Cubic Yards)

Rear Door Type / Locks	Dump Angle / Height	Boom Type / Rotation	Excavation Package	Wireless Remote	Dimensions Height / Length	Additional Options
Flat Industrial — Hydraulic Wedge Locks	50° Angle — 48" Height	6' or 10' Telescopic — 270° Rotation	Available	Available	Max Height: 12' 5" — Max Length: 40'	Safety lighting package, Safety camera package, Anti-freeze water pump system, Winter recirculation, On-board storage, Mainframe deck coating, Lateral line kit, Pump-off system, Nozzle storage box, Diamond plate package, Additional high-pressure hand gun hose reel, Cone rack storage, Additional pipe storage, Air excavation

** All models exceed 12-ft max height.*

Neptune *Combination Sewer Cleaning Trailer*

Axle Setup	Auxiliary Engine	Hose Reel Type / Spec	Vacuum Type / Drive	Filtration Type	Water Capacity / Pump	Debris Capacity
Tandem	Diesel	Retractable — 50' Capacity 3/8" High-Pressue	PD Blower — Auxiliary Engine	Cyclonic Separator — PD Blowers Include Final Filter	225 or 325 Gallons — 15–20 GPM Up to 3,000 PSI	535 or 845 (Gallons)

Rear Door Type	Dump Angle	Boom Type / Rotation	Excavation Package	Wireless Remote	Dimensions Height / Length	Additional Options
Round — Hydraulic Cam Locks	55° Angle	9' Telescopic with 2' Extension — 270° Rotation	Available	Available	Max Height: 9' 5" — Max Length: 22' 5"	Safety lighting package, Anti-freeze water pump system, Winter recirculation, On-board storage, Lateral line kit, Pump-off system, Diamond plate package

ADDITIONAL INFORMATION

Vacuum Options

PD Blowers are best used in applications dealing with liquids, sludge, or thick materials – vacuuming over a long distance horizontally. A PD has a finite lifting capability. Once a PD reaches its lift capacity, an operator must fluidize (add air) to continue conveying material to the machine.

Centrifugal Fans are capable of vacuuming material under water either with or without air induction. Fans work well moving liquids and solids at more than 100-ft. vertically or horizontally.

Capacity Options

Various Debris Tank Sizes – It doesn't matter what the job is, Vac•Con has a machine for you. With a full line of skid, trailer, and truck-mounted configurations, we can meet your debris tank requirements. Choose your debris tank size based on your application and environment, time needed out in the field, and payload requirements.

Water Options

Water Capacities – Vac•Con offers users a range of water tank capacities to best fit their applications and job requirements. Water capacity may change the overall configuration of a unit, including going from a single to tandem axle chassis.

Recycler – Vac•Con boasts the best performing Recycler Combination Machine on the market. This component allows for 73% or higher reduction in freshwater usage depending on conditions. All components of our system are designed for recycled water use – no fast-moving water pumps or components re-purposed from freshwater systems. Coarser filtration allows for a greater range of operating conditions such as heavily sedimented and small or large diameter lines. The Vac•Con Recycler can use water from ANY source, including lift stations.

Hose Reel Options

PRO Reel – A traversing motion across the front of the cab allows for almost 70 square feet of coverage within operator reach. This reel is designed for those that need to get on the job quickly with an in-cab manhole placement camera system that allows the driver to pull up to the manhole and park it, reducing setup time by 50%.

Advanced Controls – Using an industry standard CAN bus electronic controller system this setup includes a 4" color monitor at operator's station with integrated footage counter, 7" in-cab mounted color monitor for lighting controls, and systems monitoring and one-button transfer engagement (if equipped). Also included are pressure compensated hydraulics with dual proportional joysticks for independent control of hydraulic boom and hose reel functions.

Hardwired Controls as simple as it gets in a 12v classic operating system that is easy to setup, easy to use, and easy to maintain.

Additional Options

Noise Reduction – The Vac•Con combination machine boasts a noise reduction of 8% compared to traditional combination machines. The Aeroboost 3-stage fan with Quiet Drive are revolutionary components that bring a multitude of benefits to operators, fleets, and communities alike.

Temperature Controlled – Vac•Con understands that operators are working in some of the harshest conditions imaginable. That's why we offer various options for temperature-controlled enclosures for both operators and important machine operations. Many of our units have the option for climate-controlled cabinets for water and electrical systems.

Boilers can be added to many units, ideal for work in cold conditions and winterization kits are available on all products.

Carbon Infused Tungsten Elbow – Working in some of the harshest conditions imaginable, this elbow provides the extra strength and durability to get the job done.

Efficiency

Fuel Savings and Operational Efficiency – If fuel-savings and operational efficiency are your priorities, then the Vac•Con was designed for you. The Vac•Con combination machine boasts premium innovations in vacuum and filtration systems that have been proven to result in the following:

- 44% Fuel savings with Quiet Drive
- 43% Decrease in operating RPM with Quiet Drive
- 25% Increase in airflow with Aeroboost Fan
- 20% More horsepower with Dual Engine machines
- 8% Decrease in noise pollution with Quiet Drive
- 5% Increase in overall vacuum pressure (lift) with Aeroboost Fan

Built to Your Needs

Custom Comes Standard – At Vac•Con we have over 40 years of experience in designing, manufacturing, and supporting combination, hydro-excavation, and jetter machinery. We work with our customers as consultants, helping you determine what machine will best suite your needs. With Vac•Con you will not be picking your next truck off the lot or compromising by picking from a few existing models... Your Vac•Con will be custom built just for you.

Plus, we are continuously innovating new solutions for our customers in an effort to provide them with a complete offering of reliable, high-performing products.

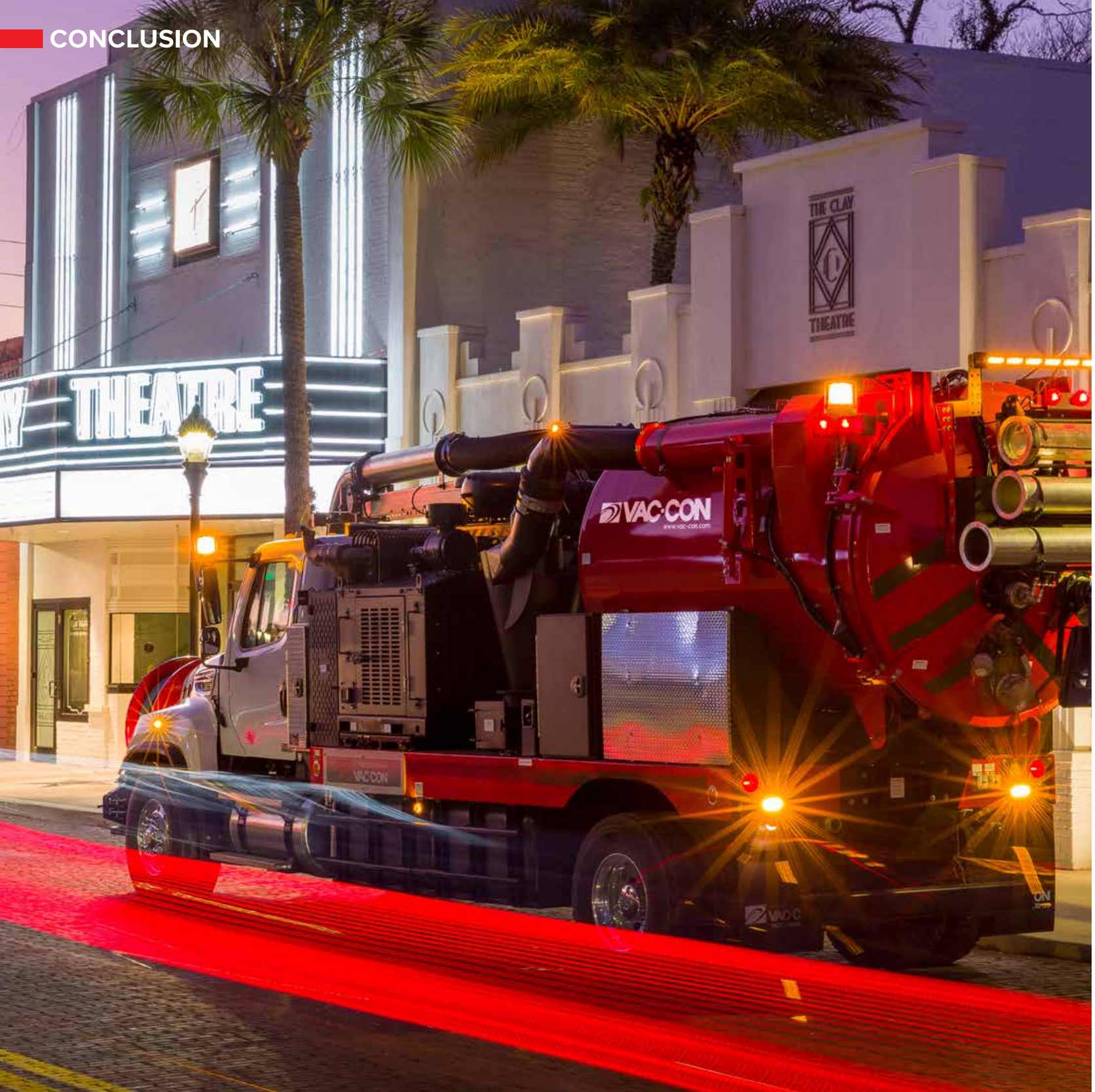
PRO REEL

The PRO Reel is the most versatile, operator conscious hose reel on the market.

Vac•Con is proud to introduce the first of it's kind, PRO Reel. Featuring a bolt-on all-aluminum design resulting in a 500-lbs. weight reduction, new ergonomic operator controls, and almost unlimited adjustability.

- Most hose reel work area coverage in the market
- 7" digital display at the operator station
- One button jet hose on / off
- In-cab camera manhole placement system reduces setup time by 50%
- Front and rear camera
- All digital hose footage counter, water level gauge, and debris tank level gauge
- Planetary gear for hose reel pay out / retrieve
- Rotary actuator for hose reel articulation
- Emergency back-up auxiliary hydraulic pump

CONCLUSION

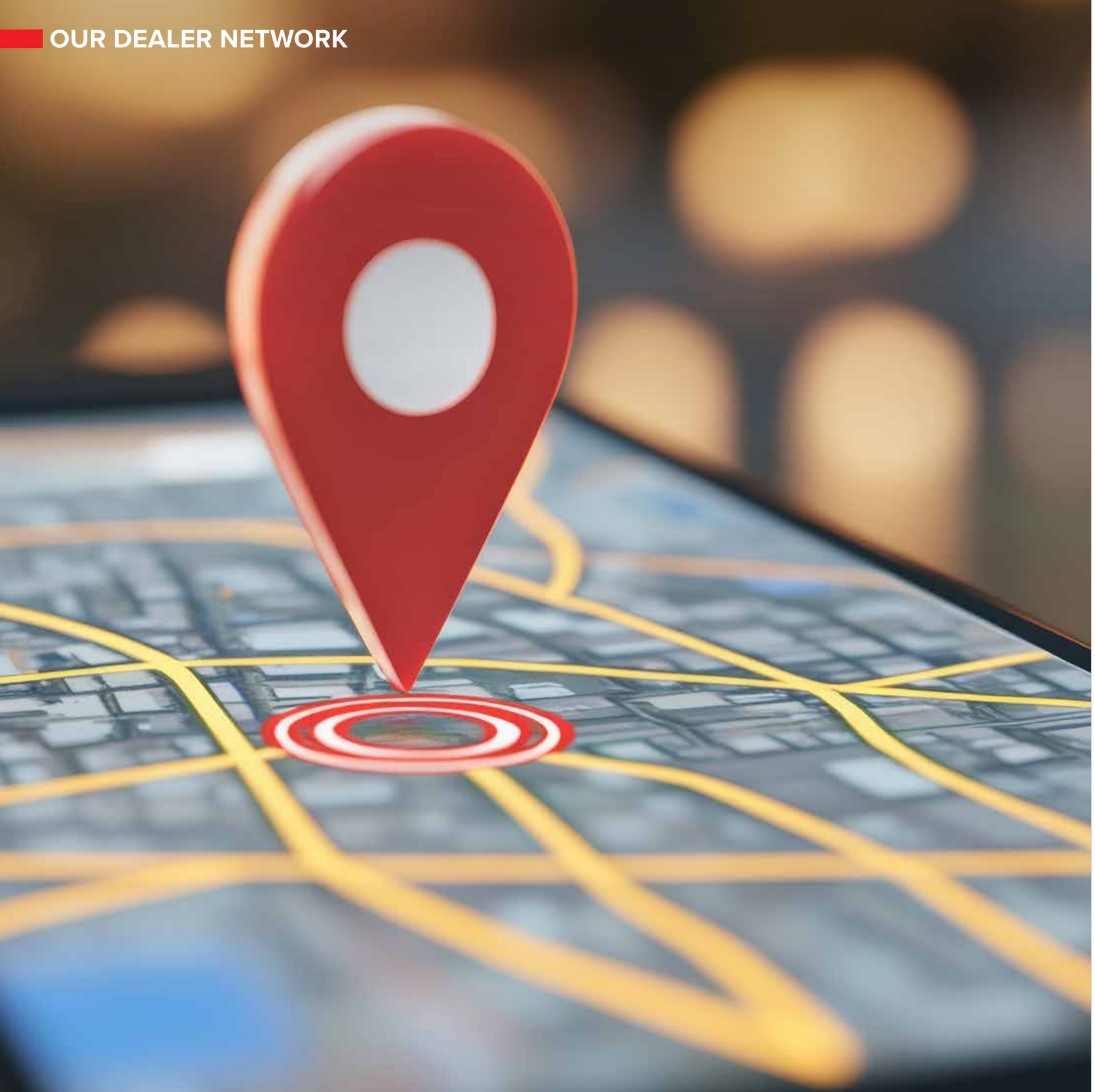


When it comes to the best environmental machinery solutions for any application, there is no comparison to Vac•Con.

As the proven experts in the industry since 1986, our product offering has been carefully designed, engineered, built, and tested to exceed expectations and bring value to our customers.

Not only do we build the best machines in the market, we provide unparalleled customer support for our equipment leading to lifelong relationships.

Once a Vac•Con customer, always a Vac•Con customer.



A WORLDWIDE NETWORK OF DEALERS

While we build the best machines in the industry, our dealers build the best support network in the field. Our global, full-product-line network of dealerships has the expertise to guide you through any buying or servicing scenario... Wherever your work leads you, you are never far from a Vac•Con expert.

To find a dealer near you, please visit our online dealer locator

www.vac-con.com

VAC-CON
www.vac-con.com

RESOLUTION 2025-69

A RESOLUTION ESTABLISHING THE VINEYARD CITY ARTIFICIAL INTELLIGENCE (AI) POLICY

WHEREAS, Vineyard City, as political subdivision organized under the laws of the State of Utah, possesses the authority to adopt policies necessary to promote the public health, safety, and welfare, including policies governing the use of emerging technologies; and

WHEREAS, the rapid integration of Artificial Intelligence (AI) into public-sector operations creates a compelling need for clear standards that ensure its use is responsible, transparent, equitable, and aligned with community expectations and legal obligations; and

WHEREAS, the adoption of a formal AI Policy is necessary to guide the responsible deployment, oversight, and governance of AI systems used by or on behalf of Vineyard City; and

NOW THEREFORE BE IT RESOLVED BY THE GOVERNING BODY OF VINEYARD, UTAH AS FOLLOWS:

Section 1. **Approval** The Vineyard City Artificial Intelligence (AI) Policy will be adopted as shown in Exhibit A.

Section 2. **Effective Date** This Resolution shall take effect upon passing.

Passed and dated this 10th day of December 2025.

_____
Julie Fullmer, Mayor

Attest:

_____
Tony Lara, Deputy City Recorder

DRAFT

VINEYARD CITY ARTIFICIAL INTELLIGENCE (AI) POLICY

1. Purpose

As Artificial Intelligence (AI) becomes more integrated into government operations, Vineyard City recognizes the importance of ensuring its use is responsible, ethical, and aligned with community values.

This policy outlines the City's approach to managing AI technologies to promote transparency, safeguard privacy, be human-centered, and protect public trust.

Artificial Intelligence (AI): Systems that perform tasks typically requiring human intelligence, such as decision-making, pattern recognition, natural language processing, and machine learning.

2. Scope

This policy applies to:

1. All AI systems deployed by the Vineyard City or on Vineyard City's behalf; and
2. Staff (full-time, part-time), interns, consultants, contractors, partners, and volunteers who may be purchasing, configuring, developing, operating, or maintaining Vineyard City's AI systems or who may be leveraging AI systems to provide services to Vineyard.

3. Guiding Principles for Responsible AI Systems

These principles describe Vineyard City's values regarding how AI systems are purchased, configured, developed, operated, or maintained.

1. **Human-Centered Design:** AI systems are developed and deployed with a human-centered approach, evaluating AI-powered services for their impact on the public.
2. **Security & Safety:** AI systems maintain confidentiality, integrity, and availability through safeguards that prevent unauthorized access and use. Implementation of AI systems is reliable and safe, and minimizes risks to individuals, society, and the environment.
3. **Privacy:** Privacy is maintained across all AI systems by safeguarding personally identifiable information (PII) and sensitive data against unauthorized access, disclosure, or manipulation.
4. **Transparency:** The purpose and use of AI systems are proactively communicated and disclosed to the public. An AI system, its data sources, operational model, and policies that govern its use are understandable and documented.

5. **Equity:** AI systems support equitable outcomes for everyone. Bias in AI systems is effectively managed to reduce harm to anyone affected by their use.
6. **Accountability:** Roles and responsibilities govern the deployment and maintenance of AI systems, and human oversight ensures compliance with applicable laws and regulations.
7. **Effectiveness:** AI systems are reliable, meet their objectives, and deliver precise and dependable outcomes for the utility and contexts in which they are deployed.
8. **Workforce Empowerment:** Staff are empowered to use AI in their roles through education, training, and collaborations that promote participation and opportunity.

4. Roles & Responsibilities

The Privacy Officer is responsible for directing Vineyard City's technology resources, policies, projects, services, and coordinating the same with other Vineyard City departments. The Privacy Officer is also responsible for overseeing the enterprise security infrastructure, cybersecurity operations, updating security policies, procedures, standards, guidelines, and monitoring policy compliance.

The Chief Administration Officer (CAO) or Privacy Officer designee will actively ensure AI systems are used in accordance with this AI Policy and the AI Governance Manual. The CAO shall also designate the Privacy Officer.

Vineyard City departments are responsible for adhering to this policy and any updates to it and the AI Governance Manual and shall verify compliance with these documents at least annually. The CAO shall notify Vineyard City departments when an update to this policy or the AI Governance Manual is released.

The City Council may vote to require a department to alter or cease using AI systems, or to require a partner to do so.

The Privacy Officer is responsible for overseeing the procurement of AI systems in alignment with existing IT procurement and governance processes and requiring vendors to comply with Vineyard City policy standards through contractual agreements.

5. Policy

When purchasing, configuring, developing, operating, or maintaining AI systems, Vineyard City will:

1. Uphold the Guiding Principles for Responsible AI Systems;

2. Conduct an AI Review to assess the potential risk of AI systems. The Privacy Officer is responsible for coordinating review of AI systems used by Vineyard City as detailed in the AI Governance Manual;
3. Obtain technical documentation about AI systems using the AI FactSheet (see AI Governance Manual) or create equivalent documentation if internally developing the AI system. The Chief Administrative Officer (CAO) or the Privacy Officer (if delegated) is responsible for requiring vendors to complete the AI FactSheet;
4. Require contractors to comply with the AI policy overseen by the Privacy Officer; and
5. In the event of an incident involving the use of the AI system, Vineyard City will follow an Incident Response Plan as detailed in the AI Governance Manual. The Privacy Officer is responsible for overseeing the security practices of AI systems used by or on behalf of Vineyard City departments.

Prohibited Uses

The use of certain AI systems is prohibited due to the sensitive nature of the information processed and the severe potential risk. This includes the following prohibited purposes:

- Real-time and covert biometric identification: The live identification of an individual using technologies including, but not limited to, facial recognition and iris scanning, without that individual's knowledge or meaningful consent.
- Fully automated decisions that do not require any meaningful human oversight but substantially impact individuals

If Vineyard City staff become aware of an instance where an AI system has caused harm, staff must report the instance to their supervisor and the Privacy Officer.

Sunset Procedures

If an AI system operated by Vineyard City or on its behalf ceases to provide a positive utility to Vineyard City residents as determined by the Chief Administrative Officer or Privacy Officer, then the use of that AI system must be halted unless express exception is provided by the City Manager. If the abrupt cessation of the use of that AI system would significantly disrupt the delivery of Vineyard City services, usage of the AI system shall be gradually phased out over time.

Public Records

Vineyard City is subject to the Government Records Access and Management Act (GRAMA). Vineyard City staff must follow all current procedures for records retention and disclosure.

Policy Enforcement

All employees and agents of Vineyard City, whether permanent or temporary, interns, volunteers, contractors, consultants, vendors, and other third parties operating AI systems on behalf of Vineyard City are required to abide by this Policy and the associated AI Governance Manual.

6. Violations of the AI Policy

Violations of any section of the AI Policy, including failure to comply with Vineyard City's AI Governance Manual, may be subject to disciplinary action, up to and including termination. Violations made by a third party while operating an AI system on behalf of Vineyard City may result in a breach of contract and/or pursuit of damages. Infractions that violate local, state, federal or international law may be remanded to the proper authorities.

7. Exceptions

Staff, as described in the scope of this policy, must adhere to all controls outlined in this policy document unless a specific documented exception is explicitly granted by CAO or Privacy Officer. Policy violations that have not been formally documented as an exception will be treated as a security incident in accordance with Vineyard City's policy. Vineyard City staff or Departments may encounter emergency situations that necessitate the immediate use of AI tools or technologies. In these circumstances, each incident use case must obtain documented approval via the Department Director prior to use. In such situations, the Department Director must submit the approved use case to the Privacy Officer for review within 7 days of the incident.

8. Definitions

Artificial Intelligence: "Artificial intelligence" or "AI" to be a machine-based system that can, for a given set of human-defined objectives, make predictions, recommendations, or decisions influencing real or virtual environments. Artificial intelligence systems use machine- and human-based inputs to perceive real and virtual environments; abstract such perceptions into models through analysis in an automated manner; and use model inference to formulate options for information or action.

Algorithm: A series of logical steps through which an agent (typically a computer or software program) turns particular inputs into particular outputs.

AI system: Any system, software, sensor, or process that automatically generates outputs including, but not limited to, predictions, recommendations, or decisions that augment or replace human decision-making. This extends to software, hardware, algorithms, and data generated by these systems, used to automate large-scale processes or analyze large data sets.

Additional terms and definitions are provided in the AI Governance Manual.

Ordinance 2025-24
Transportation Master Plan

AN ORDINANCE ADOPTING THE VINEYARD CITY TRANSPORTATION MASTER PLAN, ESTABLISHING POLICIES TO PROMOTE AND ENHANCE A COMPREHENSIVE MULTI-MODAL TRANSPORTATION SYSTEM, INCLUDING ACTIVE TRANSPORTATION, TRANSIT, AND VEHICULAR MOBILITY THAT SUPPORTS AND IS CONSISTENT WITH THE VINEYARD CITY GENERAL PLAN. THE TRANSPORTATION MASTER PLAN IDENTIFIES EXISTING CONDITIONS AND OBSTACLES, SETS FORTH GOALS AND PRIORITY PROJECTS, AND PROVIDES MAPS AND DEVELOPMENT STANDARDS FOR TRANSPORTATION INFRASTRUCTURE; PROVIDING A REPEALER CLAUSE; PROVIDING A SAVINGS AND SEVERABILITY CLAUSE; PROVIDING FOR PUBLICATION BY SUMMARY; AND PROVIDING AN EFFECTIVE DATE.

WHEREAS, in compliance with Utah State Municipal Land Use, Development, and Management Act (LUDMA), the City established a master plan as a companion document to the General Plan; and

WHEREAS, the state legislature has required that a municipality shall prepare and adopt a comprehensive, long-range general plan for the present and future needs of the municipality and the growth and development of all or any part of the land within the municipality; and

WHEREAS, the Planning Commission held a public hearing on September 3, 2025, and after fully considering public comment and staff recommendations, recommended approval to the City Council; and

WHEREAS, the City Council reviewed The Transportation Master Plan and held a public hearing on December 10, 2025, and after fully considering public comment, staff and Planning Commission's recommendations, evidence and testimony presented by the City, staff and other interested parties.

NOW, THEREFORE, BE IT ORDAINED BY THE MAYOR AND COUNCIL OF THE CITY OF VINEYARD:

Section 1: VINEYARD TRANSPORTATION MASTER PLAN is hereby adopted. Attached as exhibit A.

Section 2: REPEALER CLAUSE. All City plans, which are in conflict with the Vineyard Transportation Master Plan herewith are hereby repealed.

Section 3: SAVINGS AND SERVERABILITY CLAUSE. It is hereby declared to be the legislative intent that the provisions and parts of this Ordinance shall be severable. If any paragraph, part, section, subsection, clause or phrase of this Ordinance is for any reason held to be invalid by a Court of competent jurisdiction, such decision shall not affect the validity of the remaining portions of this Ordinance.

Section 4: PUBLICATION. This Ordinance, or a summary thereof, shall be published

according to state code and shall take effect immediately upon its passage, approval, and publication.

Section 5: EFFECTIVE DATE. This Ordinance shall be in full force and effect after its passage, approval and publication according to law.

Passed and adopted this 10th day of December 2025.

_____
Mayor Julie Fullmer

Attest

_____
Tony Lara, Deputy Recorder

VINEYARD

Transportation Master Plan

August 2025

VINEYARD
STAY CONNECTED

HALES ENGINEERING
innovative transportation solutions

ACKNOWLEDGEMENTS

Vineyard City

Naseem Ghandour, Public Works/Engineering Director

Morgan Brim, Community Development Director

Eric Ellis, City Manager

Vineyard Mayor & City Council

Julie Fullmer, *Mayor*

Brett Clawson, *City Council*

Jacob Holdaway, *City Council*

Mardi Sifuentes, *City Council*

Sara Cameron, *City Council*

Vineyard Planning Commission

Steve Anderson, Commissioner

Bryce Brady, Commissioner

Christopher Bramwell, Commissioner

Brad Fagg, Commissioner

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TABLE OF CONTENTS

Acknowledgements i

TABLE OF CONTENTS ii

LIST OF TABLES iii

LIST OF FIGURES iv

Introduction 1

- Overview 2
- Demographics 4
- Land Use 5
- Travel Demand Forecasting 8
- Public Engagement 8

Roadway Network 12

- Purpose 13
- Functional Classification 13
- Level of Service Analysis 14
- Existing Conditions 22
- Future (2033) Conditions 29
- Future (2050) Conditions 34

Public Transit & Active Transportation 42

- Purpose 43
- Public Transit 43
- Active Transportation 43

Safety 47

- Purpose 48
- Safety Hotspots 48

Conclusion 50

- Overview 51
- Next Steps 51

LIST OF TABLES

Table 1: Vineyard TAZ summary 5
Table 2: Topics and Comments from the Public Input Meeting 10
Table 3: Roadway Classifications 13
Table 4: Level of Service Descriptions 18
Table 5: Roadway Capacities 21
Table 6: Intersection LOS Criteria 22
Table 7: Recommended Phase 1 Improvement Projects 23
Table 8: Existing Evening Peak Hour Intersection Level of Service 28
Table 9: Future (2033) No-Build Evening Peak Hour Level of Service 29
Table 10: Recommended Phase 2 Improvement Projects 31
Table 11: Future (2033) Build Evening Peak Hour Build LOS 32
Table 12: Future (2050) No-Build Evening Peak Hour Level of Service 34
Table 13: Recommended Phase 3 Improvement Projects 38
Table 14: Future (2050) Build Evening Peak Hour Level of Service 38

LIST OF FIGURES

Figure 1: Vicinity map 3
Figure 2: Vineyard mode split 5
Figure 3: Vineyard Household Growth 6
Figure 4: Vineyard Employment Growth 7
Figure 5: Community Survey Locations 11
Figure 6: Arterial cross-sections 15
Figure 7: Collector cross-sections 16
Figure 8: Local street cross-section 17
Figure 9: Visual representation of LOS 19
Figure 10: Data Collection Locations 20
Figure 11: Existing (2023) Roadway Network and Intersection Control 24
Figure 12: Existing (2023) Roadway Jurisdiction 25
Figure 13: Existing (2023) Roadway Volumes and LOS 27
Figure 14: Future (2033) No-Build Roadway Volumes and LOS 30
Figure 15: Future (2033) Projects 33
Figure 16: Future (2033) Build Roadway Volumes and LOS 35
Figure 17: Future (2050) No-Build Roadway Volumes and LOS 37
Figure 18: Future (2050) Projects 39
Figure 19: Future (2050) Roadway Network and Intersection Control 40
Figure 20: Future (2050) Build Roadway Volumes and LOS 41
Figure 21: Public transit route map 45
Figure 22: Active Transportation 46
Figure 23: Crash Analysis Heat Map 49

INTRODUCTION

OVERVIEW

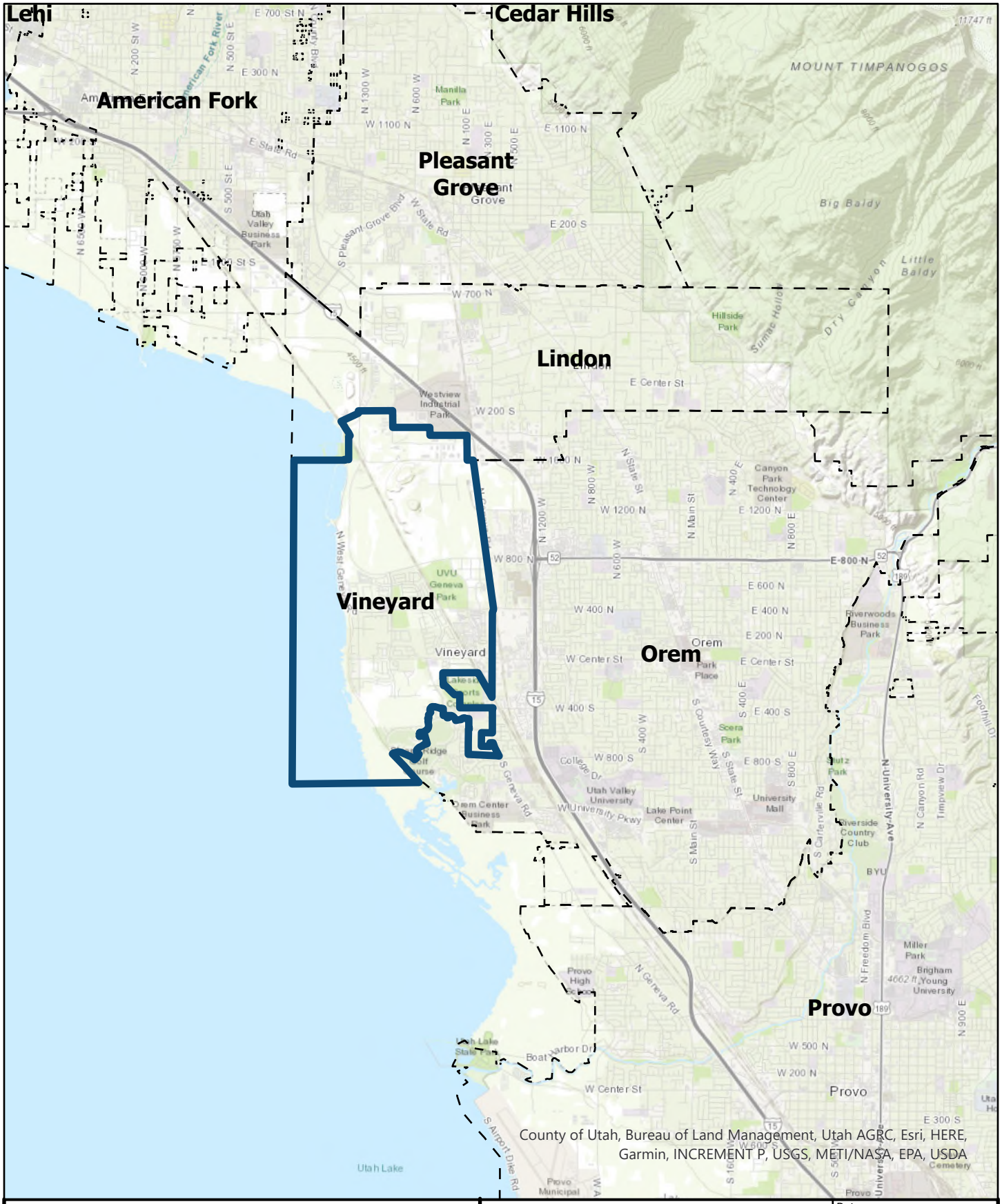
With history back to the 1890s, Vineyard City has most recently experienced rapid growth. The population has increased from 139 residents in 2010, to approximately 14,500 residents in 2023. This growth rate is unmatched in Utah. With this growth comes many challenges and opportunities to provide safe and efficient transportation for the citizens of Vineyard.

The City continues to see rapid growth with the development of Utah City, the Forge, and many other projects in the area. With a high number of residents traveling in and out of the City to commute to work during peak hours, there are existing challenges with transportation in the City. The purpose of this Transportation Master Plan (TMP) is to plan for the multi-modal transportation needs of Vineyard City, accounting for the projected future growth.

Vineyard is in Utah County, Utah, about 9 miles northwest of downtown Provo – bordered by Lindon to the north, Orem to the east, and Utah Lake to the west, as shown in Figure 1.

While numerous traffic studies have been done in or around the Vineyard City, this will be the first edition of the transportation master plan. The Vineyard City TMP is being written with the most current land use plans. Because of large and often unpredictable growth in the City, it will be necessary to update this TMP periodically.

Key to planning for Vineyard's transportation needs is an understanding of the City's goals and policies related to transportation. The other portions of the General Plan include future land use and development plans and goals in the City and how those will be achieved. This TMP provides details regarding the City's transportation needs, including future demand and improvements, to meet the goals outlined by the City. The TMP expands the vision for the General Plan into actionable mobility-related goals and objectives to guide Vineyard's near- and long-term transportation investments.



VINEYARD
STAY CONNECTED
TRANSPORTATION MASTER PLAN

Vicinity Map

Date: 3/29/2025

Project: UT23-2453

Figure 1

DEMOGRAPHICS

This section discusses the demographics of Vineyard City and provides helpful information about how people live, work, and play. These characteristics have a direct impact on the transportation needs of the City. The existing demographics data come primarily from U.S. Census data, including the American Community Survey results.

POPULATION

The population in Vineyard City has grown rapidly in recent years, making it the fastest growing city in Utah. According to the U.S. Census, the population in 2010 was 139. It is estimated that the population in 2023 was approximately 14,500. The median age of the population is approximately 24.8 years, and approximately 29 percent of the population is 18 years or younger.

Population (2023):
14,500

HOUSEHOLDS

Similar growth has occurred for the number of households in Vineyard. According to the U.S. Census, the number of households in Vineyard was 43 in the year 2000. The estimate for households rose to approximately 4,379 in 2023. It is estimated that there are approximately 3.09 persons per household.

Approximately 44 percent of the housing units in the city are owner-occupied with 52 percent of homes being single-family detached units, and the rest being apartments, condos, townhomes, mobile homes, etc. Approximately 98 percent of the residents of Vineyard have moved into the city since 2010. Related to transportation demand, approximately 94 percent of households have at least one vehicle available for use, and approximately one-fourth of households have at least three vehicles.

Households (2023):
4,379

EMPLOYMENT & JOURNEY TO WORK

As of 2023, over 6,100 Vineyard residents were employed, and the median household income was $100,022. Unlike population, the employment opportunities within the City have not seen significant growth until the last few years. Vineyard has seen an increase in regional retail developments along Mill Road between 800 North and 400 North. Data were collected from the U.S. Census American Community Survey results for Vineyard to determine the mode split in the City. The recent mode split in the City based on survey results from 2022 is shown in Figure 2.

As shown, just under three-fourths of workers drive alone in a personal vehicle to work. Approximately 11.5 percent carpool and 3.1 percent ride transit. It is anticipated that as transit, pedestrian, and bicycle facilities improve in the city the percentage of personal vehicle usage for commuting will decrease. The average commute time to work for Vineyard City residents is 20 minutes.

Avg. Commute:
20 min.

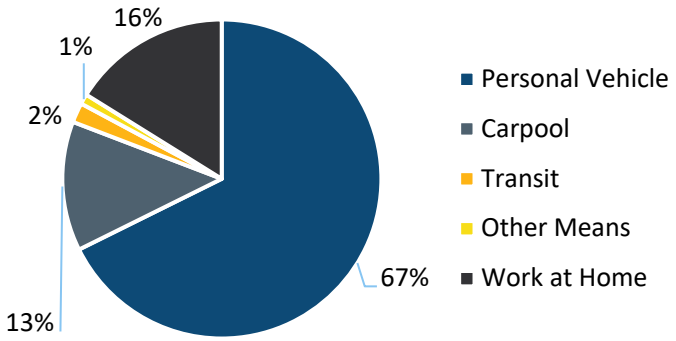


Figure 2: Vineyard mode split

LAND USE

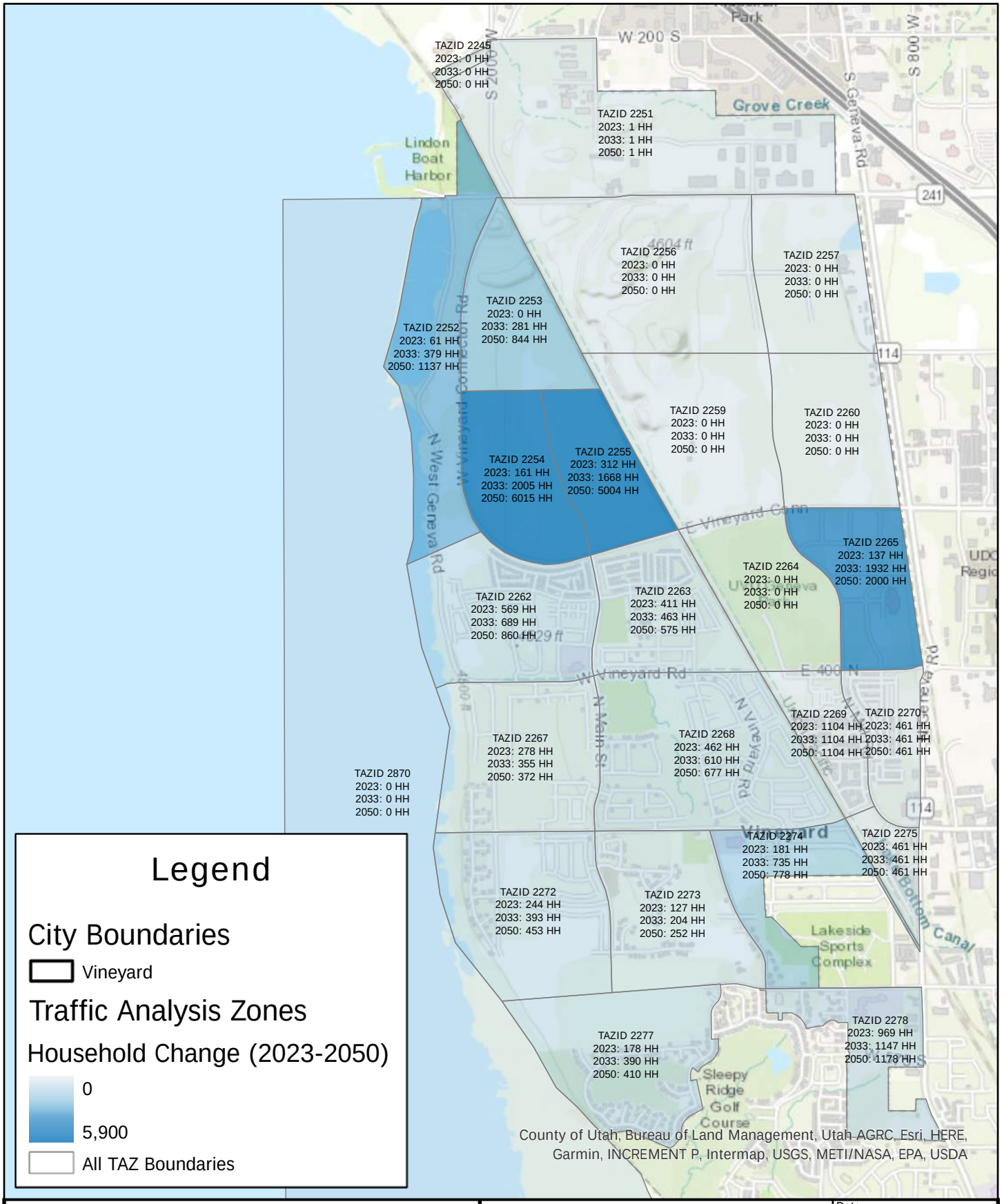
This section discusses plans for existing and future land use in Vineyard City. Land use is a good predictor of transportation trends and demand. Therefore, it is important to identify existing and future land use when planning for transportation needs. There are several parcels within the City limits that are anticipated to experience development in the near future, especially along the Vineyard Connector corridor. Other areas that already have some developed land will experience in-fill development projects that will increase the density of land uses.

Most of Vineyard City currently consists of residential uses. Existing commercial and office developments are primarily located along the Mill Road corridor. Other land uses that are currently located in the City are K-12 public schools, City buildings, religious buildings, and medical care facilities. In preparation to complete this TMP, Vineyard City staff summarized the projects and land uses that are anticipated to develop in the next twenty years and beyond to help determine future transportation demand in the City.

The baseline (2023) and future job and employment numbers for each traffic analysis zone (TAZ) are summarized in Table 1. Detailed TAZ data is proved in the Appendix. Graphical representations of the household and population growth are provided in Figure 3 and Figure 4.

Table 1: Vineyard TAZ summary

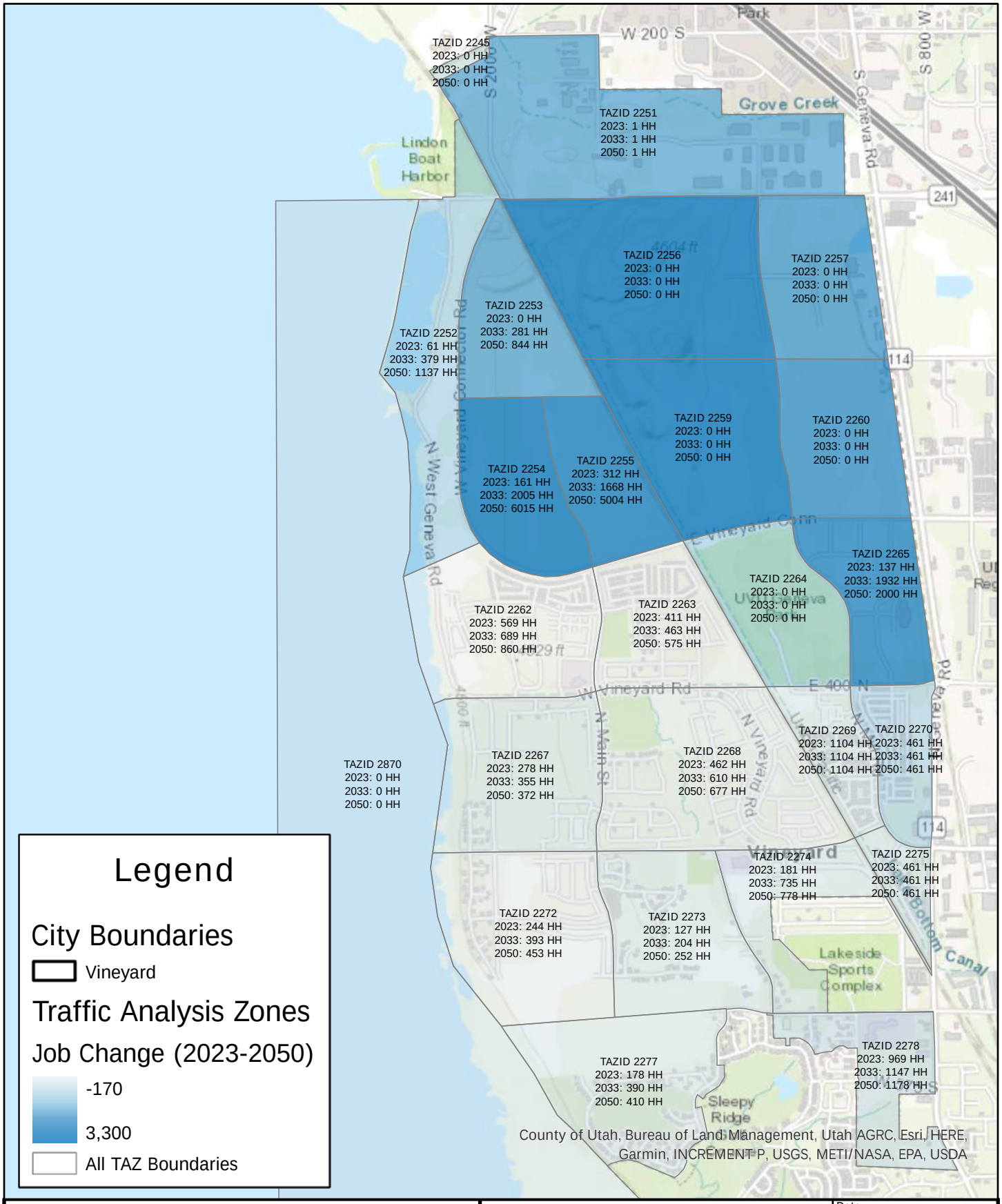
Year	Population	Households	Jobs
2023	17,637	5,583	9,042
2033	36,530	13,278	17,713
2050	56,256	22,582	30,594
Note: Some TAZ's are shared with neighboring cities, so the numbers here will be higher than Vineyard City's own land uses.			



VINEYARD
STAY CONNECTED
TRANSPORTATION MASTER PLAN

Household Heat Map

Date: 6/13/2025
Project: UT23-2453
Figure 3



VINEYARD
STAY CONNECTED
TRANSPORTATION MASTER PLAN

Employment Heat Map

Date: 6/13/2025
Project: UT23-2453
Figure 4

TRAVEL DEMAND FORECASTING

Hales Engineering obtained the Mountainland Association of Governments (MAG) Travel Demand Model (v9). Based on the socioeconomic data within that model, various adjustments were made to be in line with the data and assumptions provided by Vineyard City staff. The future land use assumptions, as summarized above in Table 1, were applied to the Vineyard City Travel Demand Model to estimate future roadway volumes throughout the city for future years 2030 and 2050.

Based on the results of the no-build future (2030) and future (2050) volume projections, Hales Engineering determined deficiencies in roadway capacity under no-build conditions, which were then used as a factor in determining future roadway projects. The future travel demand models were then adjusted accordingly based on these projects to obtain future (2033) and future (2050) build conditions. The underlying assumptions, future projects, and results of these analyses are summarized later in this document.

PUBLIC ENGAGEMENT

Local stakeholder involvement and engagement in any TMP is critical to understanding current conditions of the transportation network and to identifying needs for future improvement. Multiple public involvement activities were employed to provide outreach and opportunities for the public to provide input. These activities included one public open house, a community survey, and a web-based story map detailing project development. Additionally, multiple meetings with UDOT, MAG, UTA, Orem City staff, Lindon City staff, and the Vineyard City Council were held to keep key project stakeholders aware of the public input as well as study development.

SOCIAL MEDIA AND ONLINE COMMUNITY SURVEY

Vineyard City hosted a Facebook Live event on Tuesday, April 18, 2023 to educate the public on the TMP process and to spread word of the online survey and upcoming public input meeting and online story map. A basic presentation was given to explain the need for a TMP and the desire for public input to play a crucial road in the outcomes of the study.

An online community survey was created and disseminated via Vineyard City social media channels. The following TMP-related questions were asked in the survey:

1. Which of the following best describes you?
    a. Live, Work, Shop, and/or Recreate in Vineyard
2. How important are the following transportation modes to your personal travel in Vineyard?
    a. Personal Vehicles, Transit, Bicycle, Walking
        i. Five options ranging from “Not Important” to “Very Important”
3. How would you rate your experience with the following modes of transportation?
    a. Personal Vehicles, Transit, Bicycle, Walking
        i. Five options ranging from “Poor” to “Excellent”
4. How would you rate your current travel time in the morning peak hour
    a. “Congested and Slow,” “As Expected,” “Faster than Expected”

5. How would you rate your current travel time in the morning peak hour
    a. "Congested and Slow," "As Expected," "Faster than Expected"
6. How would you improve the Transportation Network in Vineyard
    a. Free Response for
        i. Personal Vehicles, Transit, Bicycle, Walking
7. How long is your commute to work? (optional)
    a. Free response in minutes
8. How often do you currently ride transit?
    a. "3+ days per week," "1-2 days per week," "1-3 days per month," "once every few months," "1-2 days per year," "never"
9. How often would you ride transit if you lived within a 5-minute walking distance of the Vineyard FrontRunner station?
    a. "3+ days per week," "1-2 days per week," "1-3 days per month," "once every few months," "1-2 days per year," "never"
10. From your experience, what is the most congested roadway or intersection during peak hours?
    a. (select on map)
11. What location in Vineyard City do you see as a safety concern for vehicles and/or pedestrians?
    a. (select on map)

A copy of the summarized responses from the online survey is provided in Appendix C. Locations that received comments regarding transportation are shown summarized in the map in Figure 5.

Public Input Meeting

- **Date and Time:** Tuesday April 25, 2023 from 5:30 - 8:30 PM
- **Location:** Freedom Preparatory Academy

An informal open-house style event was held to inform members of the public of the ongoing TMP as well as to obtain crucial public input via the online survey and in-person interactions. Multiple displays were used to convey the goals of the study and to communicate the importance of working with the public to find improvements in the Vineyard City transportation system. A map of the City was printed with markers to allow attendees to write and illustrate their concerns especially. A summary of many of the public comments from this meeting is provided in Table 2.

Table 2: Topics and Comments from the Public Input Meeting

Location	Comments
600 North / Main Street	Excessive eastbound queuing, need for alternative access to Vineyard Connector
600 North	Need more pedestrian crosswalks
Vineyard Loop Road	Speed limit too fast
FrontRunner Tracks	Need for pedestrian connectivity between east and west, potentially at 400 North
Lakeside Sports Park	Excessive congestion during sports season that spills onto Vineyard streets
Vineyard Connector	Need more pedestrian/bike connectivity to connect town to FrontRunner station

City Council Meetings

Date and Time: Wednesday August 30, 2023, 6:00 PM
Location: Vineyard City Hall

An introductory presentation was given, focusing on the elements of the TMP. These included the purpose and goals of the document, existing conditions throughout the city, and a summary of the public input provided to-date, projected future conditions, and potential projects to include to address future transportation-related concerns.

Date and Time: Wednesday March 6, 2024, 6:00 PM
Location: Vineyard City Hall

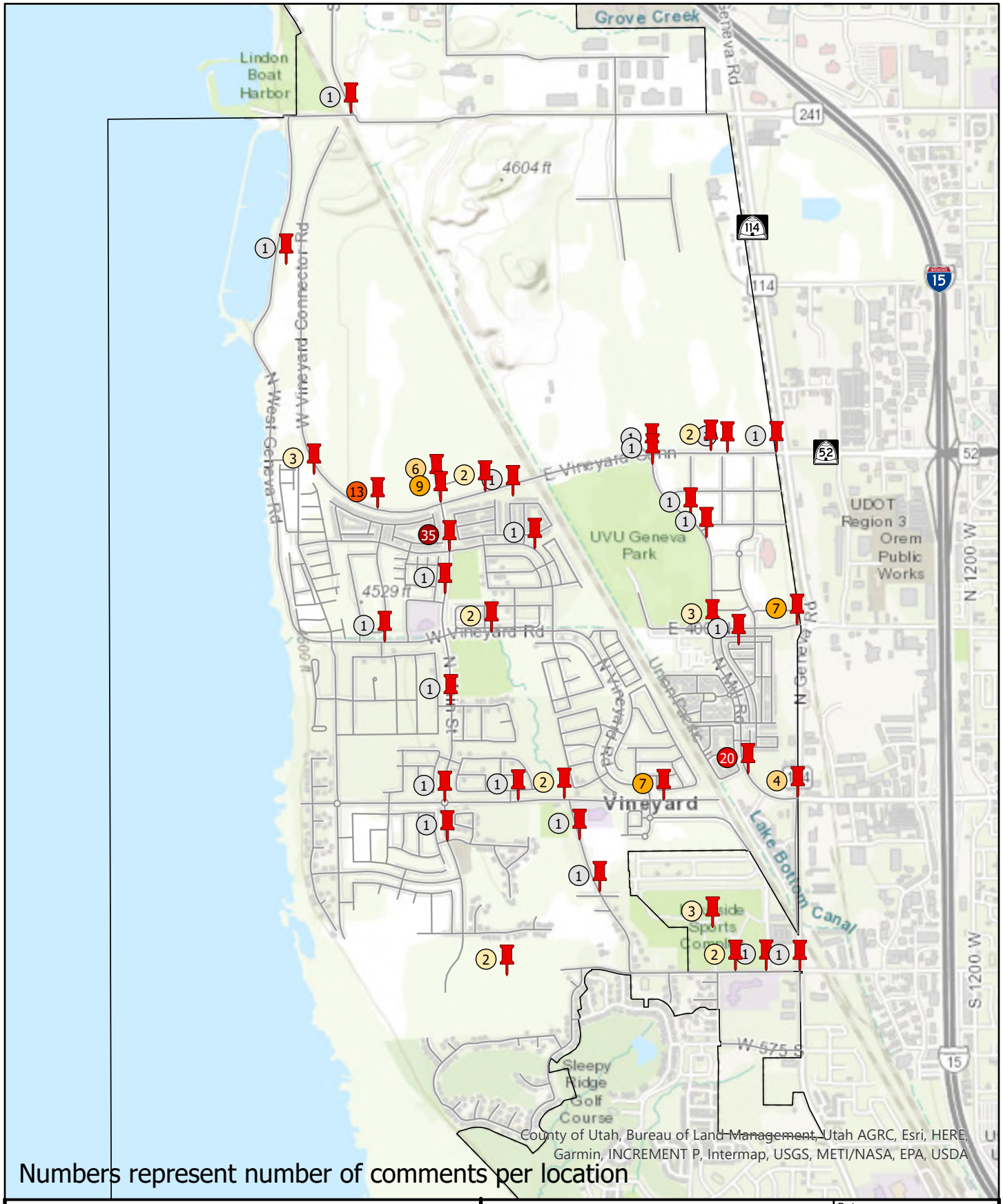
An follow-up presentation was given, focusing on progress of the TMP with emphasis on the future alignment of a proposed expressway/high-capacity arterial connection from Geneva Road to 1600 North, which will relieve congestion on the current Vineyard Connector alignment and provide a true parallel route to I-15. Additionally, level of service results from the future travel demand model projections were provided and discussed in conjunction with this expressway proposal.

Date and Time: Wednesday May 14, 2024, 6:00 PM
Location: Vineyard City Hall

A final transportation master plan presentation to the City Council, including final projects and findings.

Online Story Map

A study-specific online webpage was created in April 2023 as an additional resource through the study process. The public were directed to access the page at the public input meeting and via City social media channels. The story map was hosted at www.vineyardutah.gov. A screenshot of the opening view of the webpage is shown in Figure 5.



Numbers represent number of comments per location

VINEYARD
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Community Input Locations

Date: 3/29/2025
Project: UT23-2453
Figure 5

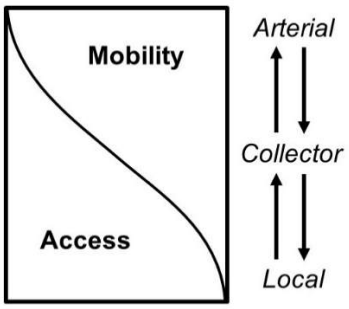
ROADWAY NETWORK

PURPOSE

The purpose of this chapter is to discuss the characteristics and needs of the existing and future roadway networks. Recommendations for future improvements are discussed as well, based on the future projections. The analysis methodologies and models that were used are also discussed.

FUNCTIONAL CLASSIFICATION

Roads are categorized into a hierarchal system and given a functional classification based on right-of-way (ROW) width. The higher a street classification, the more mobility it provides with limited access. Lower street classifications have less mobility, but more access. The four classifications defined in the Vineyard City code are arterials, major collectors, minor collectors, and local streets.



The following are the four typical street classifications for Vineyard City roadways:

- Arterial – Arterials are designed to have greater mobility and connect traffic between population centers and regional attractions. Because of their increased mobility, arterials typically have higher speeds and a high degree of access control, with the exception of some historical sections. Major Arterials have a ROW of 95 or more feet while minor arterials have a ROW of 73 feet.
- Collector – Major collector roads are designed to connect with and augment the arterial system and provide access control. Generally, these streets are intended to carry traffic for shorter distances than arterials and have lower speeds. Major collectors have a ROW of 88 feet. A minor collector road is designed to carry low-speed traffic and provides greater access than major collectors. Minor collector roads are also designed for greater mobility than local streets as they are generally wider and as a result have less side friction with on-street parking. Minor collectors have a ROW of 63 feet.
- Local Street – Local streets are designed for accessibility and have less mobility than any other functional classification. The primary purpose of these is to provide access to surrounding properties and carry low-speed traffic. Some local streets may be designed to discourage through-traffic in neighborhoods. Local streets have a ROW of 55 feet.

A summary of the Vineyard roadway classifications is shown in Table 3. Typical cross-sections were designed for each of the Vineyard street classifications primarily based on the existing City cross-section standards and standard engineering practice. These are shown in Figures 3 through 7. These cross-sections do not necessarily match existing roadway cross-sections but are recommended cross-sections for new and improved roadways in the future. Bike treatments are not included in these concepts and may require additional ROW and/or pavement. The colors shown in Table 3 correspond to colors shown in both the cross-section figures and the roadway network figures shown later in the document. The Principal Arterial classification is being introduced based on future roadway improvement recommendations and has a seven-lane cross-section to accommodate higher demands.

Table 3: Roadway Classifications

Mobility

Access

Vineyard Roadway Classifications		
Classification		Characteristics
	Major Arterial	ROW: 95+ feet 5 lanes
	Minor Arterial	ROW: 73 feet 2-3 Lanes
	Major Collector	ROW: 88 feet 3 Lanes
	Minor Collector	ROW: 63 feet 2 Lanes
	Local Street	ROW: 58 feet 2 Lanes

LEVEL OF SERVICE ANALYSIS

Level of service (LOS) is a term that describes the operating performance of an intersection or roadway. LOS is measured quantitatively and reported on a scale from A to F, with A representing the best performance and F the worst. Calculating a planning-level LOS for a roadway segment is completed based on volume-to-capacity (v/c) ratios. The volume is the average daily traffic (ADT) for the given roadway segment and the capacity is based on factors such as lane count and traffic signal spacing.

Table 4 provides a brief description of each LOS letter designation and the accompanying range of v/c ratios. A visual representation of the various levels of service is shown in Figure 9.

For the purposes of this TMP, a minimum overall performance for each of the study roadways and intersections was set at the levels of service shown below. These acceptable thresholds for various City roads were set based on discussions with the City to prioritize good flow on lower classification roads while also allowing for some congestion to encourage walkability in the downtown (Utah City) area.

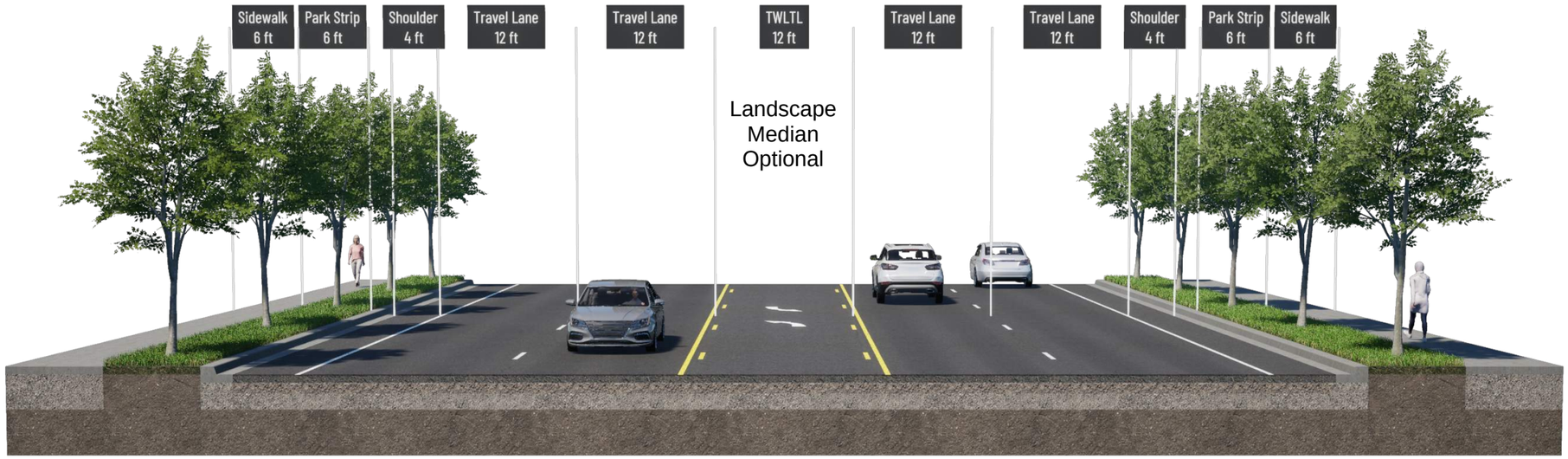
City Road Threshold			
LOS	Local	Collector	Arterial
A			
B	Acceptable		
C		Acceptable	
D			Acceptable
E			
F			

Downtown Road Threshold			
LOS	Local	Collector	Arterial
A			
B			
C	Acceptable		
D			
E		Acceptable	Acceptable
F			

Data was collected utilizing annual daily traffic counts and turning movement counts at key intersection and roads. A map showing the data collection locations is shown in Figure 10.

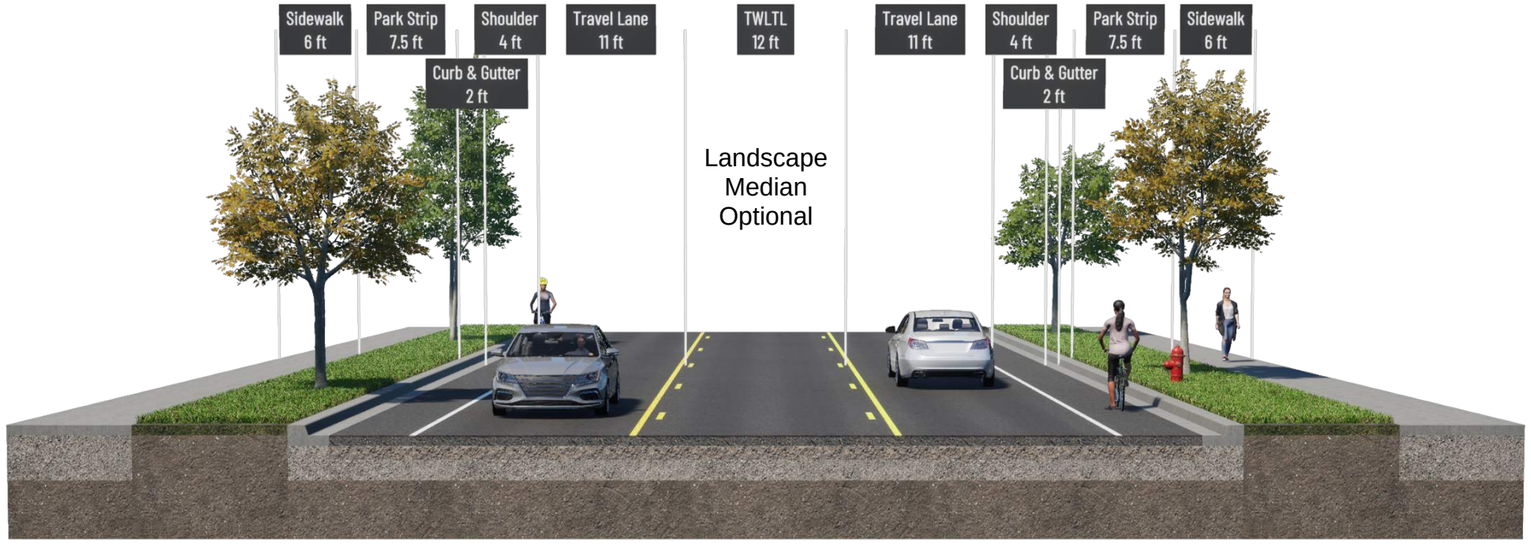
Major Arterial (5 Lanes)

Major Arterial (5 Lanes)
96+' *ROW*



Minor Arterial (3 Lanes)

Minor Arterial (3 Lanes)
73' *ROW*



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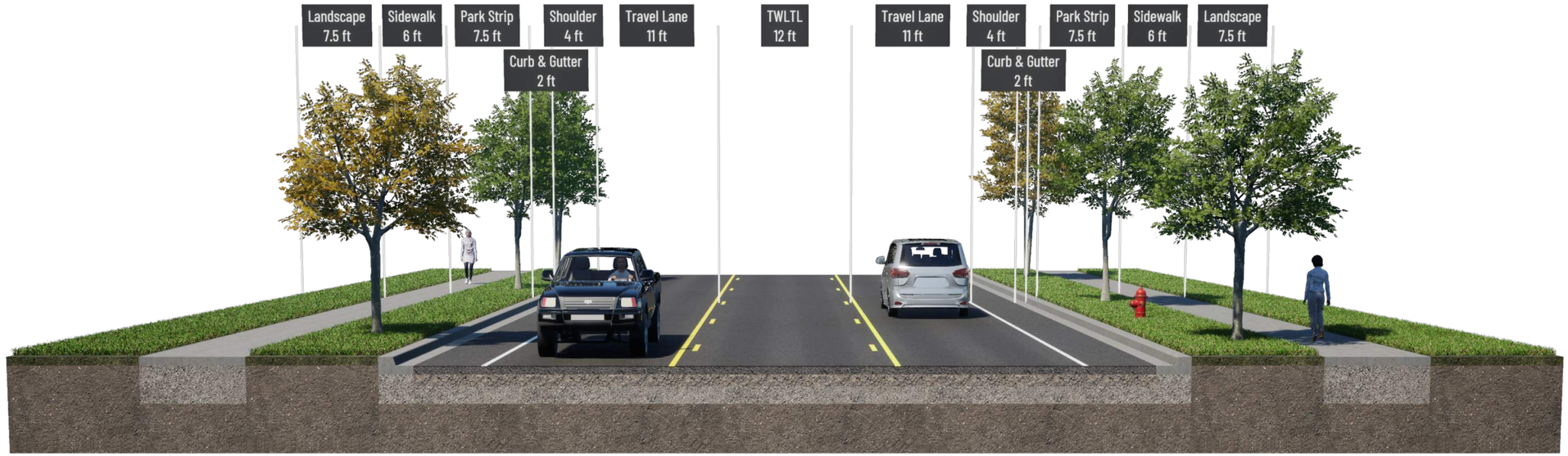
Arterial Cross Sections

Vineyard TMP

DATE	01/17/2025
PROJECT	UT23-2453
	Figure 6

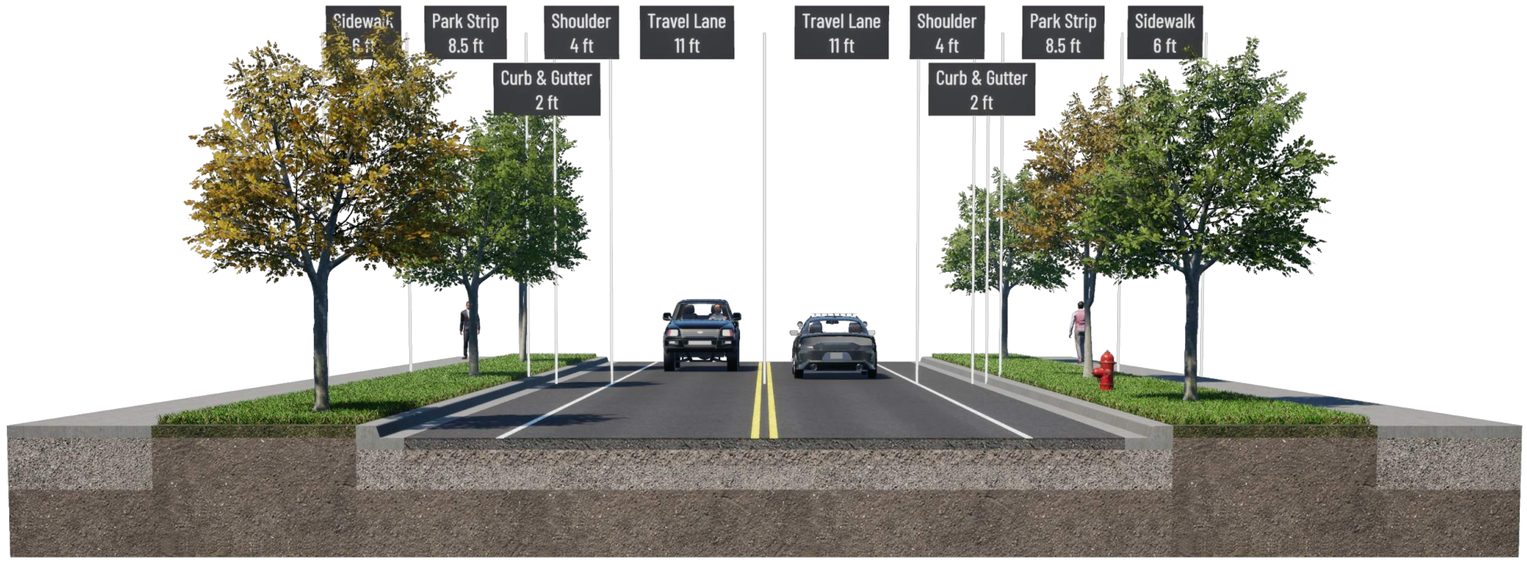
Major Collector (3 Lanes)

Major Collector (3 Lanes)
88' *ROW*



Minor Collector (2 Lanes)

Minor Collector (2 Lanes)
63' *ROW*



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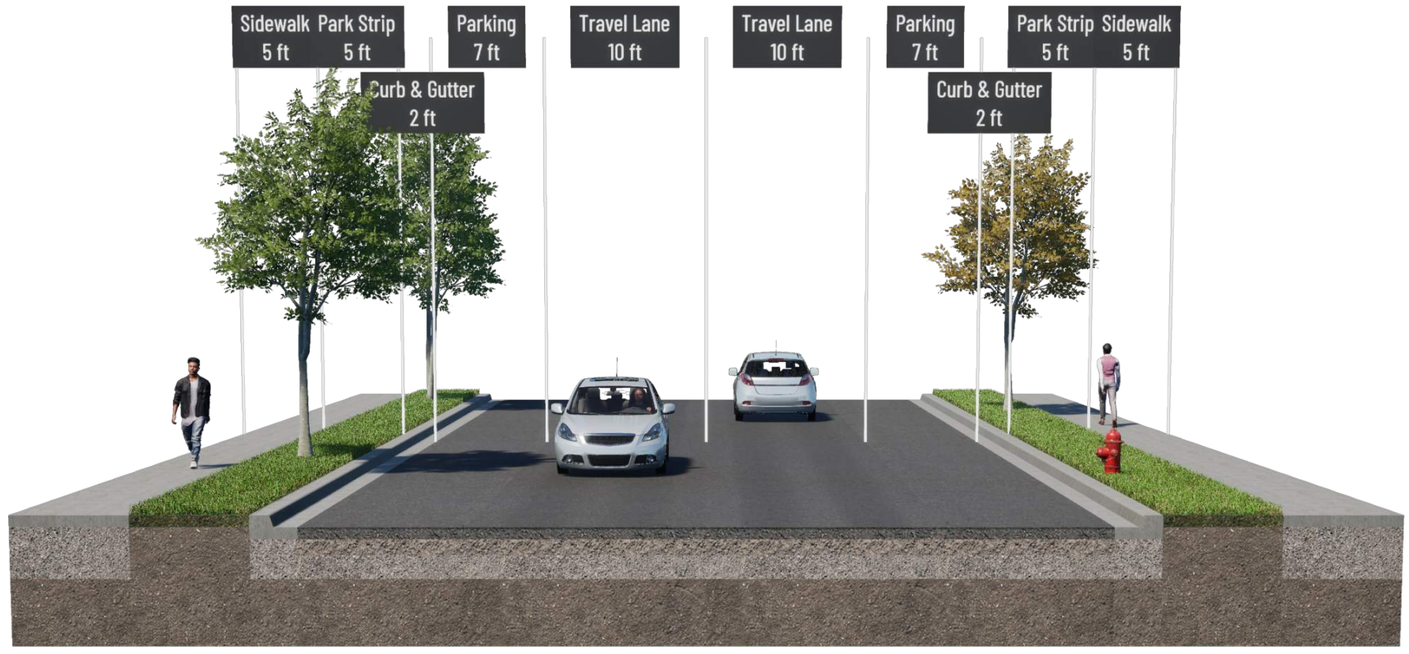
Collector Cross Sections

Vineyard TMP

DATE 01/17/2025
PROJECT UT23-2453
Figure 7

Local (2 Lanes)

Local (2 Lanes)
58' *ROW*



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Local Cross Section

Vineyard TMP

DATE 01/17/2025
PROJECT UT23-2453
Figure 8

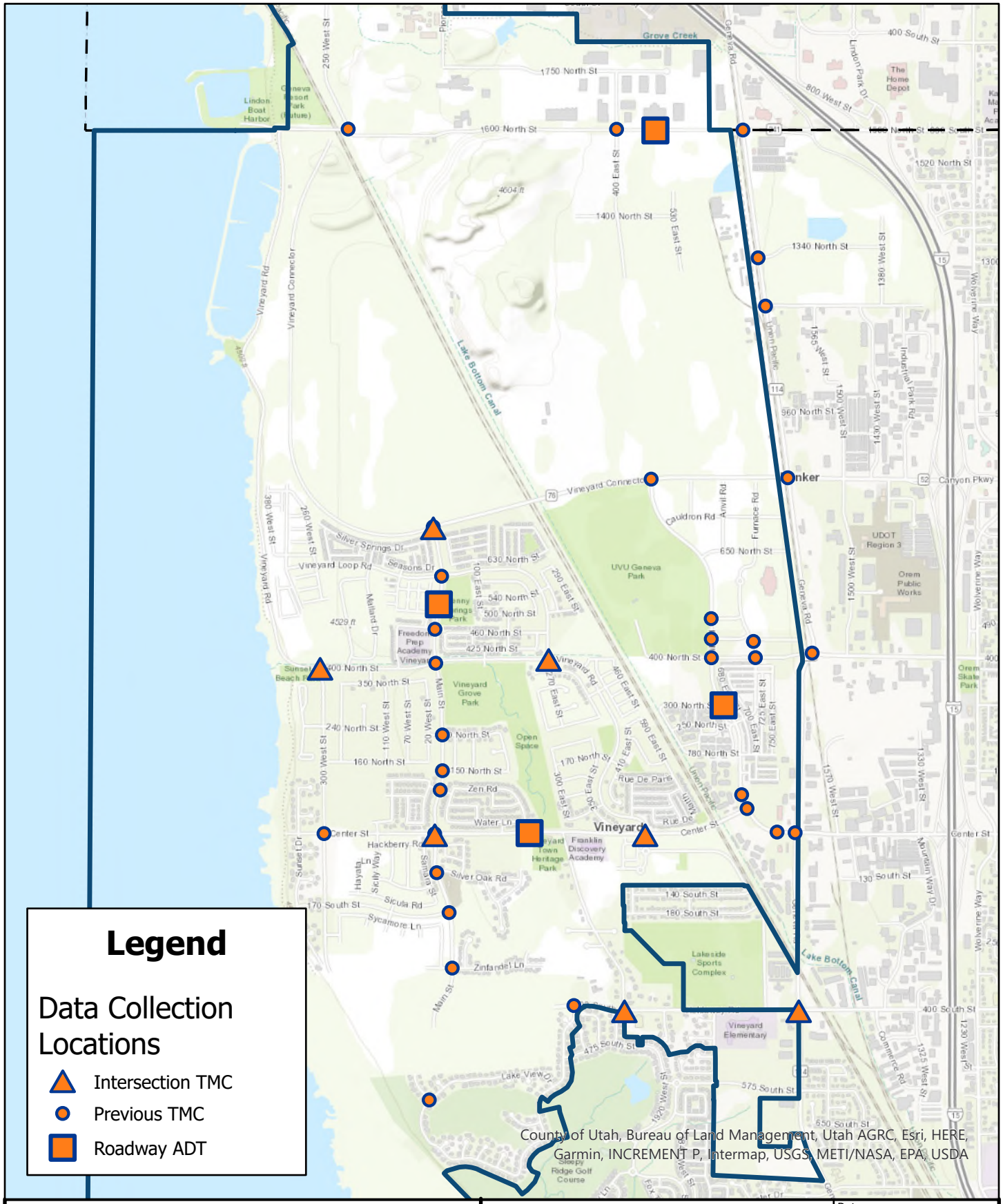
Table 4: Level of Service Descriptions

Level of Service	Description of Traffic Conditions	Volume / Capacity Ratio
A	Extremely favorable progression and a very low level of control (intersection) delay. Individual users are virtually unaffected by others in the traffic stream.	≤ 0.30
B	Good progression and a low level of control delay. The presence of other users in the traffic stream becomes noticeable.	> 0.30 - 0.50
C	Fair progression and a moderate level of control delay. The operation of individual users becomes somewhat affected by interactions with others in the traffic stream.	> 0.50 - 0.75
D	Marginal progression with relatively high levels of control delay. Operating conditions are noticeable more constrained.	> 0.75 - 0.85
E	Poor progression with unacceptably high levels of control delay. Operating conditions are at or near capacity.	> 0.85 - 1.00
F	Unacceptable progression with forced or breakdown operating conditions.	> 1.00

Source: *Highway Capacity Manual* (HCM) 7th edition (Transportation Research Board, 2022).

Level of Service (LOS)
LOS A – Free Flow, Insignificant Delays
LOS B – Stable Flow, Minimum Delays
LOS C – Stable Flow, Acceptable Delays
LOS D – Approaching Unstable Flow, Tolerable Delays
LOS E – Unstable Flow, Significant Delays
LOS F – Forced Flows, Excessive Delays

Figure 9: Visual representation of LOS



VINEYARD
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TRANSPORTATION MASTER PLAN

Data Collection Locations

Date: 3/29/2025
Project: UT23-2453
Figure 10

ROADWAY CAPACITIES

The capacities for each roadway type were identified using Transportation Research Board (TRB) *Highway Capacity Manual,* 7th Edition, 2022 methodologies and based on common practice in Utah. Key factors that influence the capacity of a roadway include the number of travel lanes, presence of a two-way left-turn lane (TWLTL) or turn pockets, level of access management, and signal spacing. The assumed LOS capacity thresholds for Vineyard City roadways are shown in Table 5, reported as vehicles per day (vpd).

Table 5: Roadway Capacities

Functional Classification	Number of Lanes	Capacity (vpd)
Local	2	9,000
Minor Collector	2	11,600
Major Collector	3	13,700
Minor Arterial	3	15,600
Major Arterial	5	31,300

INTERSECTION LOS

Intersection LOS looks at individual intersections and provides a microscopic view of a roadway network. LOS at intersections can be broken down into directions and respective movements (left-turns, through movements, or right-turns). A detailed look at intersections should occur as frequently as necessary since they are a source of bottlenecks. The Highway Capacity Manual has divided intersections into two types, signalized and un-signalized. The methodology to calculate the delay per vehicle at an intersection is outlined in the *Highway Capacity Manual* (HCM), 7th Edition, 2022 and the subsequent delay criteria and corresponding LOS. A LOS D for intersection delay has been determined to be the acceptable limit for Vineyard City. The delay thresholds for each LOS for both signalized and unsignalized intersections can be found in Table 6.

The levels of service for signalized, all-way stop-controlled (AWSC), and roundabout intersections are calculated as a weighted average of all movements. The LOS for a two-way stop-controlled (TWSC) intersection is equal to the LOS of the worst movement. Failing LOS conditions are typically experienced during the peak hours (morning and/or evening). It is not uncommon for a side street or access on busy arterials to experience LOS worse than D during the peak hours due to high traffic volumes on the major roadway. Vehicles generally learn to re-route to signalized intersections in these cases.

Table 6: Intersection LOS Criteria

LOS	LOS Delay Criteria (sec. / vehicle)	
	Signalized Intersections	TWSC, AWSC, & Roundabout Intersections
A	≤ 10	≤ 10
B	> 10 - 20	> 10 - 15
C	> 20 - 35	> 15 - 25
D	> 35 - 55	> 25 - 35
E	> 55 - 80	> 35 - 50
F	> 80	> 50

Source: *Highway Capacity Manuel, 7th Edition, 2022*

EXISTING CONDITIONS

This section discusses the existing roadway and intersection conditions in Vineyard. The current LOS for each of the major roadways and intersections in Vineyard were analyzed. It is important to analyze the existing conditions as this serves as a baseline with which future conditions and alternatives can be compared.

EXISTING ROADWAY NETWORK

Major roadways in Vineyard have been designed on a grid system as is the pattern along much of the Wasatch Front as well. Many north-south and east-west roads are located approximately every 200 to 400 feet.

Main Street and Mill Road are the City's primary arterials through town. Geneva Road (S.R. 114) also serves much of Vineyard City on the eastern edge of town. Other major north-south roadways include Vineyard Road and 380 West. Center Street and Vineyard Connector Road (S.R. 176) are the primary east-west roadways. Other major east-west routes include 400 North and 400 South.

Local roadways in Vineyard are a mixture of grid systems in some areas and unconnected roads with cul-de-sacs in other areas. Discontinuous local road systems can lead to unnecessary congestion and delay on collector and arterial roads, as vehicles are forced to take those routes even for short trips. Therefore, it is recommended that the grid system be followed as much as possible as areas develop.

The functional classifications discussed previously were assigned to the roadways in Vineyard based on existing number of lanes. The existing roadway network map that shows the functional classifications is shown in Figure 11. Most roadways in Vineyard City are maintained by the City. Vineyard Connector Road (S.R. 176) and Geneva Road (S.R. 114) are state roadways maintained by the Utah Department of Transportation (UDOT). State and City

roadway jurisdictions are shown in Figure 12. The locations of traffic signals, stop signs, and other traffic control devices are shown in Figure 11.

ROADWAY IMPROVEMENTS

Through discussions with the city representatives, several locations around the City were considered phase 1 projects or projects that require immediate work. Phase one projects were mostly based at a few Geneva Road intersections and along Lake Boulevard. A list of phase 1 projects can be found in Table 7.

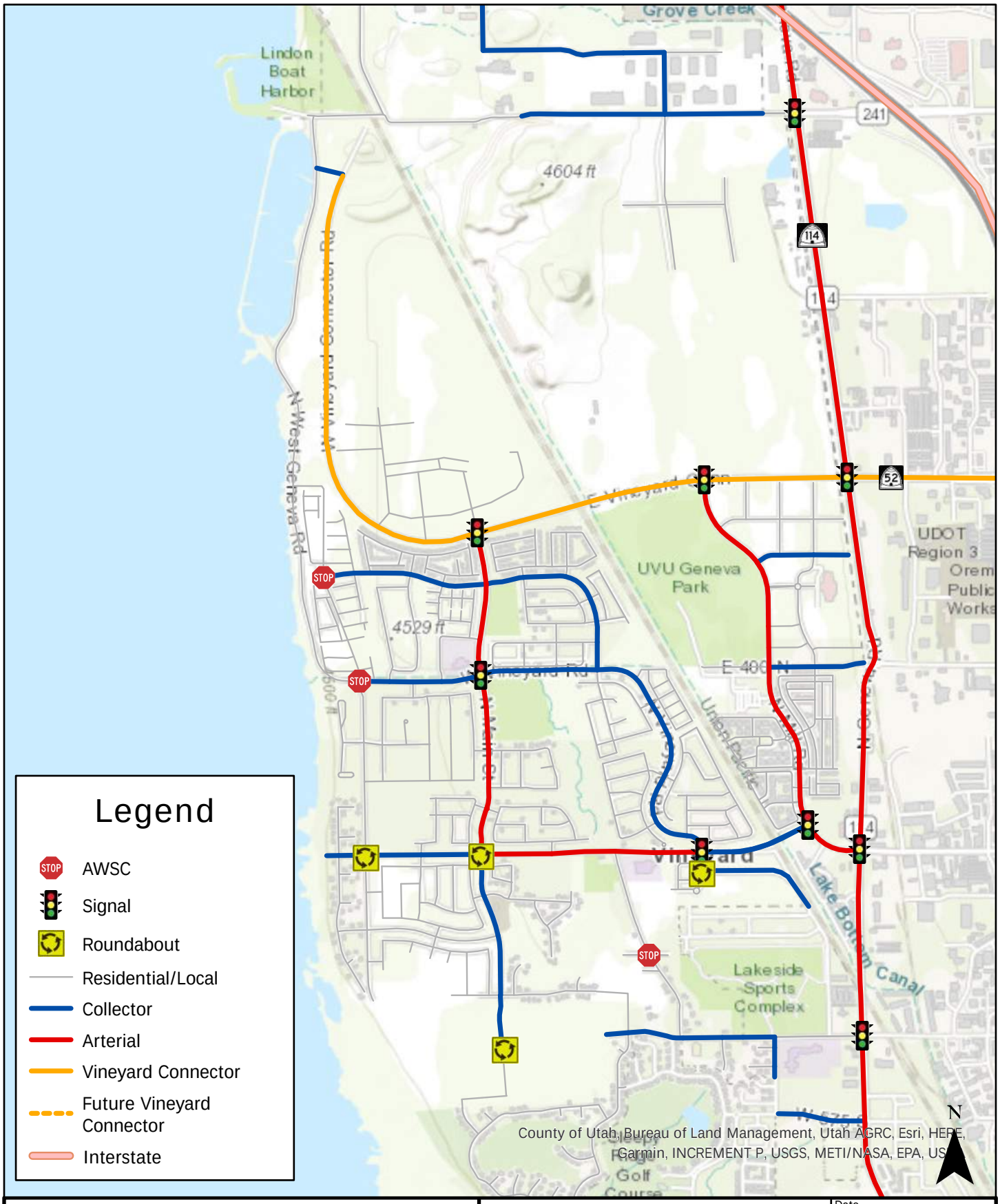
Table 7: Recommended Phase 1 Improvement Projects

#	Location	Type	Description	Jurisdiction
1	Lake Boulevard	Widen	Widen to 2 lanes	Vineyard
2	1600 North / Geneva Road Intersection	Intersection	Increase capacity	UDOT
3	300 West: Lake Boulevard Connection	New	2 lane / roundabout	Vineyard
4	400 North / Geneva Road Intersection	Intersection	Install traffic signal	UDOT
5	Center Street / Geneva Road Intersection	Intersection	NB dual LT lanes	UDOT

It is recommended that Lake Boulevard be widened to a full 2-lane width to accommodate vehicles traveling along the western edge of the City in both the northbound and southbound directions. This is a project that is currently in design at the time of this TMP.

Improvements are recommended at the UDOT-controlled 1600 North / Geneva Road and 400 North Geneva Road intersections. These improvements will take place after removal of the current rail lines on the west side of each intersection. It is also anticipated that the 400 North / Geneva Road intersection will be realigned and signalized when the west leg of the intersection is built, connecting the Vineyard roadway network to Orem at that location.

Dual northbound left-turn lanes are recommended at the Center Street / Geneva Road intersection based on existing deficiencies identified at the intersection in traffic impact studies conducted in the area for private developments. It is recommended that the City coordinate with UDOT on the timing of this improvement in conjunction with future widening plans on Geneva Road.



VINEYARD
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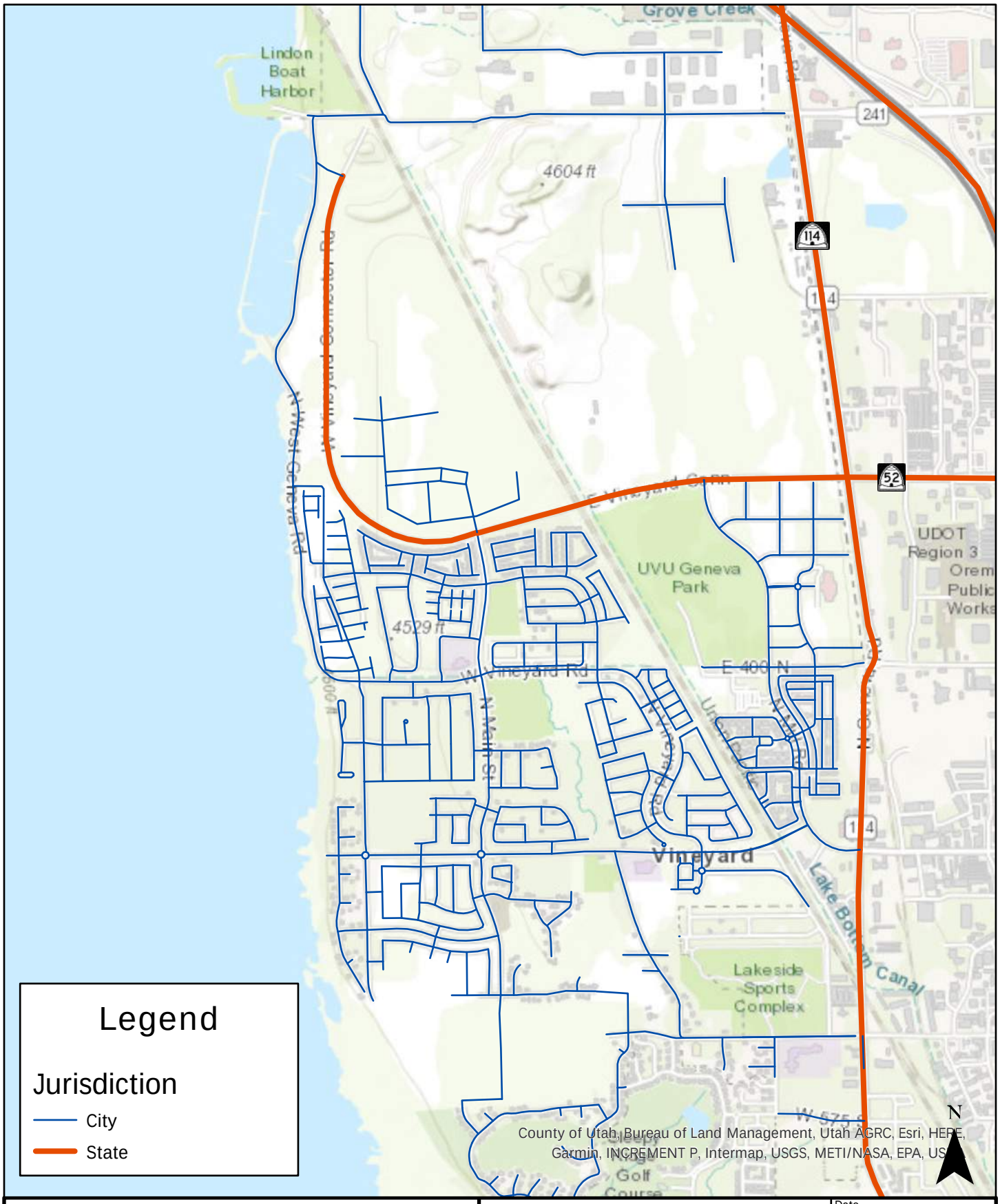
Existing (2023) Roadway Network

Date: 6/17/2025
Project: UT23-2453
Figure 11



VINEYARD
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TRANSPORTATION MASTER PLAN

Existing (2023) Roadway Jurisdiction

Date: 6/13/2025
Project: UT23-2453
Figure 12

EXISTING VOLUMES AND LOS

Roadways

In order to accurately identify existing conditions on the roadway network in Vineyard City, the consultant team gathered traffic data. Existing traffic volumes were obtained from various sources, including the following:

- Consultant Team Data – Where UDOT data were not available, the consultant team used data collected for this and previous projects in the area. These data were collected in the form of two-way roadway counts or turning movement counts at intersections and are included in Appendix B.
- UDOT - Many of the traffic volume values on State roads and other federal aid roads were obtained from UDOT's *Traffic on Utah Highways* database, Automatic Signal Performance Metrics (ATSPM) website, or from previous studies completed on UDOT roads.

The volumes from these sources were compiled to have a comprehensive volume map of all major roadways. LOS values were assigned to each roadway segment based on the volume and the LOS criteria for roadways that was described previously. The existing traffic volumes are reported as ADT in vpd along with the LOS of each roadway segment in Figure 13.

As shown, the roadways in Vineyard are currently operating within capacity, but three of the major intersections are currently operating at a poor LOS. These intersections include the 600 North / Main Street, 400 North / Geneva Road, and Mill Road / Geneva Road intersections.

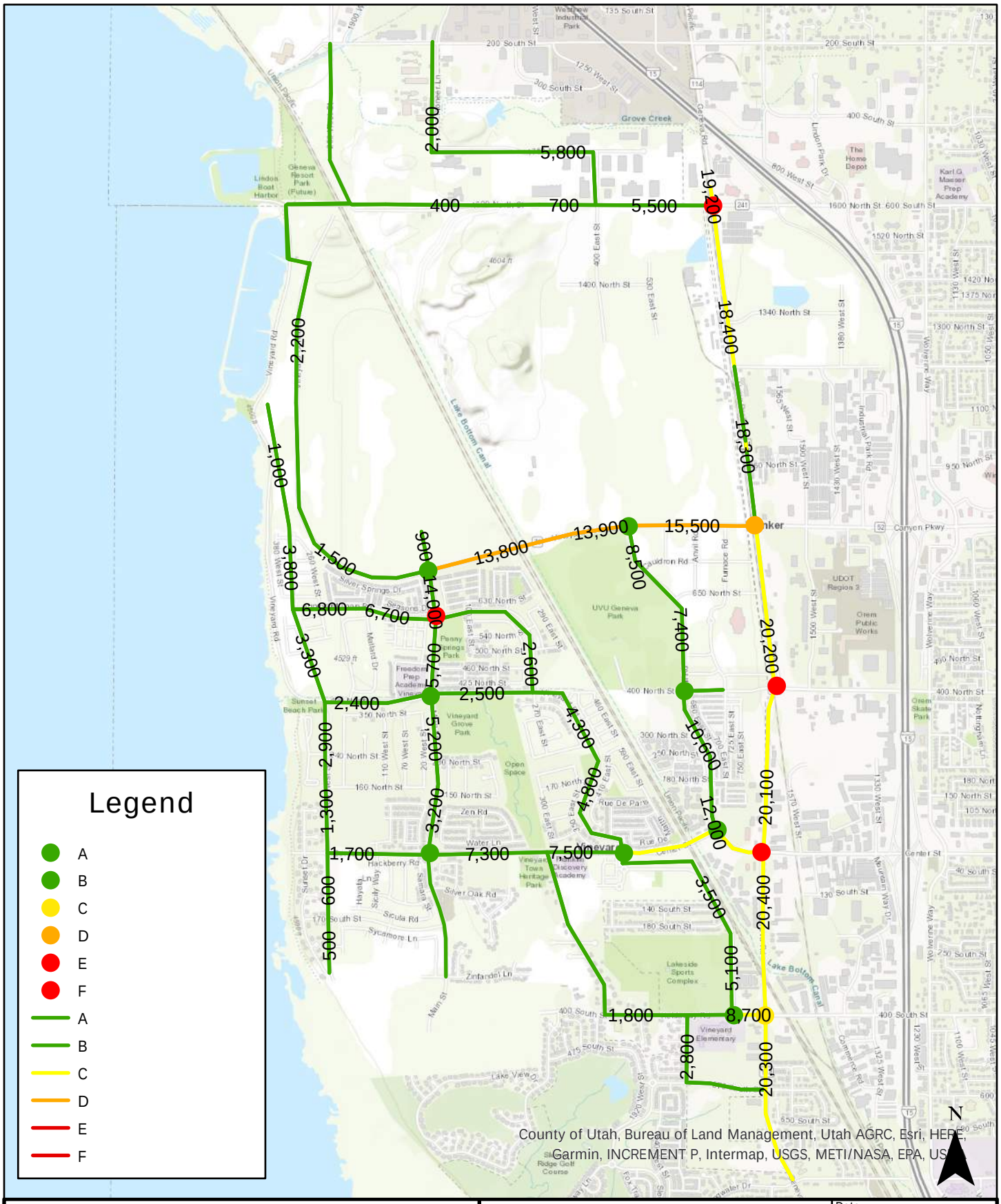
Intersections

Evening peak hour turning movement count data were collected for several major intersections within the City. Hales Engineering completed morning evening peak hour turning movement counts between 7:00 and 9:00 a.m. and 4:00 and 6:00 p.m. at the following intersections on Tuesday, March 7, 2023; Wednesday, March 8, 2023, and Thursday, March 9, 2023:

- Main Street / Center Street
- Main Street / Vineyard Connector
- 300 West / Vineyard Road
- 270 East / Vineyard Road
- Holdaway Road / 400 South (Holdaway Road)
- 400 South / Geneva Road (S.R. 114)
- Vineyard Road / Center Street

Volume data at the following intersections were collected from previous traffic studies or from UDOT's ATSPM website or other databases:

- Center Street (Mill Road) / Geneva Road (S.R. 114)
- 1600 North / Geneva Road (S.R. 114)
- 800 North (Vineyard Connector) / Geneva Road (S.R. 114)



VINEYARD
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TRANSPORTATION MASTER PLAN

Existing (2023) No-Build LOS

Date: 8/13/2025
Project: UT23-2453
Figure 13

An intersection LOS analysis was completed for all major intersections in the City. This analysis was completed for the evening peak hour using Synchro / SimTraffic traffic modeling and simulation software, which follow HCM methodology. The evening peak hour LOS was computed for each study intersection. Multiple runs of SimTraffic were used to provide a statistical evaluation of the interaction between the intersections. LOS results are provided in Table 8 and visually in Figure 13. LOS and queueing reports are shown in Appendix D.

The major intersections in Vineyard City with three exceptions are all operating at acceptable levels of service during the evening peak hour, as shown in Table 8.

Table 8: Existing Evening Peak Hour Intersection Level of Service

Intersection			Level of Service	
Description	Control	Movement[1]	Aver. Delay (Sec/Veh)	LOS[2]
Mill Road / Center Street	Signal	-	13.8	B
400 North / Main Street	Signal	-	10.1	B
600 North / Main Street	EB/WB Stop	EBL	>50	f
Vineyard Road / Center Street	Signal	-	8.8	A
400 North / Mill Road	EB/WB Stop	EBL	11.4	b
800 North (SR-176) / Main Street	Signal	-	9.1	A
800 North (SR-176) / Geneva Road (SR-114)	Signal	-	51.1	D
400 North / Geneva Road (SR-114)	WB Stop	WBL	>50	f
Mill Road / Geneva Road (SR-114)	Signal	-	>80	F
400 South / Geneva Road (SR-114)	Signal	-	22.8	C
Vineyard Road / 400 South	SB Stop	SBL	9.9	a

1. Movement indicated for unsignalized intersections where delay and LOS represents worst movement. SBL = Southbound left movement, etc.
2. Uppercase LOS used for signalized, roundabout, and AWSC intersections. Lowercase LOS used for non-AWSC unsignalized intersections.

Source: Hales Engineering, January 2025

It is recommended that east-and westbound left-turn movements be restricted at the 600 North / Main Street intersection. This change will take place with the future 300 West / Vineyard connector project, which will provide for alternative access for the neighborhood on the west side of Main Street.

It is also recommended that The 400 North / Geneva Road (SR-114) intersection be realigned and signalized, per future UDOT plans for when the Union Pacific railroad along Geneva Road is removed and the west leg of the intersection constructed.

It is recommended that Vineyard City staff coordinate with UDOT on dual northbound left-turn lanes at the Mill Road / Geneva Road (SR-114) intersection. This will increase capacity at the intersection and allow for better access from Geneva Road into Vineyard City.

FUTURE (2033) CONDITIONS

Future ADT roadway volumes were projected based on the anticipated development in the City. This was done based on future land use plans discussed previously in this report. These tasks were completed to determine roadway ADT volumes, which were then converted to turning movement counts at key intersections. Future traffic volumes were calibrated using existing traffic counts grown according to the Vineyard City Travel Demand model.

NO-BUILD LOS

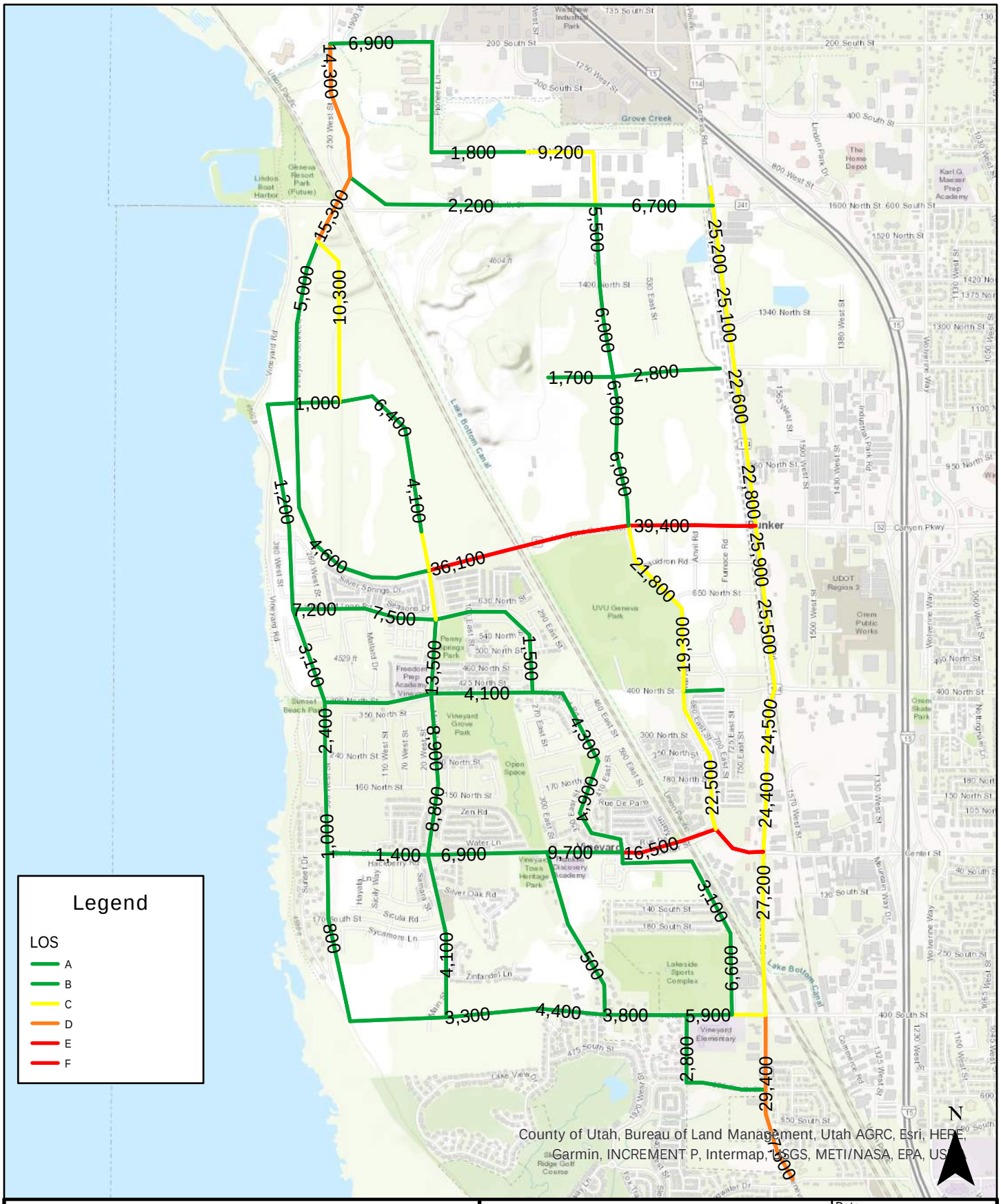
LOS was analyzed for a scenario in which new roads had been constructed to support full development, but existing roads had not been widened (no-build condition). All new roads were assumed to comply with the Vineyard City standard cross sections for each functional classification. The no-build roadway and intersection LOS for future (2033) conditions is shown in Figure 14. Evening Peak Hour intersection LOS results are shown in Table 9. It is anticipated that the 600 North / Main Street intersection will still operate at a poor level of service without any movement restrictions or improvements.

Table 9: Future (2033) No-Build Evening Peak Hour Level of Service

Intersection			Level of Service	
Description	Control	Movement[1]	Aver. Delay (Sec/Veh)	LOS[2]
400 North / Main Street	Signal	-	14.1	B
600 North / Main Street	EB/WB Stop	EBL	>50	f
Vineyard Road / Center Street	Signal	-	34.9	C
400 South / Geneva Road (SR-114)	Signal	-	50.5	D
Vineyard Road / 400 South	SB Stop	SBL	14.4	b

1. Movement indicated for unsignalized intersections where delay and LOS represents worst movement. SBL = Southbound left movement, etc.
2. Uppercase LOS used for signalized, roundabout, and AWSC intersections. Lowercase LOS used for non-AWSC unsignalized intersections.

Source: Hales Engineering, January 2025



VINEYARD
STAY CONNECTED
TRANSPORTATION MASTER PLAN

Future (2033) No-Build LOS

Date: 8/13/2025
Project: UT23-2453
Figure 14

ROADWAY IMPROVEMENTS

As Vineyard continues to develop, new roads will be constructed to connect developments to arterial streets. Additionally, improvements for future conditions were recommended for roadways that are anticipated to operate at a poor LOS. New roads and recommended improvements on city roadways are listed in Table 10. The recommended phase 2 roadway and intersections projects are shown in Figure 15. These projects were anticipated to be needed in phase 2 but may be constructed on an accelerated timeline. 400 South from Main Street to Lake View Drive is partially built at the time of this master plan.

Table 10: Recommended Phase 2 Improvement Projects

#	Location	Type	Description	Jurisdiction
1	Mill Rd: 1600 North to Vineyard Connector	New	Construct 5-lane roadway	Vineyard
2	1200 North: Utah City to Geneva Rd	New	Construct 5-lane roadway	Vineyard/UDOT
3	300 West / Vineyard Connector	New	Roundabout with leg for RT onto Vineyard Connector	Vineyard/UDOT
4	Vineyard Connector: Main St to Geneva Rd	Widen	Widen to 5 lanes	UDOT
5	600 North / Main St	Intersection	Install traffic signal	Vineyard
6	400 North: Rail Bridge to Mill Rd	Widen	Widen to 5 Lanes	Vineyard
7	400 North / Mill Rd Intersection	Intersection	Install traffic signal	Vineyard
8	Main St: Zinfandel Ln to 400 South	New	3-lane road	Vineyard
9	400 South: Main St to Lake View Dr	New	2-lane road	Vineyard
10	620 East / 400 South	Intersection	Install traffic signal	Orem/Vineyard

Hales Engineering recommends a connection to the Vineyard connector at 300 West to allow for an alternate outlet for residents in the surrounding neighborhood. This connection is proposed as a roundabout intersection with its eastern leg connecting to Vineyard connector in an added auxiliary lane that continues eastward until the Main Street / Vineyard Connector intersection. When this project is completed, it is recommended that the failing eastbound and westbound left-turn movements at the 600 North / Main Street intersection be restricted since an alternate outlet from the neighborhood west of Main Street to Vineyard Connector will then be available.

It is anticipated that UDOT will widen Vineyard Connector to a 5-lane cross-section from Main Street to Geneva Road as a phase 2 project. This will allow for increased capacity on Vineyard Connector that will better serve the increased development in the city. To allow for better connectivity on the south side of Vineyard City, it is recommended that Main Street be extended as a 3-lane road from Zinfandel Lane to 400 South. Similarly, it is recommended that 400 South be extended west from Main Street to Lake View Drive as a 2-lane road.

BUILD LOS

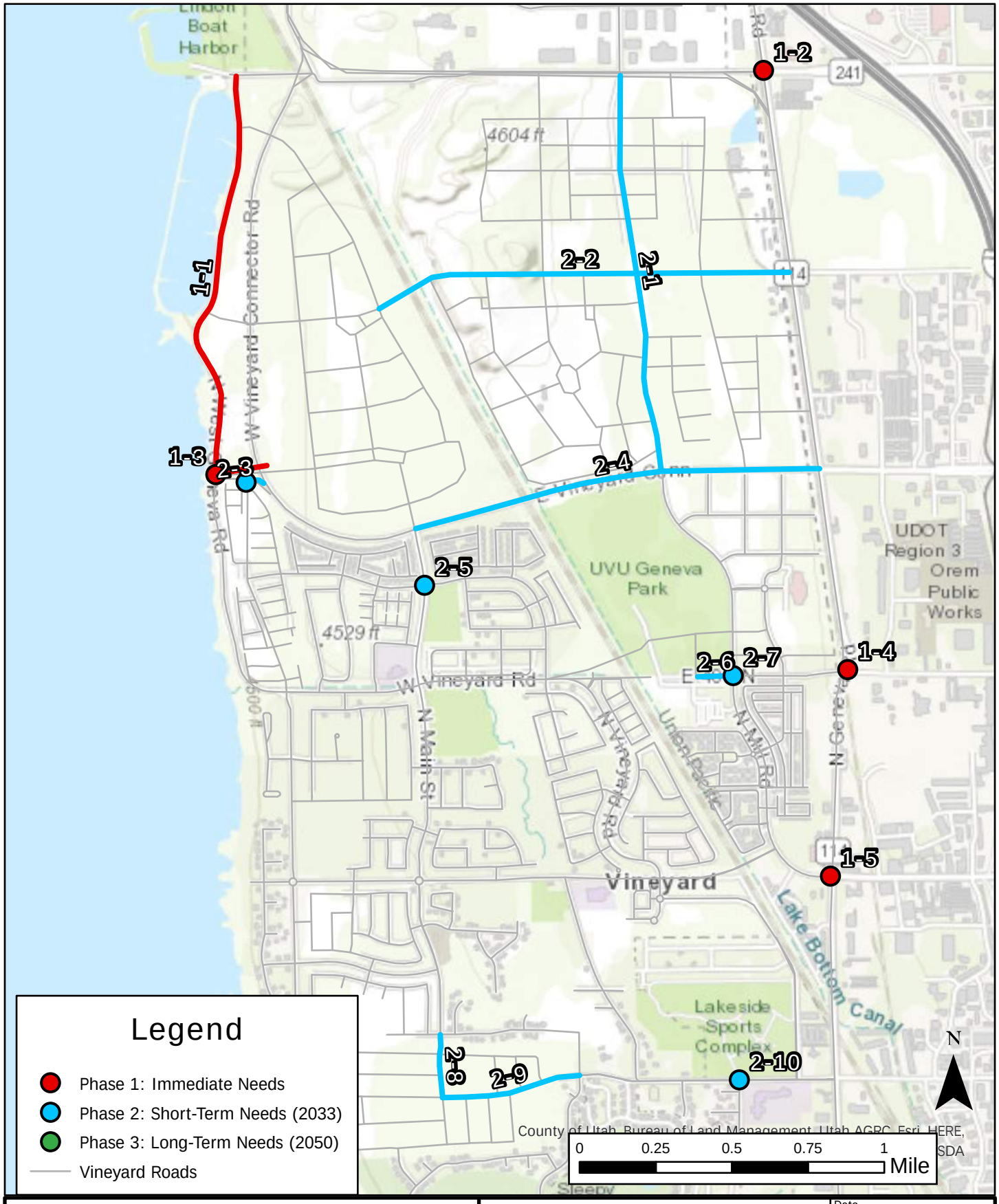
With the proposed improvements, most Vineyard City roadways are anticipated to operate at LOS D or better, as shown in Figure 16. Exceptions to this include Center Street east of Vineyard Road and Mill Road south of Center Street. Future (2033) evening peak hour LOS results are shown in Table 11.

Table 11: Future (2033) Build Evening Peak Hour Build LOS

Intersection			Level of Service	
Description	Control	Movement[1]	Aver. Delay (Sec/Veh)	LOS[2]
400 North / Main Street	Signal	-	26.0	C
600 North / Main Street	Signal	-	13.3	B
Vineyard Road / Center Street	Signal	-	30.0	C
400 South / Geneva Road (SR-114)	Signal	-	54.1	D
Vineyard Road / 400 South	SB Stop	SBL	14.9	b

1. Movement indicated for unsignalized intersections where delay and LOS represents worst movement. SBL = Southbound left movement, etc.
2. Uppercase LOS used for signalized, roundabout, and AWSC intersections. Lowercase LOS used for non-AWSC unsignalized intersections.

Source: Hales Engineering, January 2025



VINEYARD
STAY CONNECTED
TRANSPORTATION MASTER PLAN

Future (2033) Projects

Date 8/15/2025

Project UT23-2453

Figure 15

FUTURE (2050) CONDITIONS

Future ADT roadway volumes were projected based on the anticipated development in the City. This was done based on future land use plans discussed previously in this report. These tasks were completed to determine roadway ADT volumes, which were then converted to turning movement counts at key intersections.

TRAFFIC VOLUMES

Future traffic volumes were calibrated using existing traffic counts grown according to the Vineyard City Travel Demand model.

NO-BUILD LOS

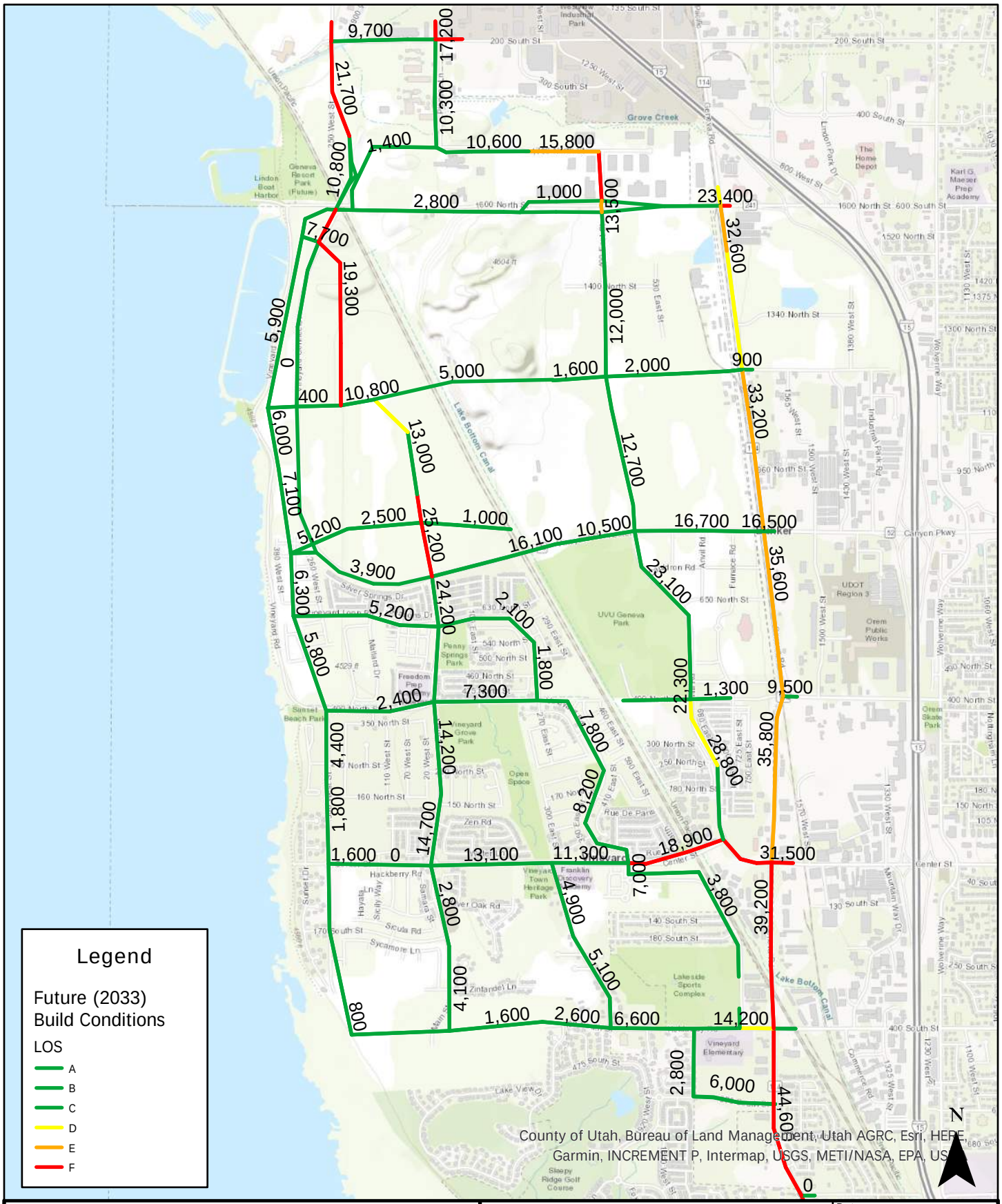
LOS was analyzed for a scenario in which new roads had been constructed to support full development, but existing roads had not been widened (no-build condition). All new roads were assumed to comply with the Vineyard City standard cross sections for each functional classification. The no-build roadway and intersection LOS for future (2050) conditions is shown in Figure 14. Evening Peak Hour intersection LOS results are shown in Table 13. With the restriction of eastbound and westbound left-turns at the 600 North / Main Street intersection, it is anticipated that levels of service will improve on those approaches. However, it may be difficult for northbound left-turning vehicles to find appropriate gaps during the evening peak hour due to the high volume of traffic projected to travel southbound on Main Street.

Table 12: Future (2050) No-Build Evening Peak Hour Level of Service

Intersection		Level of Service		
Description	Control	Movement[1]	Aver. Delay (Sec/Veh)	LOS[2]
400 North / Main Street	Signal	-	36.8	D
600 North / Main Street	EB/WB Stop	NBL	38.0	e
Vineyard Road / Center Street	Signal	-	47.7	D
400 South / Geneva Road (SR-114)	Signal	-	41.9	D
Vineyard Road / 400 South	SB Stop	SBL	21.1	c

1. Movement indicated for unsignalized intersections where delay and LOS represents worst movement. SBL = Southbound left movement, etc.
2. Uppercase LOS used for signalized, roundabout, and AWSC intersections. Lowercase LOS used for non-AWSC unsignalized intersections.

Source: Hales Engineering, February 2025



VINEYARD
STAY CONNECTED
TRANSPORTATION MASTER PLAN

Future (2033) Build LOS

Date: 8/13/2025
Project: UT23-2453
Figure 16

ROADWAY IMPROVEMENTS

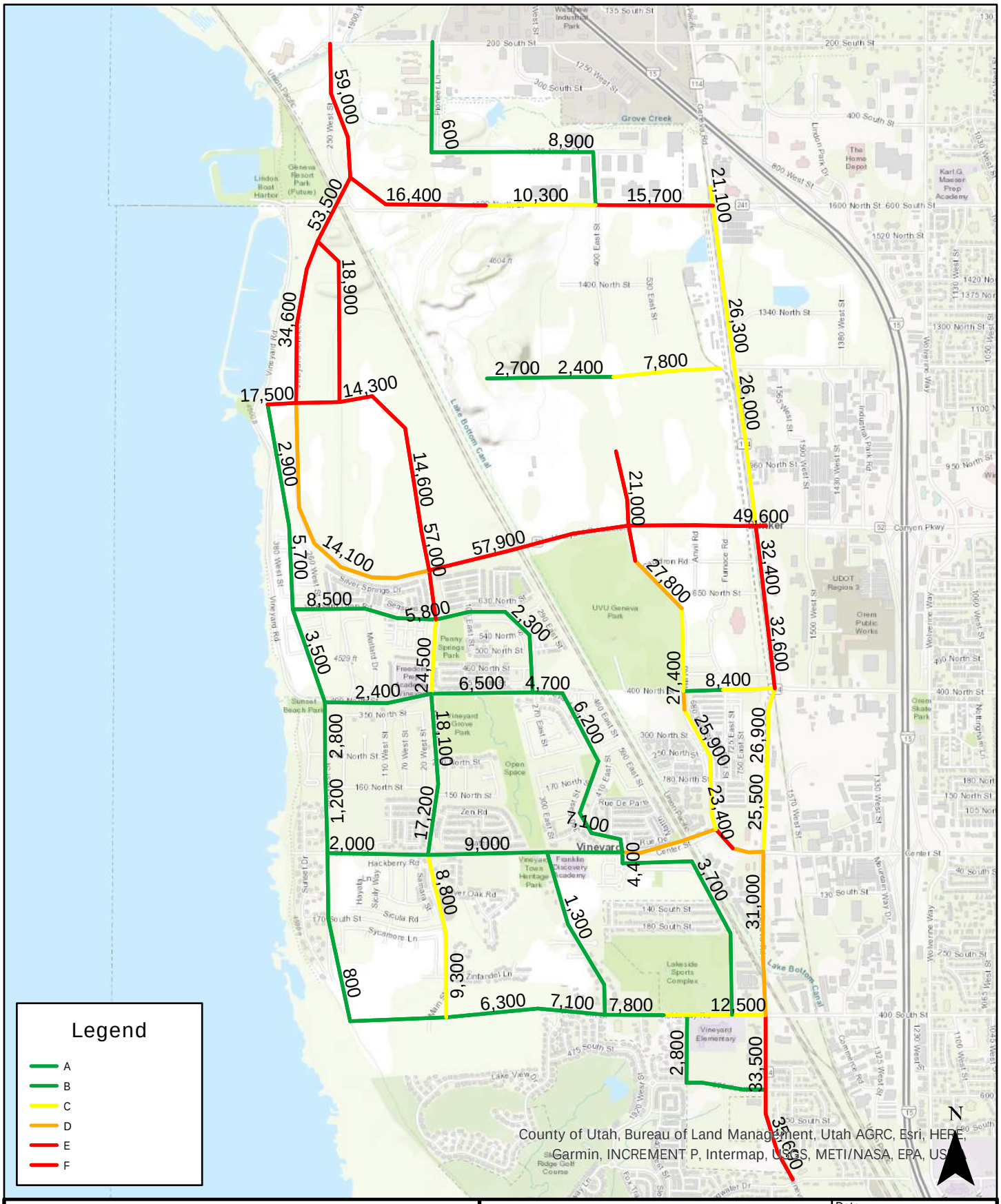
As Vineyard continues to develop, new roads will be constructed to connect developments to arterial streets. Additionally, improvements for future conditions were recommended for roadways that are anticipated to operate at a poor LOS. New roads and recommended improvements on city roadways are listed in Table 13. The recommended phase 3 roadway and intersections projects are shown in Figure 18. A map of the build future (2050) roadway network and intersection control is shown in Figure 19.

Multiple projects on UDOT roadways are recommended to increase network capacity. These include roadway widening projects on Vineyard Connector and intersection improvements at the Vineyard Connector / Geneva Road, 400 North / Geneva Road, and Center Street / Geneva Road intersections.

Recommended projects on Vineyard City roads and intersections include widening of 1600 North, widening of the Main Street / Vineyard Connector intersection, a new 400 North connection from Main Street to Mill Road including a bridge over the rail lines, increased capacity at the 400 North / Mill Road intersection, a roundabout at 620 East / 400 South, and widening on 400 South between Vineyard Road and Geneva Road.

VINEYARD CONNECTOR REALIGNMENT

Based on preliminary traffic models, it was determined that the existing Vineyard Connector (800 North) alignment will be over-capacity at full buildout in the City. Therefore, a separate grade expressway/arterial is recommended as the new connection of the future Vineyard Connector Expressway to Geneva Road. This separate grade connection will divert pass-through traffic away from the heart of Vineyard City and improve conditions on the existing Vineyard Connector (800 North) alignment. The connection between the future Vineyard Connector Expressway to Geneva Road may be aligned at or just south of 1600 North. This will also create a true parallel route to I-15 rather than the indirect route of the current 800 North alignment. A conceptual view of the proposed alignment can be identified in Figure 19.



VINEYARD
STAY CONNECTED
TRANSPORTATION MASTER PLAN

Future (2050) No-Build LOS

Date 8/13/2025

Project UT23-2453

Figure 17

Table 13: Recommended Phase 3 Improvement Projects

#	Location	Type	Description	Jurisdiction
1	New Vineyard Connector	New	New expressway along north and east sides of City	UDOT
2	1600 North: West of Railroad Crossing	Widen	Widen to 3 lanes	Vineyard
3	Vineyard Connector: 1200 North to 1600 North	Widen	Widen to 7 lanes	UDOT
4	Vineyard Connector: Main St to 1200 North	Widen	Widen to 5 lanes	UDOT
5	Main St / Vineyard Connector Intersection	Intersection	Increase intersection capacity / Innovative intersection	UDOT
6	Vineyard Connector & 800 North / Geneva Rd	Intersection	Grade-separated intersection	UDOT
7	400 North: Main St to Mill Rd	New	Construct 400 North connection (at-grade or grade-separated)	Vineyard
8	400 North / Geneva Rd	Intersection	Increase intersection capacity	UDOT
9	Center Street / Geneva Rd	Intersection	Increase intersection capacity	UDOT
10	400 South: Vineyard Rd to Geneva Rd	Widen	Widen to 5 lanes, consider restricting SB LT movement from Vineyard Rd	Vineyard

BUILD LOS

With the proposed improvements, most Vineyard City roadways are anticipated to operate at LOS D or better, as shown in Figure 20. Future (2050) evening peak hour LOS results are shown in Table 14.

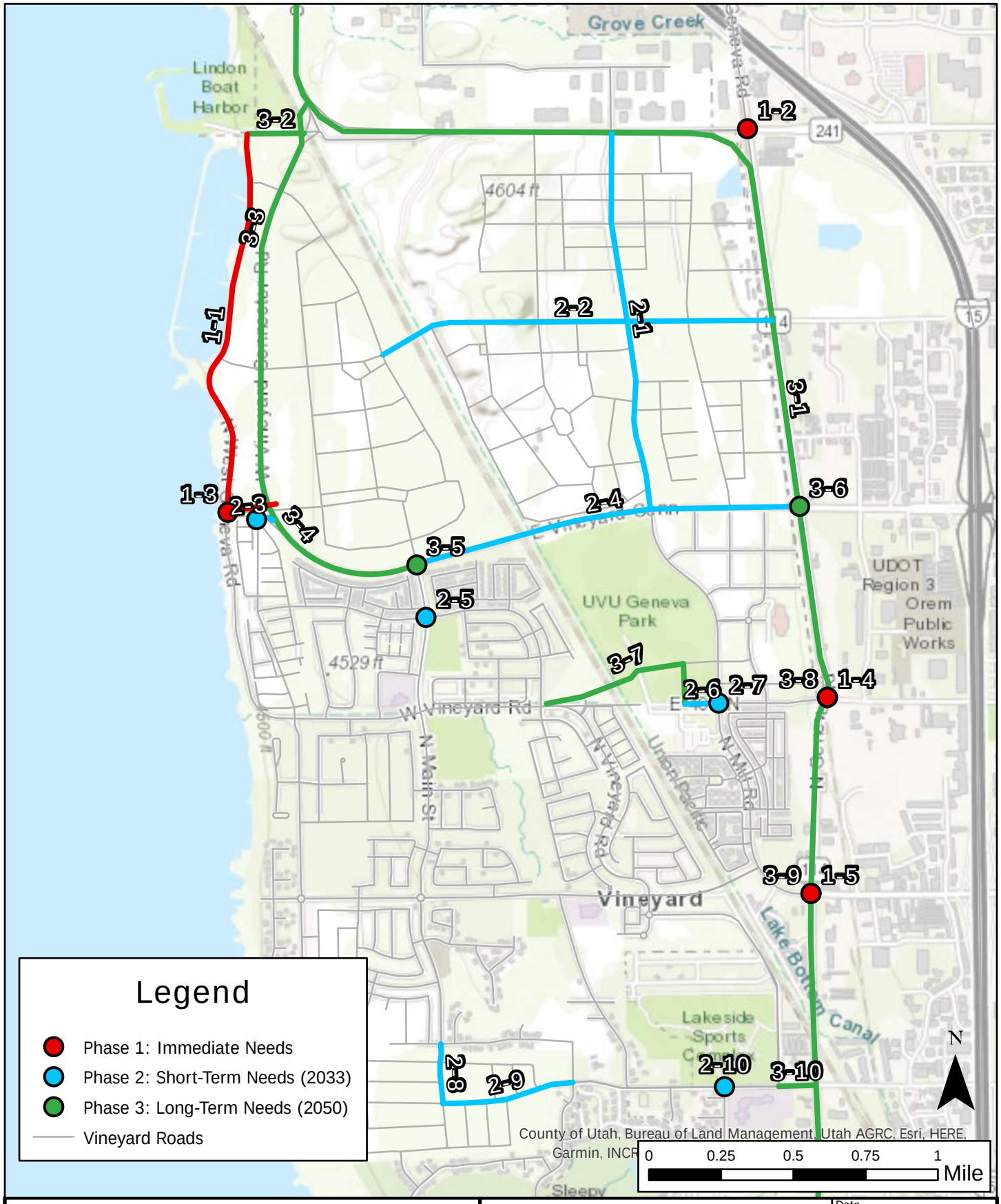
Table 14: Future (2050) Build Evening Peak Hour Level of Service

Intersection		Level of Service		
Description	Control	Movement[1]	Aver. Delay (Sec/Veh)	LOS[2]
400 North / Main Street	Signal	-	39.2	D
600 North / Main Street	Signal	-	12.2	B
Vineyard Road / Center Street	Signal	-	43.6	D
400 South / Geneva Road (SR-114)	Signal	-	37.7	D
Vineyard Road / 400 South	SB Stop	SBL	16.5	c

1. Movement indicated for unsignalized intersections where delay and LOS represents worst movement. SBL = Southbound left movement, etc.

2. Uppercase LOS used for signalized, roundabout, and AWSC intersections. Lowercase LOS used for non-AWSC unsignalized intersections.

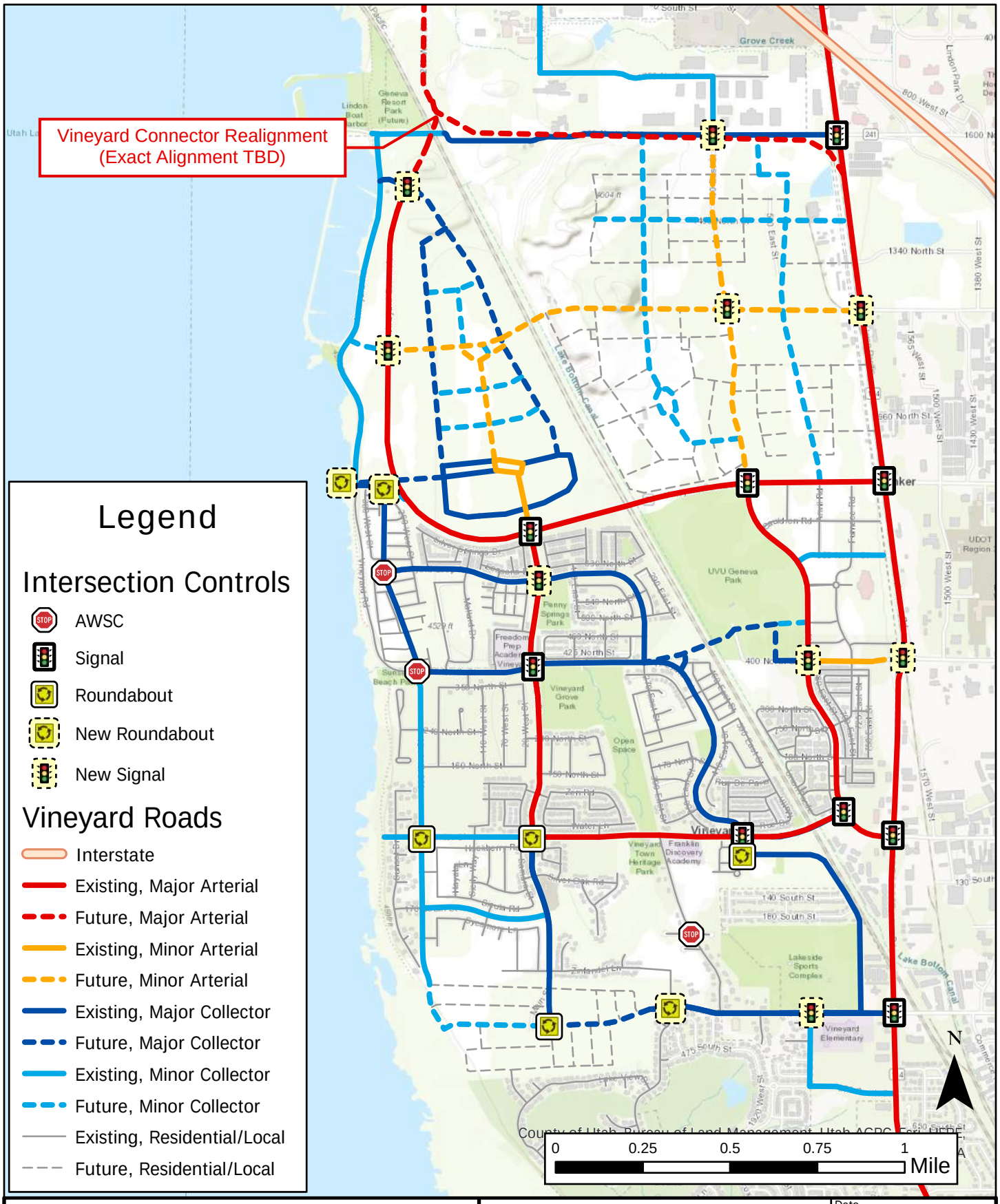
Source: Hales Engineering, February 2025



VINEYARD
STAY CONNECTED
TRANSPORTATION MASTER PLAN

Future (2050) Roadway Projects

Date: 8/5/2025
Project: UT23-2453
Figure 18



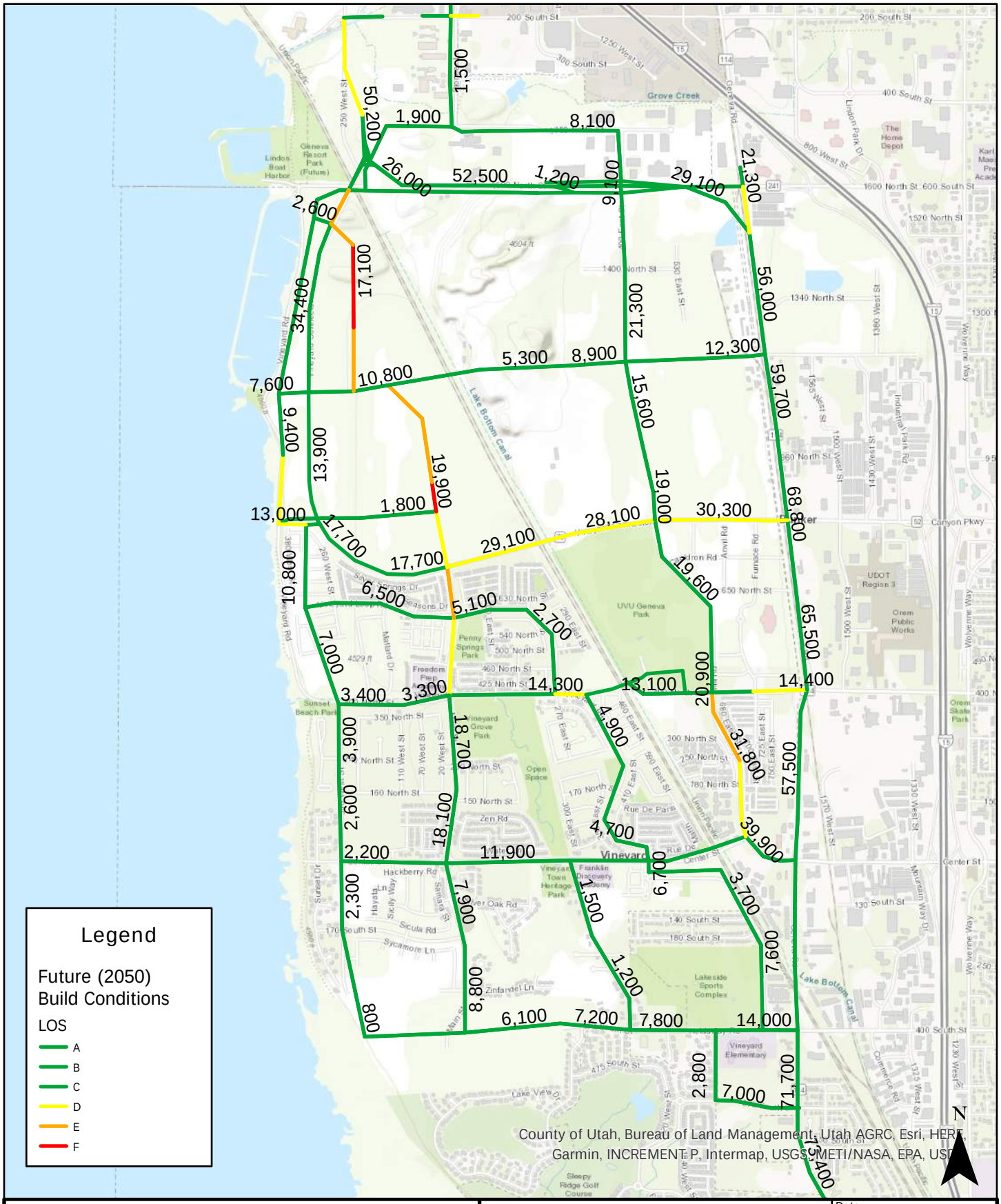
VINEYARD
STAY CONNECTED
TRANSPORTATION MASTER PLAN

Future (2050) Roadway Network

Date 6/17/2025

Project UT23-2453

Figure 19



VINEYARD
STAY CONNECTED
TRANSPORTATION MASTER PLAN

Future (2050) Build LOS

Date: 8/13/2025
Project: UT23-2453
Figure 20

PUBLIC TRANSIT & ACTIVE TRANSPORTATION

PURPOSE

A transportation system is composed of more than roadways. It also includes provisions for other modes of transportation including public transit, cycling, and walking. The purpose of this section is to discuss these modes and how Vineyard City can improve the infrastructure that facilitates these modes.

PUBLIC TRANSIT

Public transportation in Vineyard City is served by the Utah Transit Authority (UTA). Currently, public transportation within city limits includes bus and commuter rail service through UTA's Frontrunner system at the Vineyard Station. Figure 21 shows the existing and future transit routes in Vineyard.

The following are the existing transit facilities in Vineyard City:

- Bus – There is one existing UTA bus route that services Vineyard City, which is Route 834. Route 834 has headways of approximately 30 minutes and travels between Provo Central Station and the Vineyard Station via University Avenue, Orem Center Street, Vineyard Center Street, and Vineyard Main Street.
- UTA Frontrunner – The Vineyard Station, northeast of the Main Street & Vineyard Connector intersection provides UTA transit connectivity to the entire Wasatch Front from Provo to Ogden.

The following are proposed transit routes and systems for Vineyard:

- Light Rail (TRAX) – Proposed to follow along Geneva Road, then along 1200 North to the current rail line, then southward along the east side of the rail line towards Orem. This is anticipated to provide access to the greater Utah County transit network and to key destinations such as UVU. The first phase of this alignment could be a connection between the north UVU parcel in Vineyard to the main UVU campus in Orem.
- Bus Rapid Transit – One proposed connection between Orem / UVU to the Vineyard Station, and another proposed along 800 North to connect the Vineyard Station to transit routes along State Street (US-89) in Orem.
- Circulator – To reduce dependency on personal vehicles in the downtown area, a circulator could be considered to transport local downtown residents to various destinations including the Vineyard Station. This will require further study as the downtown develops.

ACTIVE TRANSPORTATION

Providing safe and convenient bicycle and pedestrian facilities in Vineyard City is critical to promoting active and multi-modal transportation. If citizens have easy access to these facilities, use of the bicycle and pedestrian modes of travel will increase. The City has a few existing routes to facilitate these modes. However, there are also some improvements that could be made to improve the system.

This section is a supplement to the parks and recreation element of the General Plan. The following are the classifications of bike facilities that are found or planned for in Vineyard City:

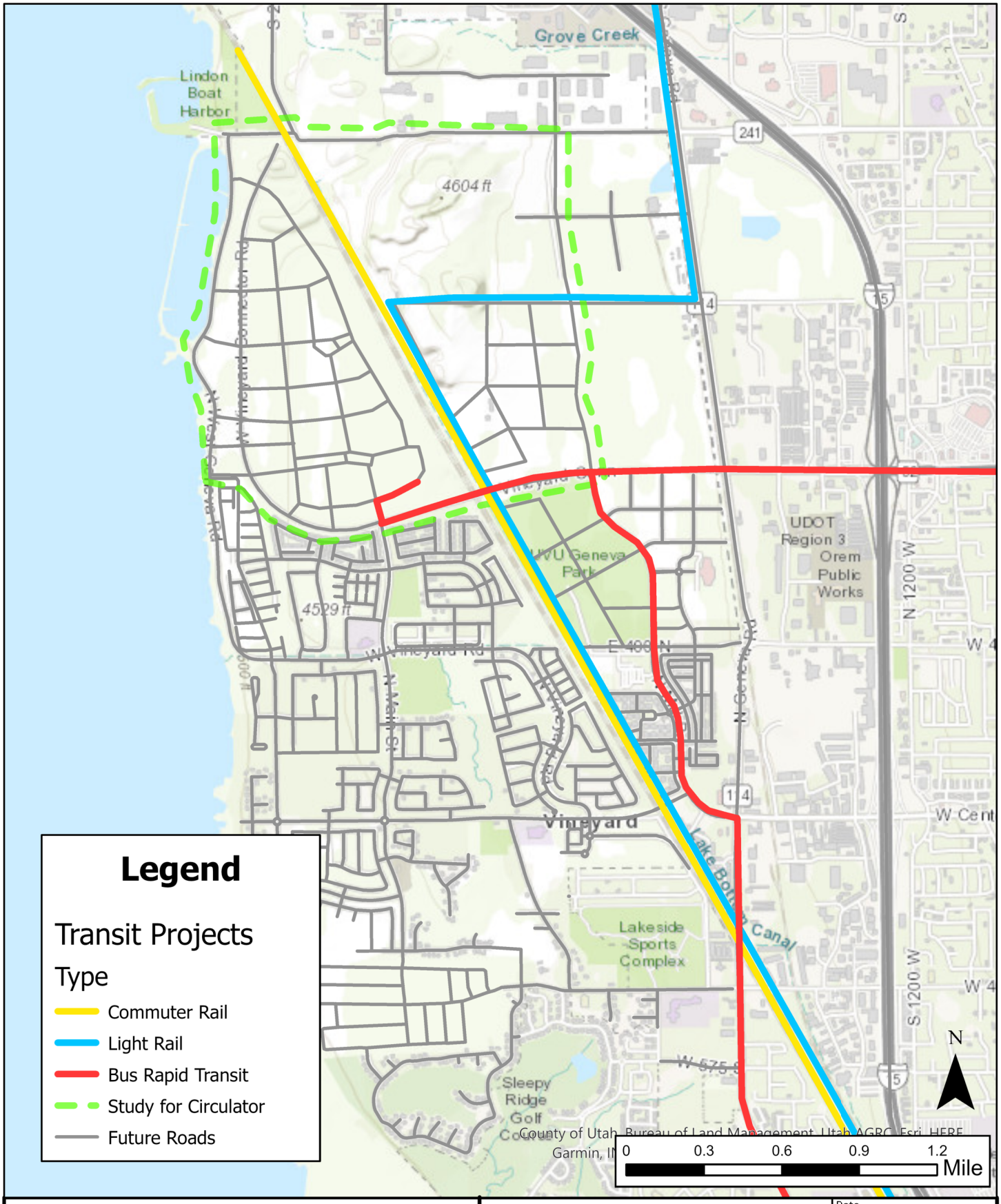
- Multi-Use Trail – A separate path designed for non-motorized traffic such as bicycles or pedestrians. Other names for these facilities include "bike paths" or "shared-use paths."
- Bike Lane – A facility that includes striped lanes meant for bicycle use within the paved roadway.
- Shared Roadway – Facilities designated by signs, striping, and/or directional markers where bicycles share the roadway with motorized traffic.

Vineyard City currently has a growing network of these bicycle facilities. Future bike facilities were identified based primarily on the City of Vineyard Active Transportation Plan (November 2022). Existing and proposed bike facilities are shown in Figure 22. The purpose of the proposed facilities is to connect existing facilities and to plan for facilities in developing areas.

The details of multiple active transportation implements can be found in the Active Transportation Plan document. Some proposed treatments throughout the City include the following:

1. Shared Roadway –A sharrow in the vehicle travel lane for shared use.
2. Conventional Bike Lane –a dedicated bike lane adjacent to vehicle traffic.
3. Buffered Bike Lane –a bike lane separated by a small buffer from vehicles.

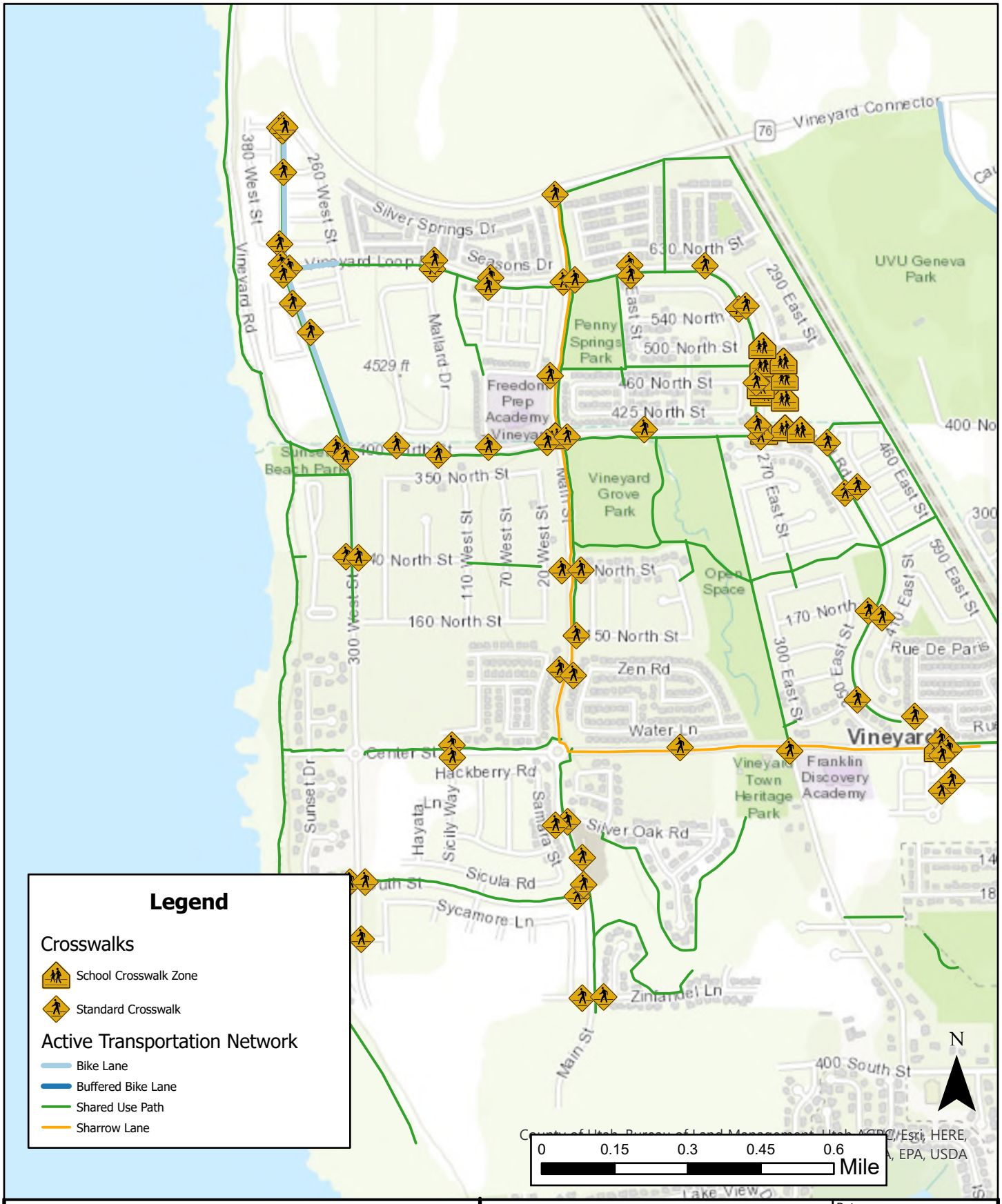
The location of parks is important when considering bike and pedestrian facilities and this was considered when proposing future facilities. Several parks currently exist in Vineyard City, scattered in a variety of places. More information on these parks is available at https://www.vineyardutah.gov/government/parks.php



VINEYARD
STAY CONNECTED
TRANSPORTATION MASTER PLAN

Future (2050) Transit

Date: 6/6/2025
Project: UT23-2453
Figure 21



VINEYARD
STAY CONNECTED
TRANSPORTATION MASTER PLAN

Future (2050) Active Transportation

Date: 3/29/2025
Project: UT23-2453
Figure 22

SAFETY

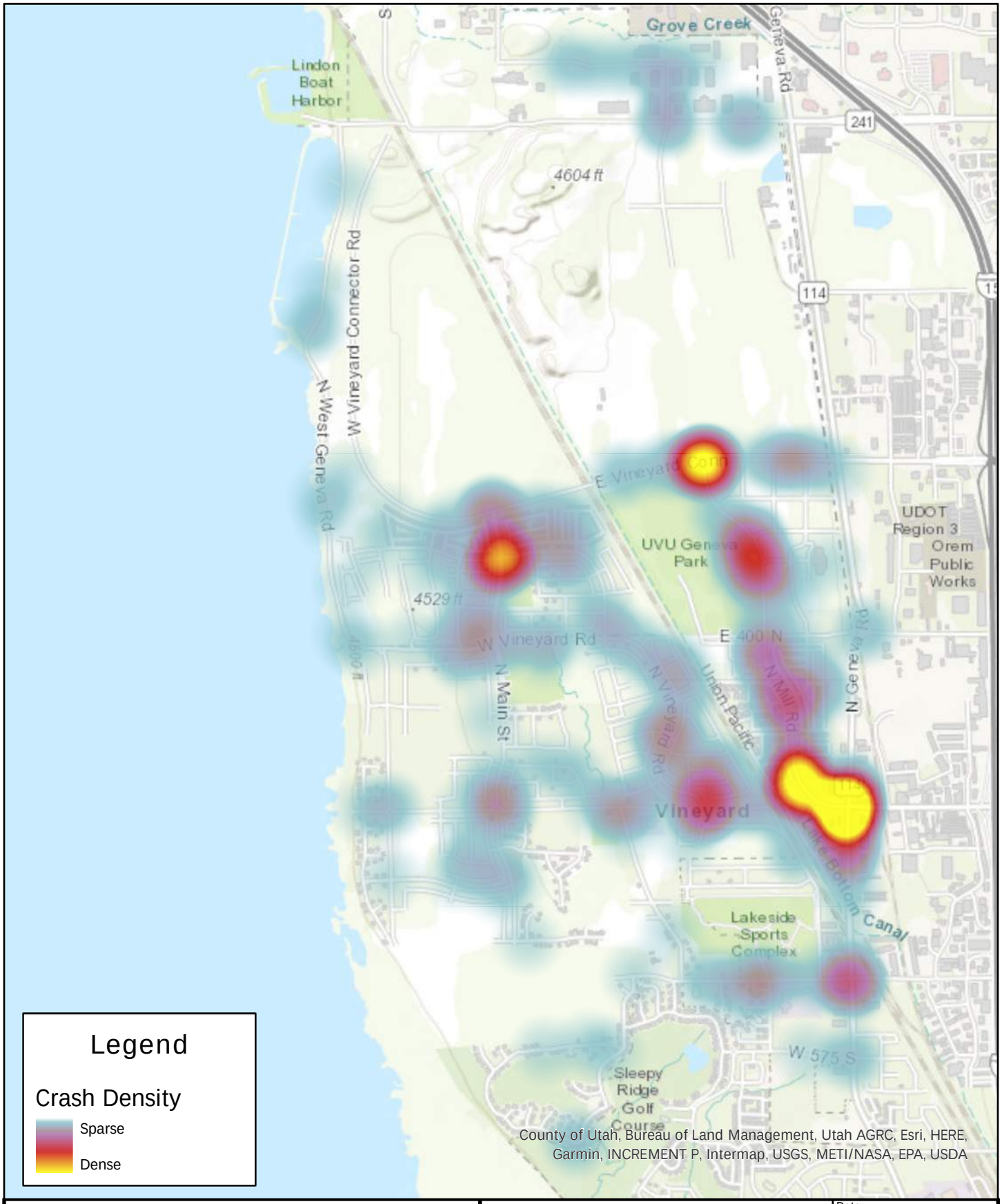
PURPOSE

The purpose of this chapter is to analyze the safety of the existing road network in Vineyard City and to recommend improvements. A few intersections have been identified by the City as areas of concern, which will be discussed in this chapter. In addition, potential traffic calming measures and access management strategies are presented.

SAFETY HOTSPOTS

This section addresses safety concerns at existing intersections in Vineyard City. Factors including crash history, sight distance, and intersection offset were examined to determine if any mitigations are needed to improve safety. Crash data are protected under 23 USC 409.

- 255 North / Mill Road
    - Angle collisions comprised approximately 15 percent of crashes at this location. 65 percent of crashes were intersection related. 30 percent of crashes involved roadway departures. Only one of the six reported crashes suspected minor injury. The remaining crashes were no injury/property damage only.
- 650 North / Mill Road
    - Both angle and sideswipe same direction collisions comprised approximately 25 percent of crashes at this location. All the crashes were intersection related. 40 percent of crashes involved roadway departures. Two of the eight reported crashes included possible injury. The remaining crashes were no injury/property damage only.
- 800 North / Mill Road
    - Angle collisions comprised approximately 15 percent of crashes at this location. All crashes were intersection related. 20 percent of crashes involved distracted driving. Five of the 30 reported crashes suspected minor injury and four reported possible injury. The remaining crashes were no injury/property damage only.
- 170 North / Vineyard Road
    - Angle collisions comprised approximately 60 percent of crashes at this location. 100 percent of crashes were intersection related. 30 percent of crashes involved distracted driving. Three of the seven crashes reported suspected minor injury, one reported possible injury, and one reported suspected serious injury. The remaining crashes were no injury/property damage only.
- Center Street / Main Street
    - Front to rear collisions comprised approximately 30 percent of crashes at this location. 85 percent of crashes were intersection related. 20 percent of crashes involved distracted driving. 30 percent of crashes were reported as sideswipe same direction. One of the six reported crashes was reported to be serious. The remaining crashes were no injury/property damage only.



VINEYARD
STAY CONNECTED
TRANSPORTATION MASTER PLAN

Crash Analysis Heat Map

Date 6/13/2025

Project UT23-2453

Figure 23

CONCLUSION

OVERVIEW

The purpose of this TMP for Vineyard City is to plan for the future multi-modal transportation needs of Vineyard City. The following tasks were completed as a part of this TMP:

- The land use and socioeconomic characteristics were reviewed and summarized.
- The functional classification of roadways was redefined.
- Data were collected to summarize the existing traffic volume conditions.
- Future volumes in 2050 conditions were projected using development predictions from Vineyard City and the travel demand model.
- A LOS analysis was performed to identify existing and future transportation needs.
- Improvements were recommended to support future growth.
- Locations for future signals were identified.
- Truck routes on existing and future roadways were identified.
- The public transit opportunities of the City were discussed.
- Recommendations were given regarding active transportation facilities.
- Several City transportation management strategies were outlined.

NEXT STEPS

It is recommended that the following steps be taken to implement the proposed improvements and recommendations of this study:

- Implement this TMP and pursue funding for roadway projects as needed.
- Require that the trip generation for all new developments be calculated to determine its impact on City roadways. With each new development that generates at least 100 peak hour trips, require that a traffic impact study be completed to analyze nearby intersections to determine needed improvements.
- Continue to communicate regularly with UDOT and UTA on current and future roadway and transit improvement needs within the City.
- Work with the State's Office of Outdoor Recreation, Bike Utah, and other agencies to apply for grant funding to increase the number of trails and active transportation/recreation options for Vineyard City residents. Install bicycle and pedestrian friendly facilities (bike racks, water stations, etc) at key locations for public access.
- Plan to address the safety hotspots with traffic calming devices as outlined above in the plan
- Work with UTA to extend public transportation options

APPENDIX A

Vineyard TAZ Data

TAZID	Actual Vineyard 2023							Vineyard 2033							Vineyard 2050						
	Residents			Employment				Residents			Employment				Residents			Employment			
	Households	Population	Household Size	Total	Retail	Industrial	Other	Households	Population	Household Size	Total	Retail	Industrial	Other	Households	Population	Household Size	Total	Retail	Industrial	Other
2245	0	0	0.00	2,314	230	1,182	902	0	0	0.00	2,382	236	1,213	933	0	0	2.99	2,476	245	1,261	970
2251	1	5	5.00	2,512	248	1,321	943	1	5	5.00	3,442	303	1,865	1,274	1	5	5.00	3,879	341	2,102	1,436
2252	0	0	0.00	5	0	0	5	379	1,156	3.05	223	17	0	206	1,137	3,411	3.00	669	50	0	619
2253	0	0	0.00	5	0	0	5	281	787	2.80	493	33	0	460	844	2,321	2.75	1,480	100	0	1,380
2254	0	0	0.00	30	1	1	28	2,005	4,311	2.15	919	100	0	819	6,015	12,632	2.10	2,758	300	0	2,458
2255	0	0	0.00	30	1	1	28	1,668	3,253	1.95	864	150	0	714	5,004	9,508	1.90	2,593	450	0	2,143
2256	0	0	0.00	98	0	58	40	0	0	0.00	665	2	237	426	0	0	2.94	3,407	10	1,214	2,183
2257	0	0	0.00	267	75	65	127	0	0	0.00	731	284	125	322	0	0	2.90	1,864	724	319	821
2259	0	0	0.00	283	7	80	196	0	0	0.00	1,465	14	326	1,125	0	0	2.99	3,129	30	696	2,403
2260	0	0	0.00	281	8	75	198	0	0	0.00	1,004	32	232	740	0	0	2.79	2,130	68	492	1,570
2262	569	1,776	3.12	238	0	0	238	689	2,106	3.06	96	0	0	96	860	2,586	3.01	71	0	0	71
2263	411	1,224	2.98	160	0	0	160	463	1,359	2.94	39	0	0	39	575	2,273	3.95	47	0	0	47
2264	0	0	0.00	610	1	9	600	0	0	0.00	776	5	14	757	0	0	0.00	1,220	8	22	1,190
2265	137	442	3.23	857	129	269	459	1,932	5,410	2.80	2,417	400	600	1,417	2,000	5,500	2.75	2,991	495	742	1,754
2267	278	906	3.26	12	0	0	12	355	1,131	3.19	130	0	0	130	372	1,167	3.14	33	0	0	33
2268	462	1,508	3.26	136	0	0	136	610	1,906	3.12	129	0	0	129	677	2,081	3.07	56	0	0	56
2269	1,104	3,377	3.06	67	0	0	67	1,104	3,182	2.88	85	0	0	85	1,104	3,127	2.83	91	0	0	91
2270	461	1,269	2.75	393	51	163	179	461	1,280	2.78	827	77	342	408	461	1,257	2.73	833	78	344	411
2272	244	794	3.25	127	0	0	127	393	1,241	3.16	133	0	0	133	453	1,364	3.01	34	0	0	34
2273	127	402	3.17	46	0	0	46	204	654	3.20	90	0	0	90	252	795	3.16	52	0	0	52
2274	181	621	3.43	85	0	17	68	735	2,449	3.33	293	0	57	236	778	2,279	2.93	117	0	23	94
2275	461	1,410	3.06	74	12	12	50	461	1,300	2.82	83	12	14	57	461	1,253	2.72	124	18	21	85
2277	178	616	3.46	32	0	0	32	390	1,272	3.26	18	0	0	18	410	1,298	3.16	22	0	0	22
2278	969	3,287	3.39	380	11	77	292	1,147	3,728	3.25	409	16	81	312	1,178	3,399	2.89	518	20	103	395
2870	0	0	0.00	0	0	0	0	0	0	0.00	0	0	0	0	0	0	0.00	0	0	0	0
TOTAL	**5,583**	**17,637**	**-**	**9,042**	**774**	**3,330**	**4,938**	**13,278**	**36,530**	-	**17,713**	**1,681**	**5,106**	**10,926**	**22,582**	**56,256**	-	**30,594**	**2,937**	**7,339**	**20,318**

APPENDIX B

Traffic Volume Data Collection

TrafficCounts

2364 North 1450 East
Lehi, UT 84043
801.636.0891

Intersection Turning Movement Summary

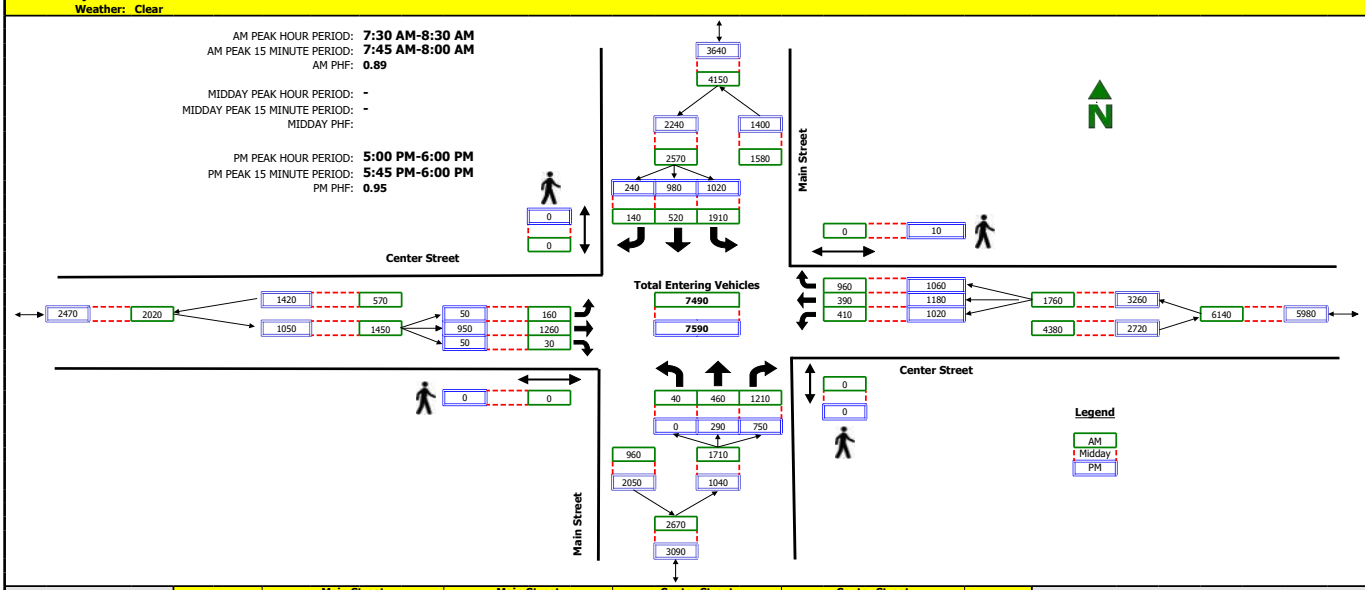
Intersection: Main Street / Center Street
North/South: Main Street
East/West: Center Street
Jurisdiction: Vineyard
Project Title: Vineyard TMP
Project No: UT23-2453
Weather: Clear

Date: 3-7-23, Tue
PM Peak to Daily Volumes Adjustment: 10.0%
Month of Year Adjustment: 100.0%
Adjustment Station #: 0
Growth Rate: 0.0%
Number of Years: 0

AM PEAK HOUR PERIOD: **7:30 AM-8:30 AM**
AM PEAK 15 MINUTE PERIOD: **7:45 AM-8:00 AM**
AM PHF: **0.89**

MIDDAY PEAK HOUR PERIOD: -
MIDDAY PEAK 15 MINUTE PERIOD: -
MIDDAY PHF:

PM PEAK HOUR PERIOD: **5:00 PM-6:00 PM**
PM PEAK 15 MINUTE PERIOD: **5:45 PM-6:00 PM**
PM PHF: **0.95**



RAW COUNT SUMMARIES	Main Street Northbound				Main Street Southbound				Center Street Eastbound				Center Street Westbound				TOTAL
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	
AM PERIOD COUNTS																	
Period	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	**K**	**L**	**M**	**N**	**O**	**P**	**TOTAL**
7:00 - 7:15	10	40	110	0	130	20	60	0	80	190	0	0	20	70	110	0	840
7:15 - 7:30	0	140	220	0	320	70	10	0	60	250	0	0	50	80	30	0	1230
7:30 - 7:45	20	110	270	0	310	100	60	0	60	280	10	0	60	60	180	0	1520
7:45 - 8:00	20	140	440	0	520	70	50	0	30	380	0	0	90	170	200	0	2110
8:00 - 8:15	0	130	310	0	480	130	20	0	50	280	20	0	160	70	380	0	2030
8:15 - 8:30	0	80	190	0	600	220	10	0	20	320	0	0	100	90	200	0	1830
8:30 - 8:45	0	120	260	0	260	120	40	0	30	270	0	0	70	120	160	0	1450
8:45 - 9:00	0	140	260	0	310	70	60	0	120	290	40	0	40	180	70	0	1580
MIDDAY PERIOD COUNTS																	
Period	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	**K**	**L**	**M**	**N**	**O**	**P**	**TOTAL**
9:00 - 9:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15 - 9:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:30 - 9:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:45 - 10:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:00 - 10:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15 - 10:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:30 - 10:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:45 - 11:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:00 - 11:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 - 11:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 - 11:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 - 12:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00 - 12:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 - 12:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 - 12:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 - 13:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:00 - 13:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:15 - 13:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:30 - 13:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:45 - 14:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14:00 - 14:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14:15 - 14:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14:30 - 14:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14:45 - 15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:00 - 15:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:15 - 15:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:30 - 15:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:45 - 16:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PM PERIOD COUNTS																	
Period	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	**K**	**L**	**M**	**N**	**O**	**P**	**TOTAL**
16:00 - 16:15	0	120	130	0	210	100	60	0	10	230	10	0	300	220	380	0	1770
16:15 - 16:30	0	30	200	20	180	180	100	0	40	200	0	0	150	260	270	0	1610
16:30 - 16:45	0	100	220	0	220	100	80	0	50	270	0	0	140	220	190	0	1590
16:45 - 17:00	0	50	170	0	320	200	80	0	90	200	20	0	180	270	250	0	1830
17:00 - 17:15	0	90	160	0	280	170	90	0	10	310	0	0	170	260	320	10	1860
17:15 - 17:30	0	100	170	0	230	250	30	0	20	270	10	0	250	280	310	0	1920
17:30 - 17:45	0	60	200	0	230	220	80	0	0	170	0	0	310	360	180	0	1810
17:45 - 18:00	0	40	220	0	280	340	40	0	20	200	40	0	290	280	250	0	2000

TrafficCounts

2364 North 1450 East
Lehi, UT 84043
801.636.0891

Intersection Turning Movement Summary

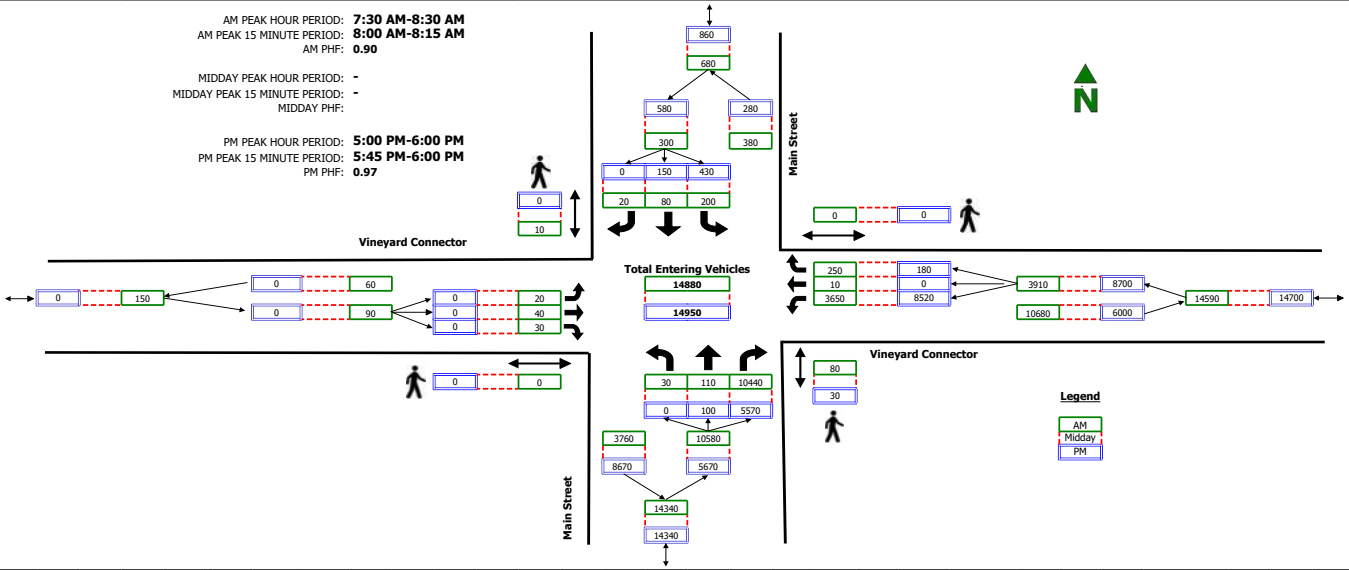
Intersection: Main Street / Vineyard Connector
North/South: Main Street
East/West: Vineyard Connector
Jurisdiction: Vineyard
Project Title: Vineyard TMP
Project No: UT23-2453
Weather: Clear

Date: 3-9-23, Thu
PM Peak to Daily Volumes Adjustment: 10.0%
Month of Year Adjustment: 100.0%
Adjustment Station #: 0
Growth Rate: 0.0%
Number of Years: 0

AM PEAK HOUR PERIOD: **7:30 AM-8:30 AM**
AM PEAK 15 MINUTE PERIOD: **8:00 AM-8:15 AM**
AM PHF: **0.90**

MIDDAY PEAK HOUR PERIOD: -
MIDDAY PEAK 15 MINUTE PERIOD: -
MIDDAY PHF:

PM PEAK HOUR PERIOD: **5:00 PM-6:00 PM**
PM PEAK 15 MINUTE PERIOD: **5:45 PM-6:00 PM**
PM PHF: **0.97**



RAW COUNT SUMMARIES	Main Street Northbound				Main Street Southbound				Vineyard Connector Eastbound				Vineyard Connector Westbound				TOTAL
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	
AM PERIOD COUNTS																	
Period	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	**K**	**L**	**M**	**N**	**O**	**P**	**TOTAL**
7:00 - 7:15	0	10	1020	0	90	50	10	0	0	30	0	0	430	40	90	0	1770
7:15 - 7:30	0	70	1560	10	40	20	10	0	20	0	0	0	490	30	160	10	2400
7:30 - 7:45	0	0	2710	10	50	10	0	0	10	0	0	0	820	0	20	0	3620
7:45 - 8:00	0	70	2520	30	60	40	10	10	0	0	20	0	980	0	140	0	3840
8:00 - 8:15	20	20	2920	20	60	10	10	0	0	30	0	0	1060	0	10	0	4140
8:15 - 8:30	10	20	2290	20	30	20	0	0	10	10	10	0	790	10	80	0	3280
8:30 - 8:45	0	10	2340	10	20	10	0	0	0	0	0	0	670	20	0	0	3070
8:45 - 9:00	0	20	2550	10	20	10	0	0	0	0	0	10	940	20	0	10	3560
MIDDAY PERIOD COUNTS																	
Period	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	**K**	**L**	**M**	**N**	**O**	**P**	**TOTAL**
9:00 - 9:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15 - 9:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:30 - 9:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:45 - 10:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:00 - 10:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15 - 10:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:30 - 10:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:45 - 11:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:00 - 11:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 - 11:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 - 11:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 - 12:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00 - 12:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 - 12:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 - 12:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 - 13:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:00 - 13:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:15 - 13:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:30 - 13:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:45 - 14:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14:00 - 14:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14:15 - 14:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14:30 - 14:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14:45 - 15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:00 - 15:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:15 - 15:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:30 - 15:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:45 - 16:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PM PERIOD COUNTS																	
Period	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	**K**	**L**	**M**	**N**	**O**	**P**	**TOTAL**
16:00 - 16:15	0	20	1060	30	130	50	0	0	10	20	0	0	1610	0	20	0	2920
16:15 - 16:30	0	20	1140	10	20	50	0	0	0	30	0	0	1970	0	70	0	3300
16:30 - 16:45	0	10	1080	20	80	30	0	0	0	40	0	0	1890	0	20	10	3150
16:45 - 17:00	0	40	1640	0	40	40	0	0	0	0	0	0	1750	0	90	0	3600
17:00 - 17:15	0	20	1390	20	110	30	0	0	0	0	0	0	1960	0	50	0	3560
17:15 - 17:30	0	40	1310	0	140	20	0	0	0	0	0	0	2260	0	30	0	3800
17:30 - 17:45	0	10	1490	10	170	60	0	0	0	0	0	0	1950	0	70	0	3750
17:45 - 18:00	0	30	1380	0	10	40	0	0	0	0	0	0	2350	0	30	0	3840

TrafficCounts

2364 North 1450 East
Lehi, UT 84043
801.636.0891

Intersection Turning Movement Summary

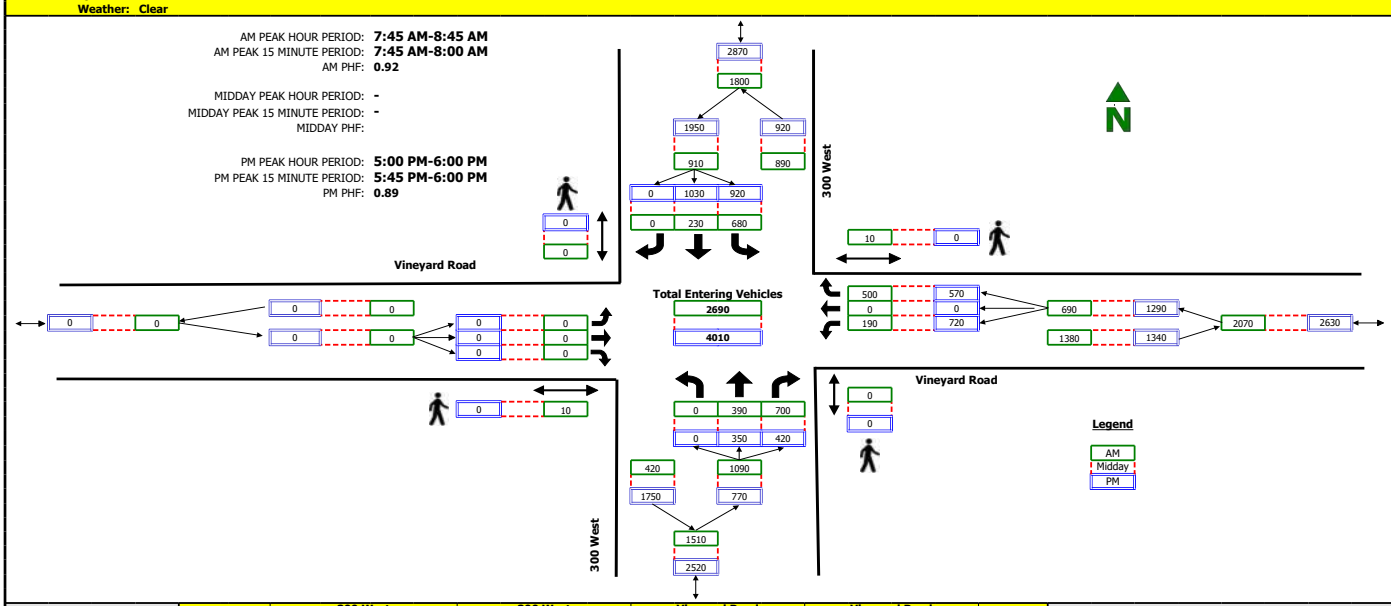
Intersection: 300 West / Vineyard Road
North/South: 300 West
East/West: Vineyard Road
Jurisdiction: Vineyard
Project Title: Vineyard TMP
Project No: UT23-2453
Weather: Clear

Date: 3-8-23, Wed
PM Peak to Daily Volumes Adjustment 10.0%
Month of Year Adjustment: 100.0%
Adjustment Station #: 0
Growth Rate: 0.0%
Number of Years: 0

AM PEAK HOUR PERIOD: **7:45 AM-8:45 AM**
AM PEAK 15 MINUTE PERIOD: **7:45 AM-8:00 AM**
AM PHF: **0.92**

MIDDAY PEAK HOUR PERIOD: **-**
MIDDAY PEAK 15 MINUTE PERIOD: **-**
MIDDAY PHF:

PM PEAK HOUR PERIOD: **5:00 PM-6:00 PM**
PM PEAK 15 MINUTE PERIOD: **5:45 PM-6:00 PM**
PM PHF: **0.89**



RAW COUNT SUMMARIES	300 West Northbound				300 West Southbound				Vineyard Road Eastbound				Vineyard Road Westbound				TOTAL
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	
AM PERIOD COUNTS																	
Period	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	**K**	**L**	**M**	**N**	**O**	**P**	**TOTAL**
7:00 - 7:15	0	50	60	0	100	30	0	0	0	0	0	0	30	0	50	0	320
7:15 - 7:30	0	30	160	0	120	30	0	0	0	0	0	10	30	0	20	0	390
7:30 - 7:45	0	60	190	0	160	80	0	0	0	0	0	10	50	0	70	0	610
7:45 - 8:00	0	100	200	0	200	50	0	0	0	0	0	10	40	0	140	0	730
8:00 - 8:15	0	90	140	0	130	70	0	0	0	0	0	0	90	0	100	0	620
8:15 - 8:30	0	110	200	0	160	60	0	0	0	0	0	0	40	0	140	10	710
8:30 - 8:45	0	90	160	0	190	50	0	0	0	0	0	0	20	0	120	0	630
8:45 - 9:00	0	110	140	0	220	60	0	0	0	0	0	0	80	0	100	0	710
MIDDAY PERIOD COUNTS																	
Period	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	**K**	**L**	**M**	**N**	**O**	**P**	**TOTAL**
9:00 - 9:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15 - 9:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:30 - 9:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:45 - 10:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:00 - 10:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15 - 10:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:30 - 10:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:45 - 11:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:00 - 11:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 - 11:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 - 11:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 - 12:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00 - 12:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 - 12:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 - 12:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 - 13:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:00 - 13:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:15 - 13:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:30 - 13:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:45 - 14:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14:00 - 14:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14:15 - 14:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14:30 - 14:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14:45 - 15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:00 - 15:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:15 - 15:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:30 - 15:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:45 - 16:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PM PERIOD COUNTS																	
Period	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	**K**	**L**	**M**	**N**	**O**	**P**	**TOTAL**
16:00 - 16:15	0	60	70	0	140	140	0	0	0	10	0	0	70	0	170	0	660
16:15 - 16:30	0	80	50	10	140	90	0	0	0	0	0	0	120	0	150	10	630
16:30 - 16:45	0	30	130	0	250	170	0	0	0	0	0	0	170	0	180	0	930
16:45 - 17:00	0	110	70	10	150	200	0	0	0	0	0	0	90	0	160	0	780
17:00 - 17:15	0	50	40	0	240	270	0	0	0	0	0	0	180	0	70	0	850
17:15 - 17:30	0	80	80	0	290	290	0	0	0	0	0	0	190	0	140	0	1070
17:30 - 17:45	0	130	160	0	150	190	0	0	0	0	0	0	150	0	180	0	960
17:45 - 18:00	0	90	140	0	240	280	0	0	0	0	0	0	200	0	180	0	1130

TrafficCounts

2364 North 1450 East
Lehi, UT 84043
801.636.0891

Intersection Turning Movement Summary

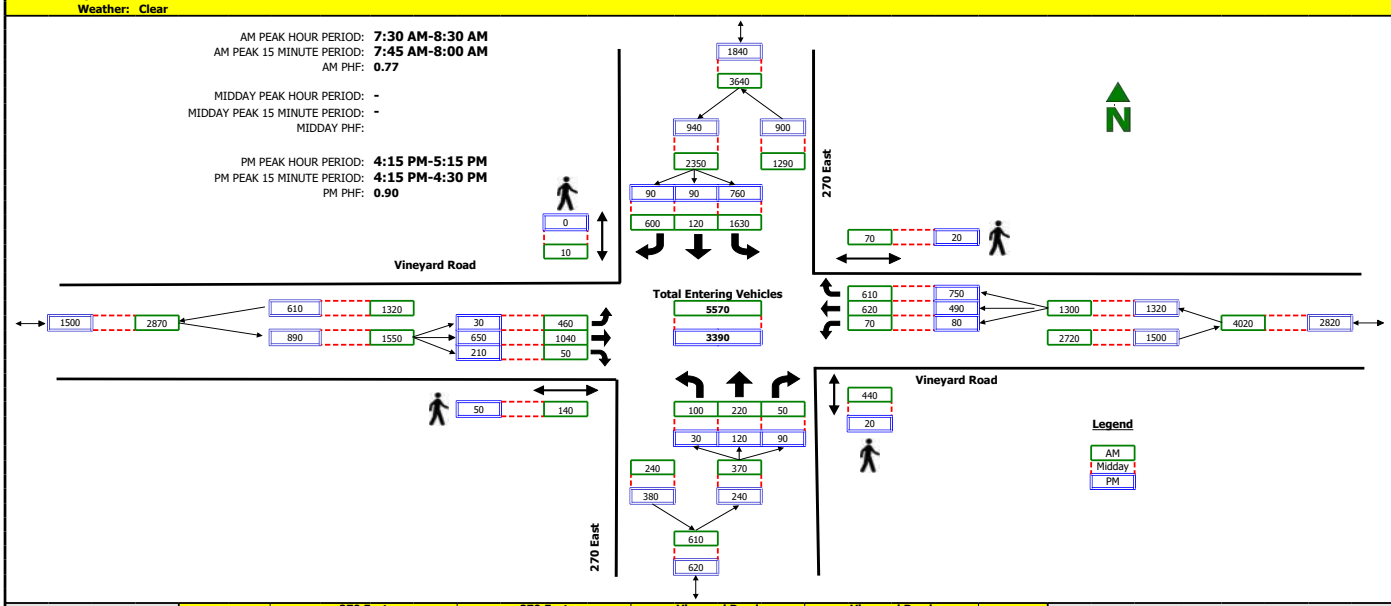
Intersection: 270 East / Vineyard Road
North/South: 270 East
East/West: Vineyard Road
Jurisdiction: Vineyard
Project Title: Vineyard TMP
Project No: UT23-2453
Weather: Clear

Date: 3-8-23, Wed
PM Peak to Daily Volumes Adjustment 10.0%
Month of Year Adjustment: 100.0%
Adjustment Station #: 0
Growth Rate: 0.0%
Number of Years: 0

AM PEAK HOUR PERIOD: **7:30 AM-8:30 AM**
AM PEAK 15 MINUTE PERIOD: **7:45 AM-8:00 AM**
AM PHF: **0.77**

MIDDAY PEAK HOUR PERIOD: -
MIDDAY PEAK 15 MINUTE PERIOD: -
MIDDAY PHF:

PM PEAK HOUR PERIOD: **4:15 PM-5:15 PM**
PM PEAK 15 MINUTE PERIOD: **4:15 PM-4:30 PM**
PM PHF: **0.90**



RAW COUNT SUMMARIES	270 East Northbound				270 East Southbound				Vineyard Road Eastbound				Vineyard Road Westbound				TOTAL
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	

AM PEAK PERIOD COUNTS

Period	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	TOTAL
7:00 - 7:15	10	10	0	10	90	10	0	0	0	80	10	30	10	80	40	10	340
7:15 - 7:30	0	60	30	70	120	0	30	0	10	180	10	20	0	40	90	10	570
7:30 - 7:45	0	20	0	80	470	10	110	0	130	150	0	10	20	110	230	20	1250
7:45 - 8:00	50	80	10	300	420	20	220	0	220	390	20	120	20	140	210	40	1800
8:00 - 8:15	40	60	20	60	470	50	200	0	90	290	10	10	10	240	70	10	1550
8:15 - 8:30	10	60	20	0	270	40	70	10	20	210	20	0	20	130	100	0	970
8:30 - 8:45	0	30	10	20	230	0	10	0	20	80	10	10	10	110	80	0	590
8:45 - 9:00	0	20	70	10	200	20	30	10	30	90	10	0	10	130	90	10	700

MIDDAY PERIOD COUNTS

Period	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	TOTAL
9:00 - 9:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15 - 9:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:30 - 9:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:45 - 10:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:00 - 10:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15 - 10:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:30 - 10:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:45 - 11:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:00 - 11:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 - 11:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 - 11:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 - 12:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00 - 12:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 - 12:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 - 12:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 - 13:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:00 - 13:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:15 - 13:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:30 - 13:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:45 - 14:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14:00 - 14:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14:15 - 14:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14:30 - 14:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14:45 - 15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:00 - 15:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:15 - 15:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:30 - 15:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:45 - 16:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

PM PERIOD COUNTS

Period	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	TOTAL
16:00 - 16:15	10	20	0	0	170	20	30	0	20	200	50	0	30	140	120	0	810
16:15 - 16:30	30	50	30	20	190	10	60	0	10	140	80	40	40	110	190	0	940
16:30 - 16:45	0	30	20	0	220	40	0	0	20	170	40	10	20	130	150	10	840
16:45 - 17:00	0	20	20	0	160	20	10	0	0	130	50	0	0	110	160	10	680
17:00 - 17:15	0	20	20	0	190	20	20	0	0	210	40	0	20	140	250	0	930
17:15 - 17:30	10	10	20	0	210	40	0	0	0	160	20	0	20	100	270	0	860
17:30 - 17:45	10	50	0	0	120	20	10	0	10	170	30	10	20	120	200	10	760
17:45 - 18:00	50	50	10	10	90	30	10	0	20	170	40	10	10	110	130	0	720

TrafficCounts

2364 North 1450 East
Lehi, UT 84043
801.636.0891

Intersection Turning Movement Summary

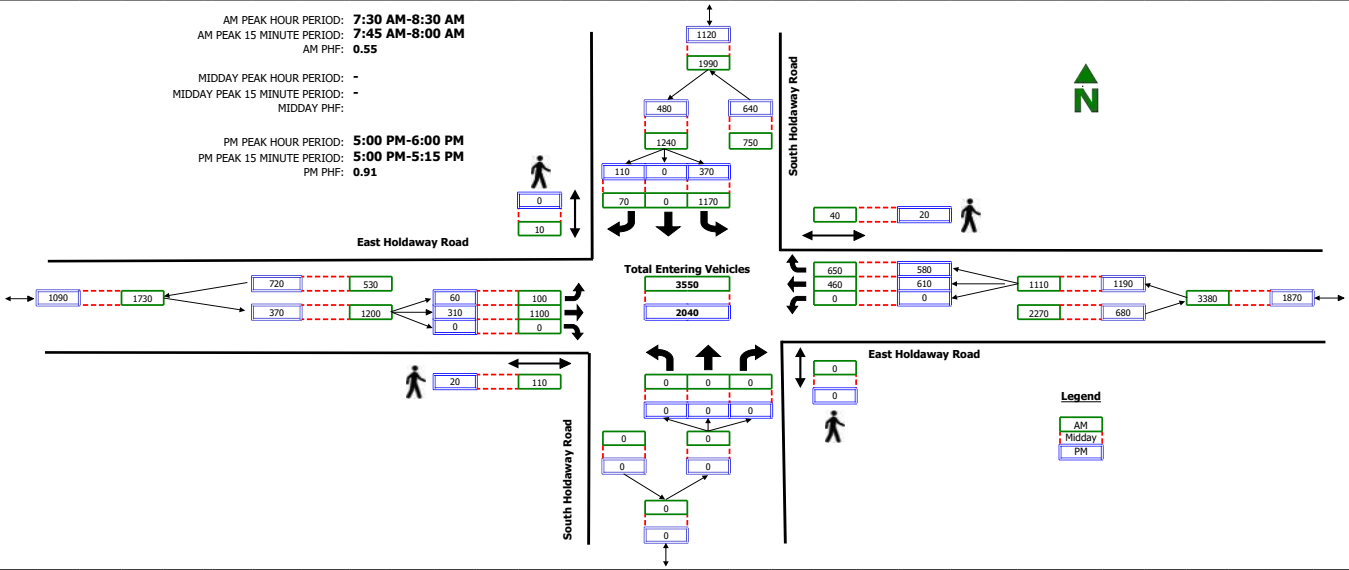
Intersection: South Holdaway Road / East Holdaway Road
North/South: South Holdaway Road
East/West: East Holdaway Road
Jurisdiction: Vineyard
Project Title: Vineyard TMP
Project No: UT23-2453
Weather: Clear

Date: 3-8-23, Wed
PM Peak to Daily Volumes Adjustment: 10.0%
Month of Year Adjustment: 100.0%
Adjustment Station #: 0
Growth Rate: 0.0%
Number of Years: 0

AM PEAK HOUR PERIOD: **7:30 AM-8:30 AM**
AM PEAK 15 MINUTE PERIOD: **7:45 AM-8:00 AM**
AM PHF: **0.55**

MIDDAY PEAK HOUR PERIOD: **-**
MIDDAY PEAK 15 MINUTE PERIOD: **-**
MIDDAY PHF:

PM PEAK HOUR PERIOD: **5:00 PM-6:00 PM**
PM PEAK 15 MINUTE PERIOD: **5:00 PM-5:15 PM**
PM PHF: **0.91**



RAW COUNT SUMMARIES	South Holdaway Road Northbound				South Holdaway Road Southbound				East Holdaway Road Eastbound				East Holdaway Road Westbound				TOTAL
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	
AM PERIOD COUNTS																	
Period	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	**K**	**L**	**M**	**N**	**O**	**P**	**TOTAL**
7:00 - 7:15	0	0	0	10	60	0	10	0	10	30	0	0	0	30	10	0	150
7:15 - 7:30	0	0	0	0	50	0	0	0	10	250	0	10	0	30	60	10	400
7:30 - 7:45	0	0	0	0	160	0	10	0	10	330	0	110	0	30	70	0	610
7:45 - 8:00	0	0	0	0	580	0	0	0	40	500	0	0	0	240	250	20	1610
8:00 - 8:15	0	0	0	0	200	0	40	10	50	180	0	0	0	80	200	10	750
8:15 - 8:30	0	0	0	0	230	0	20	0	0	90	0	0	0	110	130	10	580
8:30 - 8:45	0	0	0	0	40	0	0	0	0	120	0	0	0	50	80	0	290
8:45 - 9:00	0	0	0	0	130	0	40	10	20	100	0	10	0	40	90	10	420
MIDDAY PERIOD COUNTS																	
Period	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	**K**	**L**	**M**	**N**	**O**	**P**	**TOTAL**
9:00 - 9:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15 - 9:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:30 - 9:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:45 - 10:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:00 - 10:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15 - 10:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:30 - 10:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:45 - 11:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:00 - 11:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 - 11:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 - 11:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 - 12:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00 - 12:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 - 12:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 - 12:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 - 13:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:00 - 13:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:15 - 13:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:30 - 13:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:45 - 14:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14:00 - 14:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14:15 - 14:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14:30 - 14:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14:45 - 15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:00 - 15:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:15 - 15:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:30 - 15:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:45 - 16:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PM PERIOD COUNTS																	
Period	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	**K**	**L**	**M**	**N**	**O**	**P**	**TOTAL**
16:00 - 16:15	0	0	0	0	60	0	20	0	0	80	0	0	0	140	100	0	400
16:15 - 16:30	0	0	0	0	60	0	10	0	20	70	0	20	0	70	200	0	430
16:30 - 16:45	0	0	0	0	40	0	20	0	20	110	0	0	0	150	110	10	450
16:45 - 17:00	0	0	0	0	110	0	40	0	20	50	0	0	0	90	60	0	370
17:00 - 17:15	0	0	0	0	140	0	30	0	10	100	0	0	0	110	170	10	560
17:15 - 17:30	0	0	0	0	50	0	0	0	10	80	0	0	0	220	140	10	500
17:30 - 17:45	0	0	0	0	70	0	20	0	30	80	0	20	0	200	150	0	550
17:45 - 18:00	0	0	0	0	110	0	60	0	10	50	0	0	0	80	120	0	430

TrafficCounts

2364 North 1450 East
Lehi, UT 84043
801.636.0891

Intersection Turning Movement Summary

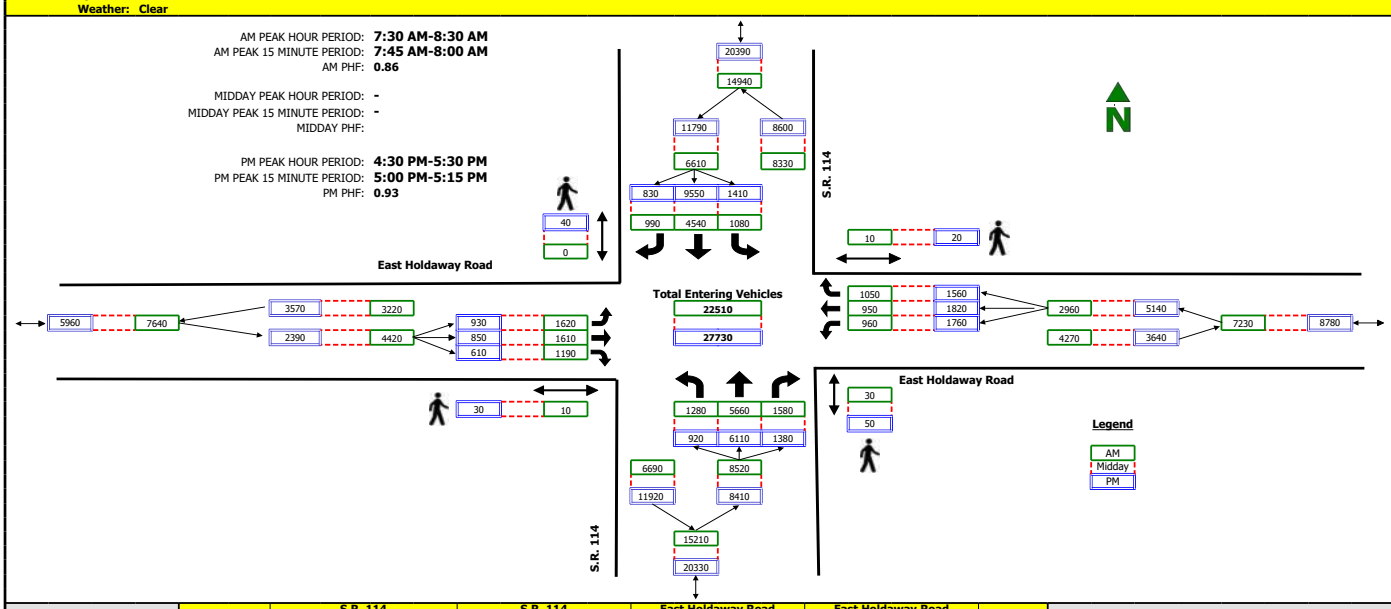
Intersection: S.R. 114 / East Holdaway Road
North/South: S.R. 114
East/West: East Holdaway Road
Jurisdiction: Vineyard
Project Title: Vineyard TMP
Project No: UT23-2453
Weather: Clear

Date: 3-8-23, Wed
PM Peak to Daily Volumes Adjustment 10.0%
Month of Year Adjustment: 100.0%
Adjustment Station #: 0
Growth Rate: 0.0%
Number of Years: 0

AM PEAK HOUR PERIOD: **7:30 AM-8:30 AM**
AM PEAK 15 MINUTE PERIOD: **7:45 AM-8:00 AM**
AM PHF: **0.86**

MIDDAY PEAK HOUR PERIOD: -
MIDDAY PEAK 15 MINUTE PERIOD: -
MIDDAY PHF:

PM PEAK HOUR PERIOD: **4:30 PM-5:30 PM**
PM PEAK 15 MINUTE PERIOD: **5:00 PM-5:15 PM**
PM PHF: **0.93**



RAW COUNT SUMMARIES	S.R. 114 Northbound				S.R. 114 Southbound				East Holdaway Road Eastbound				East Holdaway Road Westbound				TOTAL
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	

AM PEAK PERIOD COUNTS

Period	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	TOTAL
7:00 - 7:15	60	1060	220	0	210	700	130	0	130	80	80	0	180	20	100	0	2970
7:15 - 7:30	120	1080	300	0	190	820	100	0	270	170	110	0	220	80	210	0	3670
7:30 - 7:45	230	1350	360	10	300	930	290	0	330	430	160	0	220	130	210	10	4940
7:45 - 8:00	410	1490	470	0	320	1240	200	0	540	600	360	10	230	380	270	0	6510
8:00 - 8:15	440	1490	460	0	280	1240	270	0	470	330	420	0	190	230	210	0	6030
8:15 - 8:30	200	1330	290	20	180	1130	230	0	280	250	250	0	320	210	360	0	5030
8:30 - 8:45	110	1730	280	0	250	1000	180	0	150	130	170	10	170	130	270	0	4570
8:45 - 9:00	100	1560	470	0	240	1130	100	0	270	250	190	0	80	70	230	0	4690

MIDDAY PERIOD COUNTS

Period	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	TOTAL
9:00 - 9:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15 - 9:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:30 - 9:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:45 - 10:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:00 - 10:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15 - 10:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:30 - 10:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:45 - 11:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:00 - 11:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 - 11:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 - 11:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 - 12:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00 - 12:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 - 12:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 - 12:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 - 13:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:00 - 13:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:15 - 13:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:30 - 13:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:45 - 14:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14:00 - 14:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14:15 - 14:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14:30 - 14:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14:45 - 15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:00 - 15:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:15 - 15:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:30 - 15:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:45 - 16:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

PM PERIOD COUNTS

Period	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	TOTAL
16:00 - 16:15	310	1420	380	10	330	2100	270	0	140	250	170	0	310	270	390	0	6340
16:15 - 16:30	130	1300	300	10	330	1970	330	0	200	180	230	10	370	340	270	10	5950
16:30 - 16:45	200	1460	430	10	400	2260	290	20	180	250	100	10	280	150	300	0	6300
16:45 - 17:00	210	1680	210	30	260	2260	190	0	270	160	240	10	550	470	540	10	7040
17:00 - 17:15	240	1460	400	10	470	2770	200	10	190	200	110	0	480	540	420	10	7480
17:15 - 17:30	270	1510	340	0	280	2260	150	10	290	240	160	10	450	660	300	0	6910
17:30 - 17:45	180	1360	300	0	290	2060	160	0	200	130	140	0	430	350	480	10	6080
17:45 - 18:00	360	1130	290	10	160	2140	160	0	300	230	80	0	310	430	190	10	5780

TrafficCounts

2364 North 1450 East
Lehi, UT 84043
801.636.0891

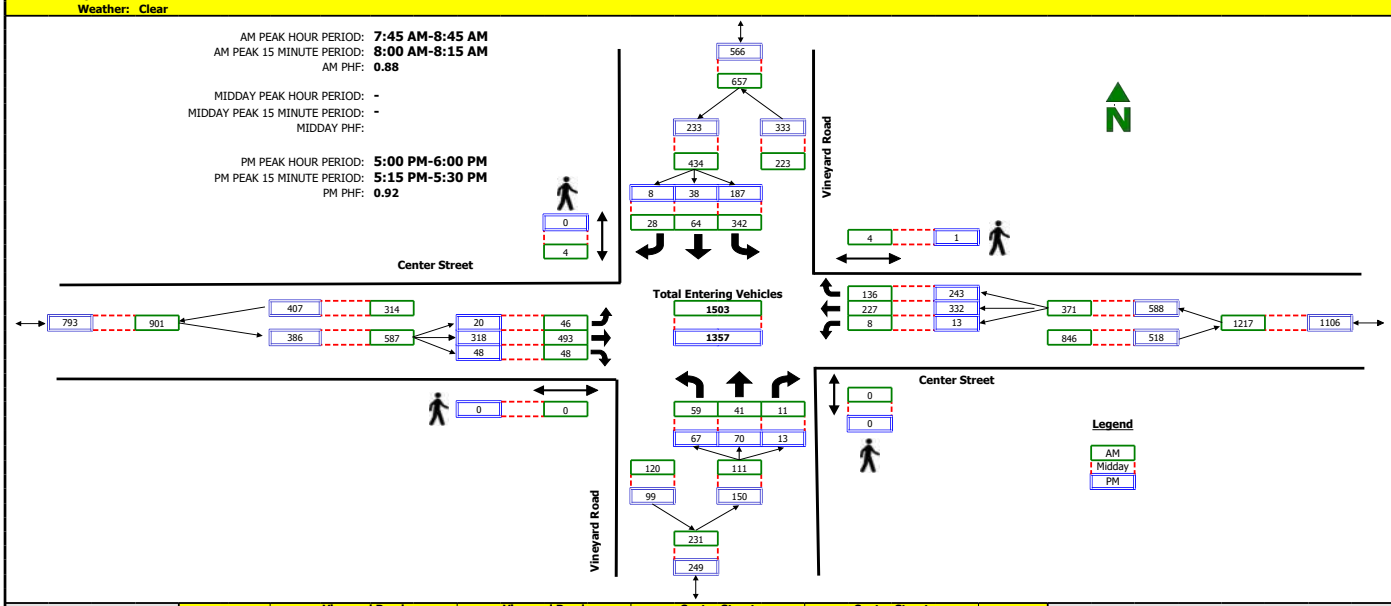
Intersection Turning Movement Summary

Intersection:	Vineyard Road / Center Street	**Date:**	3-7-23, Tue
North/South:	Vineyard Road	**PM Peak to Daily Volumes Adjustment**	100.0%
East/West:	Center Street	**Month of Year Adjustment:**	100.0%
Jurisdiction:	Vineyard	**Adjustment Station #:**	0
Project Title:	Vineyard TMP	**Growth Rate:**	0.0%
Project No:	UT23-2453	**Number of Years:**	0
Weather:	Clear		

AM PEAK HOUR PERIOD: **7:45 AM-8:45 AM**
AM PEAK 15 MINUTE PERIOD: **8:00 AM-8:15 AM**
AM PHF: **0.88**

MIDDAY PEAK HOUR PERIOD: **-**
MIDDAY PEAK 15 MINUTE PERIOD: **-**
MIDDAY PHF:

PM PEAK HOUR PERIOD: **5:00 PM-6:00 PM**
PM PEAK 15 MINUTE PERIOD: **5:15 PM-5:30 PM**
PM PHF: **0.92**



RAW COUNT SUMMARIES	Vineyard Road Northbound				Vineyard Road Southbound				Center Street Eastbound				Center Street Westbound				TOTAL
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	

AM PEAK PERIOD COUNTS

Period	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	TOTAL
7:00 - 7:15	3	3	0	0	39	5	3	0	0	42	5	0	1	19	17	0	137
7:15 - 7:30	2	4	2	0	41	3	2	0	4	66	12	0	1	20	22	0	179
7:30 - 7:45	10	8	3	0	88	12	6	0	4	77	16	0	4	33	37	0	298
7:45 - 8:00	10	4	1	0	84	19	11	0	23	113	11	0	1	38	55	0	370
8:00 - 8:15	23	15	6	0	124	29	3	0	5	105	11	0	2	63	39	0	425
8:15 - 8:30	18	13	0	0	65	9	6	3	10	142	11	0	3	72	23	3	372
8:30 - 8:45	8	9	4	0	69	7	8	1	8	133	15	0	2	54	19	1	336
8:45 - 9:00	11	2	4	0	62	10	6	0	5	93	13	0	0	48	28	1	282

MIDDAY PERIOD COUNTS

Period	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	TOTAL
9:00 - 9:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15 - 9:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:30 - 9:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:45 - 10:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:00 - 10:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15 - 10:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:30 - 10:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:45 - 11:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:00 - 11:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 - 11:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 - 11:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 - 12:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00 - 12:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 - 12:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 - 12:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 - 13:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:00 - 13:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:15 - 13:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:30 - 13:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:45 - 14:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14:00 - 14:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14:15 - 14:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14:30 - 14:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14:45 - 15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:00 - 15:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:15 - 15:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:30 - 15:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:45 - 16:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

PM PERIOD COUNTS

Period	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	TOTAL
16:00 - 16:15	22	14	6	0	36	7	5	1	8	82	7	0	6	96	43	0	332
16:15 - 16:30	12	16	4	0	45	14	4	3	8	65	8	0	7	64	52	3	299
16:30 - 16:45	15	11	7	0	56	10	0	0	10	92	11	0	3	58	57	1	330
16:45 - 17:00	17	10	4	0	50	8	8	0	2	73	6	0	7	61	60	1	306
17:00 - 17:15	13	13	3	0	46	12	1	0	0	86	8	0	3	85	63	1	333
17:15 - 17:30	18	24	4	0	64	12	1	0	9	95	15	0	3	74	48	0	367
17:30 - 17:45	17	19	4	0	38	5	1	0	9	71	13	0	5	88	75	0	345
17:45 - 18:00	19	14	2	0	39	9	5	0	2	66	12	0	2	85	57	0	312

TrafficCounts

2364 North 1450 East
Lehi, UT 84043
801.636.0891

Intersection Turning Movement Summary

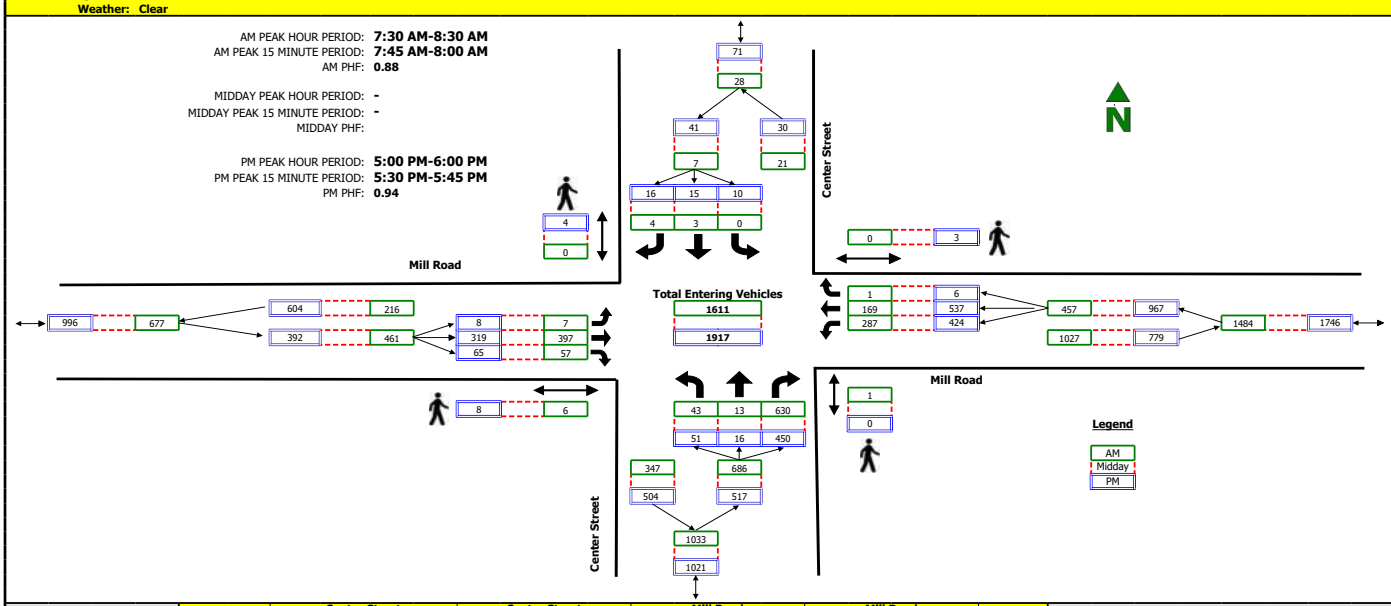
Intersection: Center Street / Mill Road
North/South: Center Street
East/West: Mill Road
Jurisdiction: Vineyard
Project Title: Vineyard Mill Road Plaza
Project No: 2182
Weather: Clear

Date: 3-30-22, Wed
PM to Daily Volumes Adjustment: 100.0%
Month of Year Adjustment: 100.0%
Adjustment Station #: 0
Growth Rate: 0.0%
Number of Years: 0

AM PEAK HOUR PERIOD: **7:30 AM-8:30 AM**
AM PEAK 15 MINUTE PERIOD: **7:45 AM-8:00 AM**
AM PHF: **0.88**

MIDDAY PEAK HOUR PERIOD: **-**
MIDDAY PEAK 15 MINUTE PERIOD: **-**
MIDDAY PHF:

PM PEAK HOUR PERIOD: **5:00 PM-6:00 PM**
PM PEAK 15 MINUTE PERIOD: **5:30 PM-5:45 PM**
PM PHF: **0.94**



RAW COUNT SUMMARIES	Center Street Northbound				Center Street Southbound				Mill Road Eastbound				Mill Road Westbound				TOTAL
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	

AM PEAK PERIOD COUNTS

Period	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	TOTAL
7:00 - 7:15	1	2	72	1	0	0	0	0	1	60	3	0	26	16	0	0	181
7:15 - 7:30	3	5	105	0	0	1	1	0	2	61	9	0	42	21	1	0	251
7:30 - 7:45	8	3	152	1	0	1	1	0	4	108	11	3	50	32	1	0	371
7:45 - 8:00	14	3	179	0	0	0	1	0	0	117	17	0	65	61	0	0	457
8:00 - 8:15	15	4	163	0	0	1	0	0	2	75	15	2	95	42	0	0	412
8:15 - 8:30	6	3	136	0	0	1	2	0	1	97	14	1	77	34	0	0	371
8:30 - 8:45	8	3	136	0	0	1	1	0	3	71	14	0	47	32	0	0	316
8:45 - 9:00	9	3	139	1	0	0	0	1	0	91	13	0	61	41	0	0	357

MIDDAY PERIOD COUNTS

Period	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	TOTAL
9:00 - 9:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15 - 9:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:30 - 9:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:45 - 10:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:00 - 10:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15 - 10:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:30 - 10:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:45 - 11:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:00 - 11:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 - 11:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 - 11:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 - 12:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00 - 12:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 - 12:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 - 12:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 - 13:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:00 - 13:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:15 - 13:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:30 - 13:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:45 - 14:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14:00 - 14:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14:15 - 14:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14:30 - 14:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14:45 - 15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:00 - 15:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:15 - 15:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:30 - 15:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:45 - 16:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

PM PERIOD COUNTS

Period	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	TOTAL
16:00 - 16:15	4	3	91	4	0	2	3	0	1	46	13	2	87	93	0	1	343
16:15 - 16:30	8	1	101	0	2	3	3	2	0	70	18	3	112	97	2	1	417
16:30 - 16:45	7	1	118	1	0	1	0	0	0	73	15	3	64	66	2	1	347
16:45 - 17:00	12	3	124	2	3	0	0	4	3	89	19	2	81	111	3	2	448
17:00 - 17:15	8	9	95	0	5	7	8	2	2	80	15	5	93	129	3	1	454
17:15 - 17:30	13	1	116	0	2	4	3	2	3	67	17	3	113	141	0	2	480
17:30 - 17:45	14	1	116	0	2	3	3	0	0	90	14	0	127	142	0	0	512
17:45 - 18:00	16	5	123	0	1	1	2	0	3	82	19	0	91	125	3	0	471

TrafficCounts

2364 North 1450 East
Lehi, UT 84043
801.636.0891

Intersection Turning Movement Summary

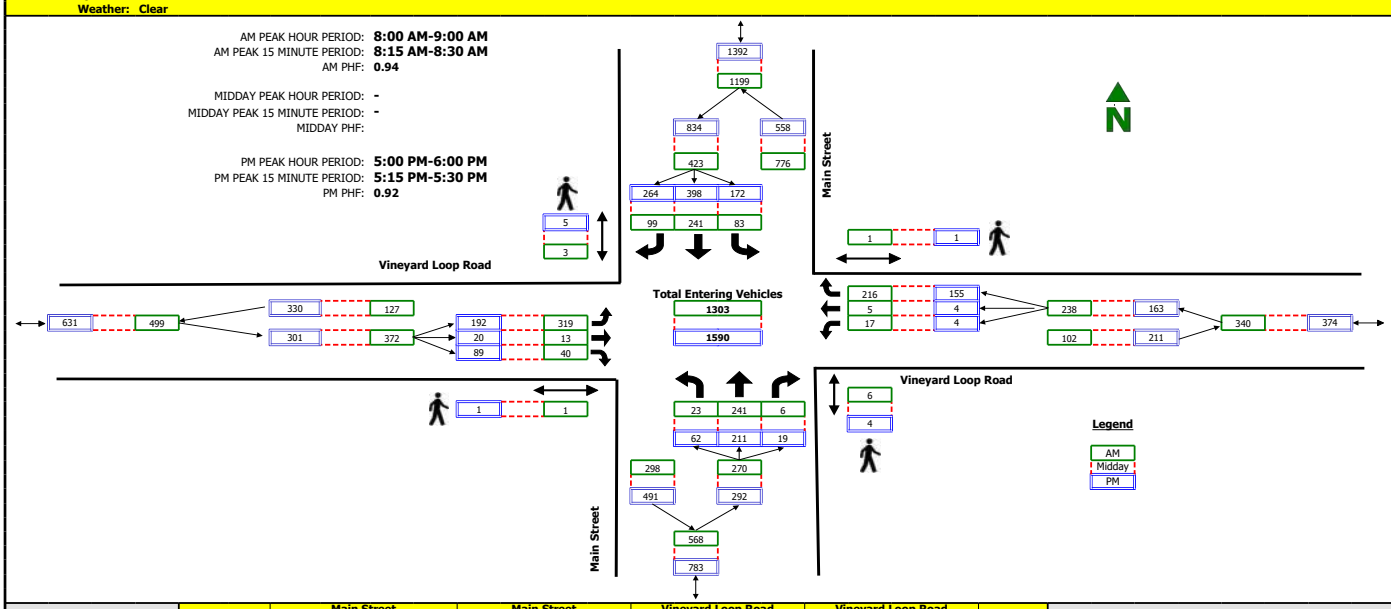
Intersection: Main Street / Vineyard Loop Road
North/South: Main Street
East/West: Vineyard Loop Road
Jurisdiction: Vineyard
Project Title: Vineyard Active Transportation Plan
Project No: UT21-1896
Weather: Clear

Date: 5-6-21, Thu
Day of Week Adjustment: 100.0%
Month of Year Adjustment: 100.0%
Adjustment Station #: 0
Growth Rate: 0.0%
Number of Years: 0

AM PEAK HOUR PERIOD: **8:00 AM-9:00 AM**
AM PEAK 15 MINUTE PERIOD: **8:15 AM-8:30 AM**
AM PHF: **0.94**

MIDDAY PEAK HOUR PERIOD: **-**
MIDDAY PEAK 15 MINUTE PERIOD: **-**
MIDDAY PHF:

PM PEAK HOUR PERIOD: **5:00 PM-6:00 PM**
PM PEAK 15 MINUTE PERIOD: **5:15 PM-5:30 PM**
PM PHF: **0.92**



RAW COUNT SUMMARIES	Main Street Northbound				Main Street Southbound				Vineyard Loop Road Eastbound				Vineyard Loop Road Westbound				TOTAL
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	

AM PEAK PERIOD COUNTS

Period	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	TOTAL
7:00 - 7:15	1	29	0	0	7	38	20	2	33	0	11	0	2	2	29	3	172
7:15 - 7:30	1	36	1	0	9	30	20	1	46	0	6	1	1	1	35	0	186
7:30 - 7:45	2	40	0	1	6	50	29	0	61	3	4	1	3	1	54	0	253
7:45 - 8:00	2	59	0	2	17	63	22	3	85	0	10	2	4	1	43	2	306
8:00 - 8:15	5	49	2	3	15	82	22	2	79	5	9	0	11	0	54	0	333
8:15 - 8:30	8	61	1	1	25	67	23	1	87	4	11	0	4	2	54	0	347
8:30 - 8:45	4	57	2	0	22	48	31	0	77	2	8	1	1	3	51	1	306
8:45 - 9:00	6	74	1	2	21	44	23	0	76	2	12	0	1	0	57	0	317

MIDDAY PERIOD COUNTS

Period	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	TOTAL
9:00 - 9:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15 - 9:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:30 - 9:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:45 - 10:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:00 - 10:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15 - 10:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:30 - 10:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:45 - 11:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:00 - 11:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 - 11:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 - 11:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 - 12:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00 - 12:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 - 12:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 - 12:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 - 13:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:00 - 13:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:15 - 13:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:30 - 13:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:45 - 14:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14:00 - 14:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14:15 - 14:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14:30 - 14:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14:45 - 15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:00 - 15:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:15 - 15:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:30 - 15:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:45 - 16:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

PM PEAK PERIOD COUNTS

Period	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	TOTAL
16:00 - 16:15	6	59	2	0	40	54	47	1	54	1	6	0	2	2	28	0	301
16:15 - 16:30	6	48	6	1	36	67	45	0	49	4	6	0	1	1	26	0	295
16:30 - 16:45	6	40	6	0	47	47	64	0	48	2	13	0	0	1	42	0	316
16:45 - 17:00	6	59	3	2	39	65	68	0	57	1	8	0	2	1	53	0	362
17:00 - 17:15	13	48	2	0	53	97	52	0	48	3	7	0	0	0	37	0	360
17:15 - 17:30	15	56	7	3	39	115	80	3	47	6	27	0	1	2	37	0	432
17:30 - 17:45	16	56	6	0	43	97	80	2	44	8	28	0	2	1	43	0	424
17:45 - 18:00	18	51	4	1	37	89	52	0	53	3	27	1	1	1	38	1	374

TrafficCounts

2364 North 1450 East
Lehi, UT 84043
801.636.0891

Intersection Turning Movement Summary

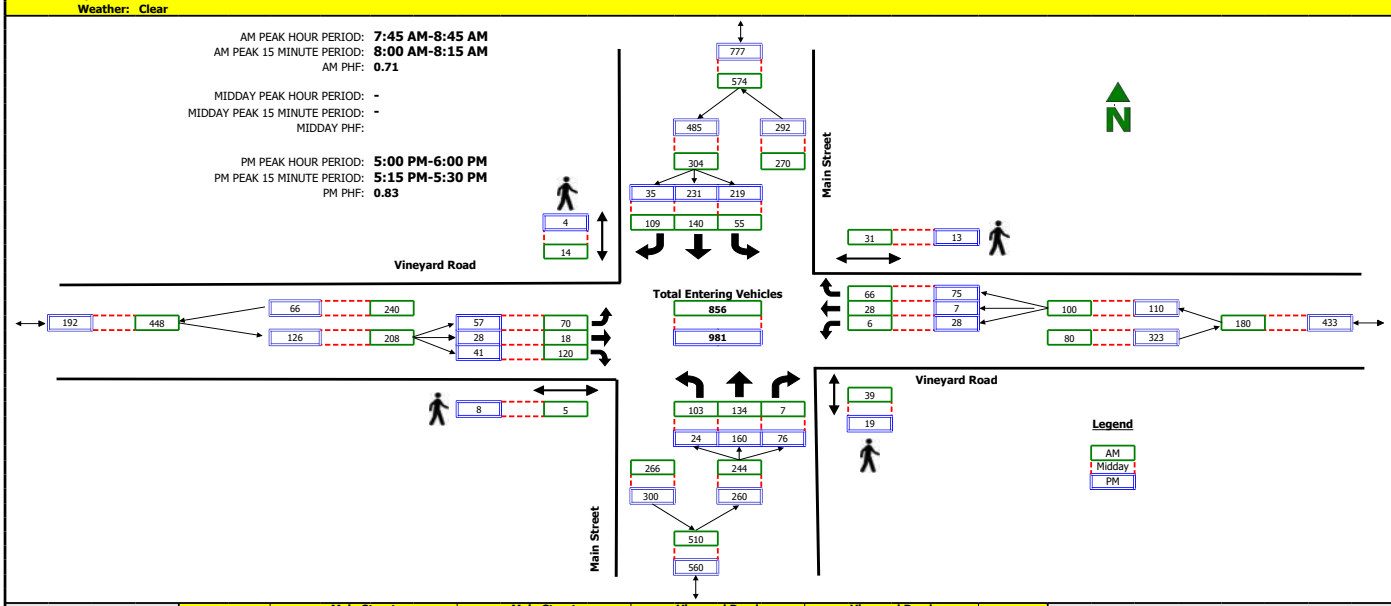
Intersection: Main Street / Vineyard Road
North/South: Main Street
East/West: Vineyard Road
Jurisdiction: Vineyard
Project Title: Vineyard Active Transportation Plan
Project No: UT21-1896
Weather: Clear

Date: 5-6-21, Thu
PM to Daily Volumes Adjustment: 100.0%
Month of Year Adjustment: 100.0%
Adjustment Station #: 0
Growth Rate: 0.0%
Number of Years: 0

AM PEAK HOUR PERIOD: **7:45 AM-8:45 AM**
AM PEAK 15 MINUTE PERIOD: **8:00 AM-8:15 AM**
AM PHF: **0.71**

MIDDAY PEAK HOUR PERIOD: **-**
MIDDAY PEAK 15 MINUTE PERIOD: **-**
MIDDAY PHF:

PM PEAK HOUR PERIOD: **5:00 PM-6:00 PM**
PM PEAK 15 MINUTE PERIOD: **5:15 PM-5:30 PM**
PM PHF: **0.83**



RAW COUNT SUMMARIES	Main Street Northbound				Main Street Southbound				Vineyard Road Eastbound				Vineyard Road Westbound				TOTAL
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	

AM PEAK PERIOD COUNTS

Period	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	TOTAL
7:00 - 7:15	4	14	0	0	2	37	6	0	1	1	1	0	1	3	12	0	82
7:15 - 7:30	4	29	2	1	10	16	8	0	1	2	4	0	3	2	8	0	89
7:30 - 7:45	17	21	1	7	8	31	21	4	8	2	13	0	3	1	16	9	142
7:45 - 8:00	19	33	1	9	10	32	25	4	19	5	15	0	0	9	17	3	185
8:00 - 8:15	59	40	3	16	10	44	49	8	9	5	58	0	4	8	14	26	303
8:15 - 8:30	20	28	2	13	19	35	24	1	27	5	38	2	1	7	18	1	224
8:30 - 8:45	5	33	1	1	16	29	11	1	15	3	9	3	1	4	17	1	144
8:45 - 9:00	4	43	2	1	11	34	10	2	16	0	11	1	1	7	26	1	165

MIDDAY PERIOD COUNTS

Period	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	TOTAL
9:00 - 9:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15 - 9:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:30 - 9:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:45 - 10:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:00 - 10:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15 - 10:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:30 - 10:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:45 - 11:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:00 - 11:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 - 11:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 - 11:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 - 12:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00 - 12:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 - 12:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 - 12:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 - 13:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:00 - 13:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:15 - 13:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:30 - 13:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:45 - 14:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14:00 - 14:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14:15 - 14:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14:30 - 14:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14:45 - 15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:00 - 15:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:15 - 15:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:30 - 15:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:45 - 16:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

PM PERIOD COUNTS

Period	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	TOTAL
16:00 - 16:15	5	33	5	2	25	32	11	0	22	4	5	0	4	4	17	5	167
16:15 - 16:30	3	34	6	3	22	37	10	3	10	6	4	0	4	4	14	3	154
16:30 - 16:45	4	28	9	0	25	31	6	0	13	4	9	3	3	0	13	0	145
16:45 - 17:00	8	35	7	2	24	35	5	2	22	7	9	2	3	3	14	4	172
17:00 - 17:15	4	33	10	5	44	46	10	1	13	8	6	0	7	1	16	2	198
17:15 - 17:30	9	42	31	8	77	60	7	2	11	12	11	2	8	5	21	8	294
17:30 - 17:45	7	47	22	1	56	57	10	1	11	5	12	3	7	0	19	2	253
17:45 - 18:00	4	38	13	5	42	68	8	0	22	3	12	3	6	1	19	1	236

TrafficCounts

2364 North 1450 East
Lehi, UT 84043
801.636.0891

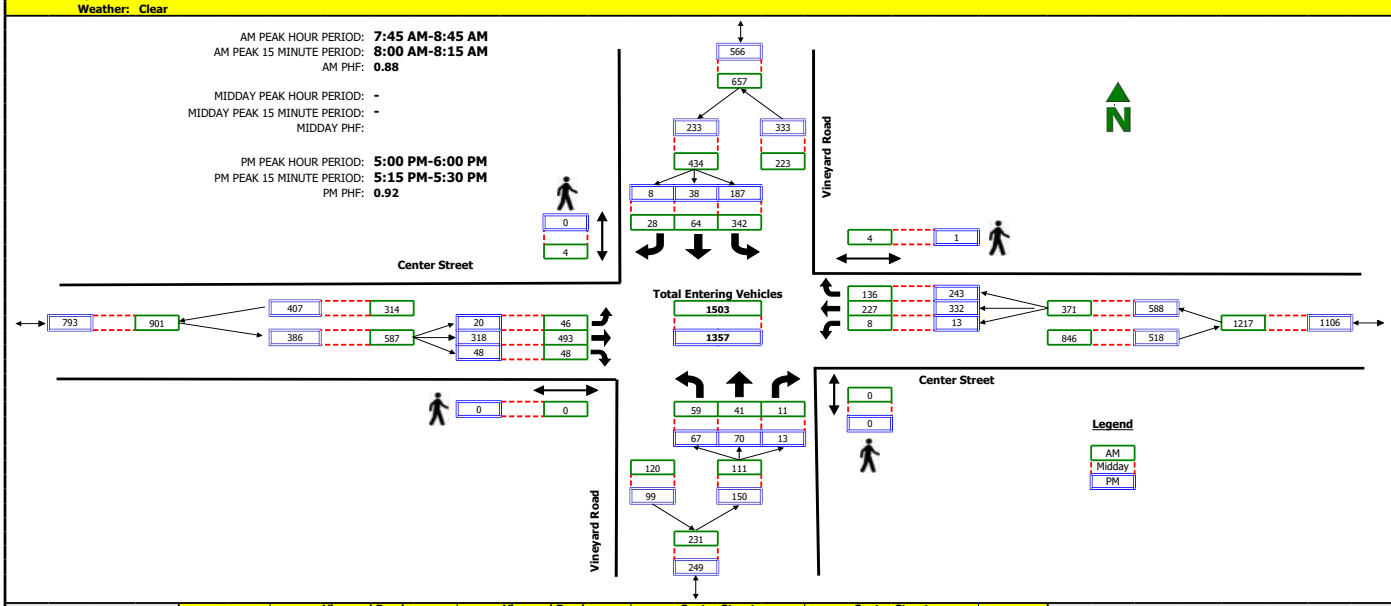
Intersection Turning Movement Summary

Intersection:	Vineyard Road / Center Street	**Date:**	3-7-23, Tue
North/South:	Vineyard Road	**PM Peak to Daily Volumes Adjustment**	100.0%
East/West:	Center Street	**Month of Year Adjustment:**	100.0%
Jurisdiction:	Vineyard	**Adjustment Station #:**	0
Project Title:	Vineyard TMP	**Growth Rate:**	0.0%
Project No:	UT23-2453	**Number of Years:**	0
Weather:	Clear		

AM PEAK HOUR PERIOD: **7:45 AM-8:45 AM**
AM PEAK 15 MINUTE PERIOD: **8:00 AM-8:15 AM**
AM PHF: **0.88**

MIDDAY PEAK HOUR PERIOD: **-**
MIDDAY PEAK 15 MINUTE PERIOD: **-**
MIDDAY PHF:

PM PEAK HOUR PERIOD: **5:00 PM-6:00 PM**
PM PEAK 15 MINUTE PERIOD: **5:15 PM-5:30 PM**
PM PHF: **0.92**



RAW COUNT SUMMARIES	Vineyard Road Northbound				Vineyard Road Southbound				Center Street Eastbound				Center Street Westbound				TOTAL
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	

AM PEAK PERIOD COUNTS

Period	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	TOTAL
7:00 - 7:15	3	3	0	0	39	5	3	0	0	42	5	0	1	19	17	0	137
7:15 - 7:30	2	4	2	0	41	3	2	0	4	66	12	0	1	20	22	0	179
7:30 - 7:45	10	8	3	0	88	12	6	0	4	77	16	0	4	33	37	0	298
7:45 - 8:00	10	4	1	0	84	19	11	0	23	113	11	0	1	38	55	0	370
8:00 - 8:15	23	15	6	0	124	29	3	0	5	105	11	0	2	63	39	0	425
8:15 - 8:30	18	13	0	0	65	9	6	3	10	142	11	0	3	72	23	3	372
8:30 - 8:45	8	9	4	0	69	7	8	1	8	133	15	0	2	54	19	1	336
8:45 - 9:00	11	2	4	0	62	10	6	0	5	93	13	0	0	48	28	1	282

MIDDAY PERIOD COUNTS

Period	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	TOTAL
9:00 - 9:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15 - 9:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:30 - 9:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:45 - 10:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:00 - 10:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15 - 10:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:30 - 10:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:45 - 11:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:00 - 11:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 - 11:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 - 11:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 - 12:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00 - 12:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 - 12:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 - 12:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 - 13:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:00 - 13:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:15 - 13:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:30 - 13:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:45 - 14:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14:00 - 14:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14:15 - 14:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14:30 - 14:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14:45 - 15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:00 - 15:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:15 - 15:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:30 - 15:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:45 - 16:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

PM PERIOD COUNTS

Period	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	TOTAL
16:00 - 16:15	22	14	6	0	36	7	5	1	8	82	7	0	6	96	43	0	332
16:15 - 16:30	12	16	4	0	45	14	4	3	8	65	8	0	7	64	52	3	299
16:30 - 16:45	15	11	7	0	56	10	0	0	10	92	11	0	3	58	57	1	330
16:45 - 17:00	17	10	4	0	50	8	8	0	2	73	6	0	7	61	60	1	306
17:00 - 17:15	13	13	3	0	46	12	1	0	0	86	8	0	3	85	63	1	333
17:15 - 17:30	18	24	4	0	64	12	1	0	9	95	15	0	3	74	48	0	367
17:30 - 17:45	17	19	4	0	38	5	1	0	9	71	13	0	5	88	75	0	345
17:45 - 18:00	19	14	2	0	39	9	5	0	2	66	12	0	2	85	57	0	312

TrafficCounts

2364 North 1450 East
Lehi, UT 84043
801.636.0891

Intersection Turning Movement Summary

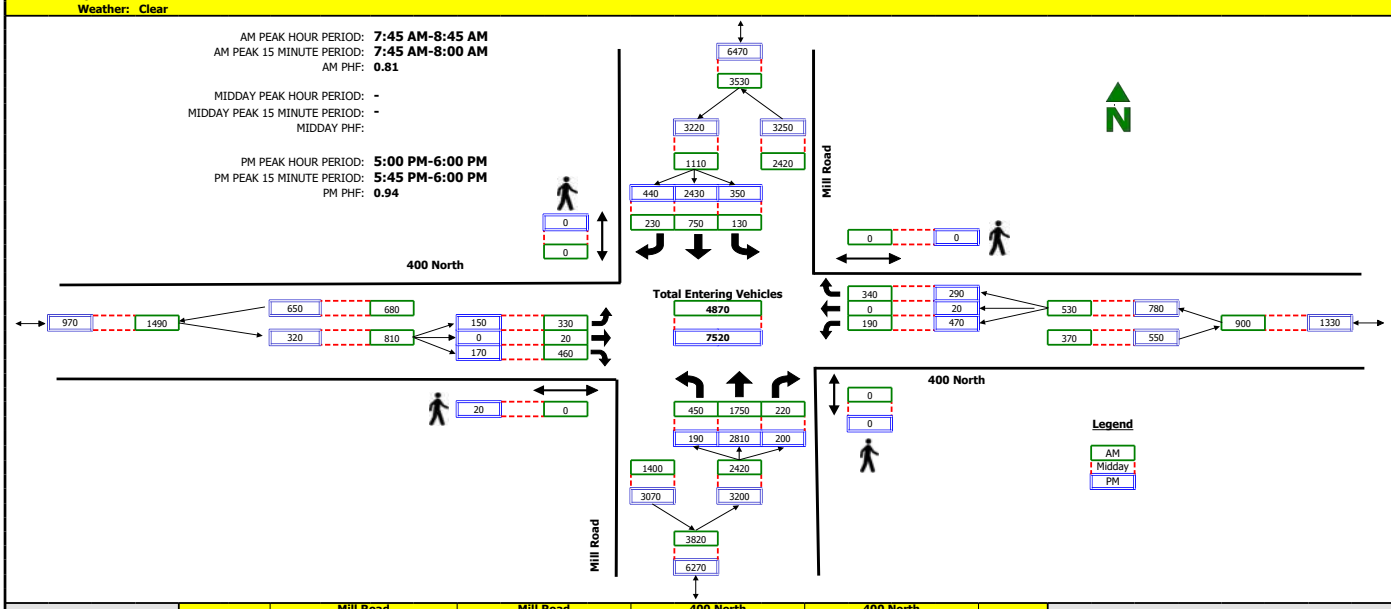
Intersection: Mill Road / 400 North
North/South: Mill Road
East/West: 400 North
Jurisdiction: Vineyard
Project Title: The Yard TIS
Project No: UT21-2032
Weather: Clear

Date: 10-12-21, Tue
PM to Daily Volumes Adjustment: 10.0%
Month of Year Adjustment: 100.0%
Adjustment Station #: 0
Growth Rate: 0.0%
Number of Years: 0

AM PEAK HOUR PERIOD: **7:45 AM-8:45 AM**
AM PEAK 15 MINUTE PERIOD: **7:45 AM-8:00 AM**
AM PHF: **0.81**

MIDDAY PEAK HOUR PERIOD: **-**
MIDDAY PEAK 15 MINUTE PERIOD: **-**
MIDDAY PHF:

PM PEAK HOUR PERIOD: **5:00 PM-6:00 PM**
PM PEAK 15 MINUTE PERIOD: **5:45 PM-6:00 PM**
PM PHF: **0.94**



RAW COUNT SUMMARIES	Mill Road Northbound				Mill Road Southbound				400 North Eastbound				400 North Westbound				TOTAL
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	

AM PEAK PERIOD COUNTS

Period	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	TOTAL
7:00 - 7:15	70	170	30	0	40	100	40	0	120	10	30	0	20	0	70	0	700
7:15 - 7:30	20	370	30	0	10	160	50	0	80	0	40	0	30	0	100	0	890
7:30 - 7:45	90	400	30	10	30	40	30	0	50	0	40	0	60	0	90	0	860
7:45 - 8:00	300	460	110	0	30	160	80	0	80	10	130	0	30	0	110	0	1500
8:00 - 8:15	70	410	80	0	40	190	60	0	150	0	140	0	20	0	40	0	1200
8:15 - 8:30	40	400	10	0	50	180	50	0	60	10	110	0	40	0	120	0	1070
8:30 - 8:45	40	480	20	0	10	220	40	0	40	0	80	0	100	0	70	0	1100
8:45 - 9:00	10	530	50	0	30	190	10	0	50	10	60	0	50	0	150	0	1140

MIDDAY PERIOD COUNTS

Period	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	TOTAL
9:00 - 9:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15 - 9:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:30 - 9:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:45 - 10:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:00 - 10:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15 - 10:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:30 - 10:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:45 - 11:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:00 - 11:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 - 11:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 - 11:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 - 12:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00 - 12:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 - 12:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 - 12:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 - 13:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:00 - 13:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:15 - 13:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:30 - 13:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:45 - 14:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14:00 - 14:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14:15 - 14:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14:30 - 14:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14:45 - 15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:00 - 15:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:15 - 15:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:30 - 15:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:45 - 16:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

PM PERIOD COUNTS

Period	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	TOTAL
16:00 - 16:15	20	400	50	0	70	540	80	0	30	0	60	0	70	0	50	10	1370
16:15 - 16:30	10	510	60	20	80	490	70	0	10	0	80	0	70	10	80	0	1470
16:30 - 16:45	120	460	40	0	50	530	120	0	50	0	10	0	90	0	30	0	1500
16:45 - 17:00	100	550	40	0	40	510	160	0	20	10	40	0	110	0	50	0	1630
17:00 - 17:15	70	570	20	0	130	510	130	0	60	0	60	0	160	0	80	0	1790
17:15 - 17:30	20	470	120	0	110	770	140	0	50	0	40	0	140	10	40	0	1910
17:30 - 17:45	60	800	20	0	50	540	80	0	20	0	30	0	80	0	130	0	1810
17:45 - 18:00	40	970	40	0	60	610	90	0	20	0	40	20	90	10	40	0	2010

TrafficCounts

2364 North 1450 East
Lehi, UT 84043
801.636.0891

Intersection Turning Movement Summary

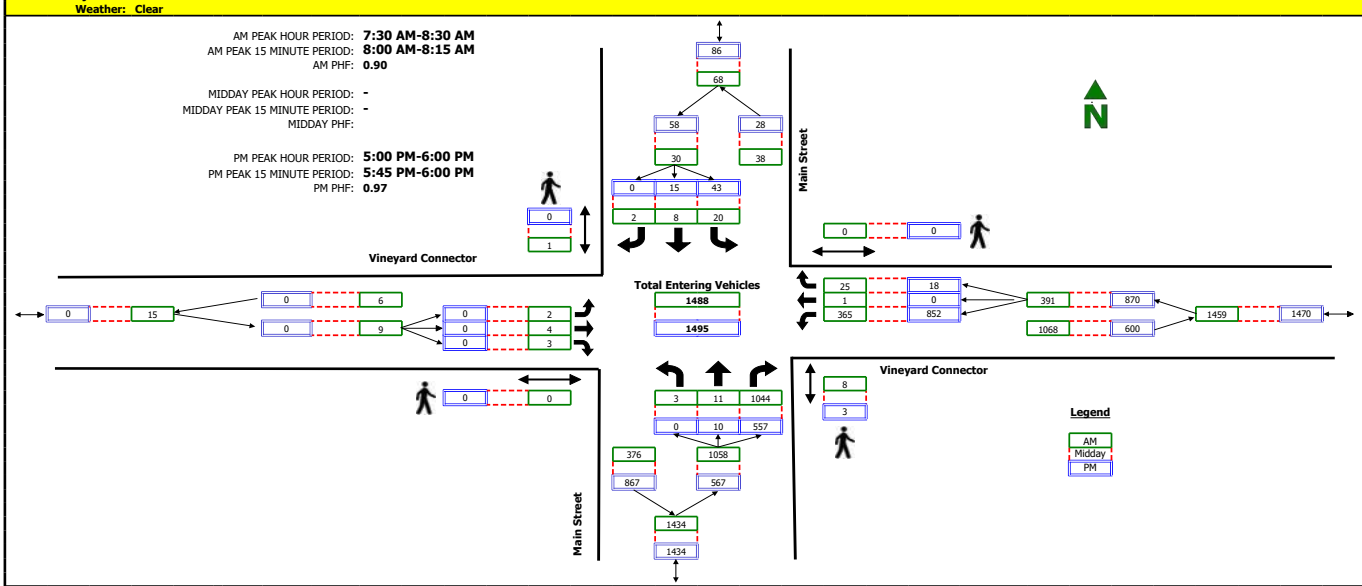
Intersection: Main Street / Vineyard Connector
North/South: Main Street
East/West: Vineyard Connector
Jurisdiction: Vineyard
Project Title: Vineyard TMP
Project No: UT23-2453
Weather: Clear

Date: 3-9-23, Thu
PM Peak to Daily Volumes Adjustment: 100.0%
Month of Year Adjustment: 100.0%
Adjustment Station #: 0
Growth Rate: 0.0%
Number of Years: 0

AM PEAK HOUR PERIOD: **7:30 AM-8:30 AM**
AM PEAK 15 MINUTE PERIOD: **8:00 AM-8:15 AM**
AM PHF: **0.90**

MIDDAY PEAK HOUR PERIOD: -
MIDDAY PEAK 15 MINUTE PERIOD: -
MIDDAY PHF:

PM PEAK HOUR PERIOD: **5:00 PM-6:00 PM**
PM PEAK 15 MINUTE PERIOD: **5:45 PM-6:00 PM**
PM PHF: **0.97**



RAW COUNT SUMMARIES	Main Street Northbound				Main Street Southbound				Vineyard Connector Eastbound				Vineyard Connector Westbound				TOTAL
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	
AM PERIOD COUNTS																	
Period	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	TOTAL
7:00 - 7:15	0	1	102	0	9	5	1	0	0	3	0	0	43	4	9	0	177
7:15 - 7:30	0	7	156	1	4	2	1	0	2	0	0	0	49	3	16	1	240
7:30 - 7:45	0	0	271	1	5	1	0	0	1	0	0	0	82	0	2	0	362
7:45 - 8:00	0	7	252	3	6	4	1	1	0	0	2	0	98	0	14	0	384
8:00 - 8:15	2	2	292	2	6	1	1	0	0	3	0	0	106	0	1	0	414
8:15 - 8:30	1	2	229	2	3	2	0	0	1	1	1	0	79	1	8	0	328
8:30 - 8:45	0	1	234	1	2	1	0	0	0	0	0	0	67	2	0	0	307
8:45 - 9:00	0	2	255	1	2	1	0	0	0	0	0	1	94	2	0	1	356
MIDDAY PERIOD COUNTS																	
Period	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	TOTAL
9:00 - 9:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15 - 9:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:30 - 9:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:45 - 10:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:00 - 10:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15 - 10:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:30 - 10:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:45 - 11:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:00 - 11:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 - 11:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 - 11:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 - 12:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00 - 12:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 - 12:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 - 12:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 - 13:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:00 - 13:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:15 - 13:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:30 - 13:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:45 - 14:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14:00 - 14:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14:15 - 14:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14:30 - 14:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14:45 - 15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:00 - 15:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:15 - 15:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:30 - 15:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:45 - 16:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PM PERIOD COUNTS																	
Period	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	TOTAL
16:00 - 16:15	0	2	106	3	13	5	0	0	1	2	0	0	161	0	2	0	292
16:15 - 16:30	0	2	114	1	2	5	0	0	0	3	0	0	197	0	7	0	330
16:30 - 16:45	0	1	108	2	8	3	0	0	0	4	0	0	189	0	2	1	315
16:45 - 17:00	0	4	164	0	4	4	0	0	0	0	0	0	175	0	9	0	360
17:00 - 17:15	0	2	139	2	11	3	0	0	0	0	0	0	196	0	5	0	356
17:15 - 17:30	0	4	131	0	14	2	0	0	0	0	0	0	226	0	3	0	380
17:30 - 17:45	0	1	149	1	17	6	0	0	0	0	0	0	195	0	7	0	375
17:45 - 18:00	0	3	138	0	1	4	0	0	0	0	0	0	235	0	3	0	384

TrafficCounts

2364 North 1450 East
Lehi, UT 84043
801.636.0891

Intersection Turning Movement Summary

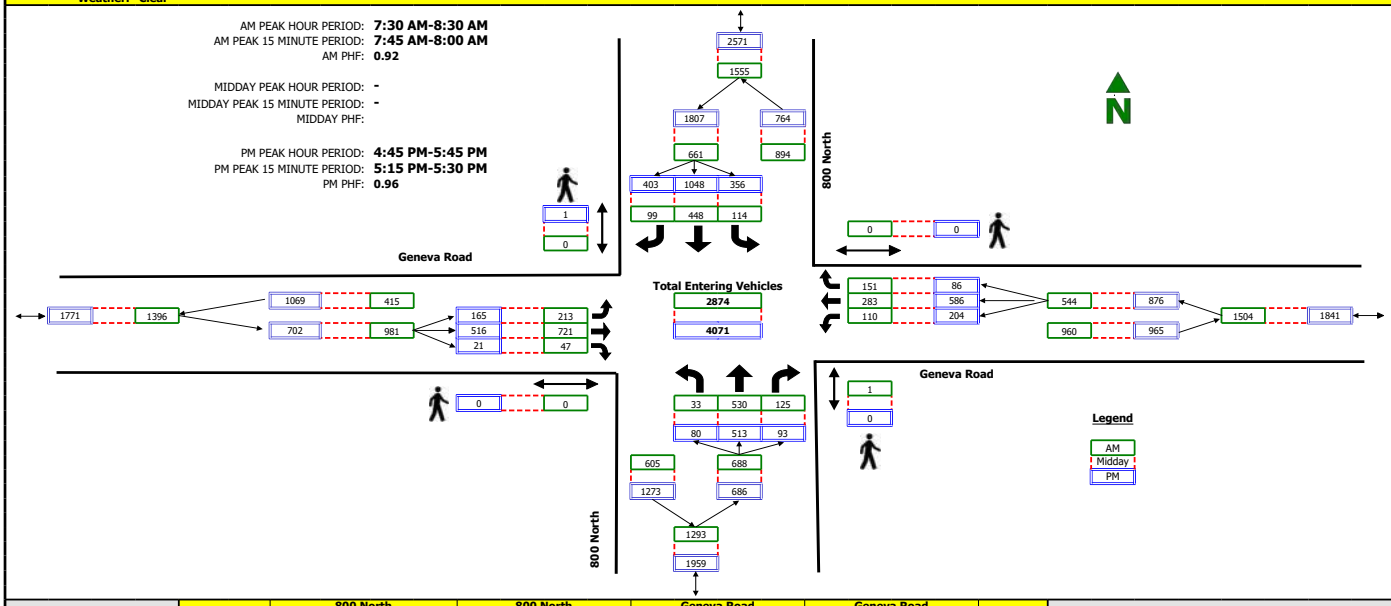
Intersection: 800 North / Geneva Road
North/South: 800 North
East/West: Geneva Road
Jurisdiction: Vineyard
Project Title: Vineyard Mill Road & 1600 North
Project No: 2157
Weather: Clear

Date: 3-17-22, Thu
Day of Week Adjustment: 100.0%
Month of Year Adjustment: 100.0%
Adjustment Station #: 0
Growth Rate: 0.0%
Number of Years: 0

AM PEAK HOUR PERIOD: **7:30 AM-8:30 AM**
AM PEAK 15 MINUTE PERIOD: **7:45 AM-8:00 AM**
AM PHF: **0.92**

MIDDAY PEAK HOUR PERIOD: **-**
MIDDAY PEAK 15 MINUTE PERIOD: **-**
MIDDAY PHF:

PM PEAK HOUR PERIOD: **4:45 PM-5:45 PM**
PM PEAK 15 MINUTE PERIOD: **5:15 PM-5:30 PM**
PM PHF: **0.96**



RAW COUNT SUMMARIES	800 North Northbound				800 North Southbound				Geneva Road Eastbound				Geneva Road Westbound				TOTAL
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	

AM PERIOD COUNTS

Period	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	TOTAL
7:00 - 7:15	4	102	19	0	15	69	16	0	31	114	3	0	12	25	12	0	422
7:15 - 7:30	1	95	24	0	24	65	21	2	29	125	4	0	12	59	29	0	488
7:30 - 7:45	11	131	32	1	26	109	22	0	53	172	12	0	28	60	40	0	696
7:45 - 8:00	8	162	34	0	27	108	27	0	49	198	12	0	24	76	53	0	778
8:00 - 8:15	9	117	26	0	30	114	20	0	65	165	8	0	31	71	30	0	686
8:15 - 8:30	5	120	33	0	31	117	30	0	46	186	15	0	27	76	28	0	714
8:30 - 8:45	2	125	32	0	38	94	21	0	58	175	12	0	18	45	33	0	653
8:45 - 9:00	7	150	43	1	41	119	24	2	75	184	13	0	25	55	36	0	772

MIDDAY PERIOD COUNTS

Period	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	TOTAL
9:00 - 9:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15 - 9:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:30 - 9:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:45 - 10:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:00 - 10:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15 - 10:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:30 - 10:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:45 - 11:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:00 - 11:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 - 11:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 - 11:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 - 12:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00 - 12:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 - 12:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 - 12:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 - 13:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:00 - 13:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:15 - 13:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:30 - 13:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:45 - 14:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14:00 - 14:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14:15 - 14:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14:30 - 14:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14:45 - 15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:00 - 15:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:15 - 15:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:30 - 15:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:45 - 16:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

PM PERIOD COUNTS

Period	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	TOTAL
16:00 - 16:15	13	141	27	0	70	173	41	2	46	126	3	0	24	161	20	1	845
16:15 - 16:30	9	123	34	0	61	191	66	0	42	108	9	0	28	131	22	1	824
16:30 - 16:45	11	99	26	0	88	207	72	0	48	132	2	0	29	129	22	0	865
16:45 - 17:00	12	131	29	0	103	262	91	0	34	110	5	0	39	138	18	0	972
17:00 - 17:15	21	108	28	0	87	242	85	0	56	137	6	0	51	133	30	0	984
17:15 - 17:30	22	164	24	0	88	272	129	0	37	100	6	0	49	151	22	0	1064
17:30 - 17:45	25	110	12	0	78	272	98	1	38	169	4	0	65	164	16	0	1051
17:45 - 18:00	18	125	20	0	67	205	118	0	49	113	7	0	48	145	23	1	938

TrafficCounts

2364 North 1450 East
Lehi, UT 84043
801.636.0891

Intersection Turning Movement Summary

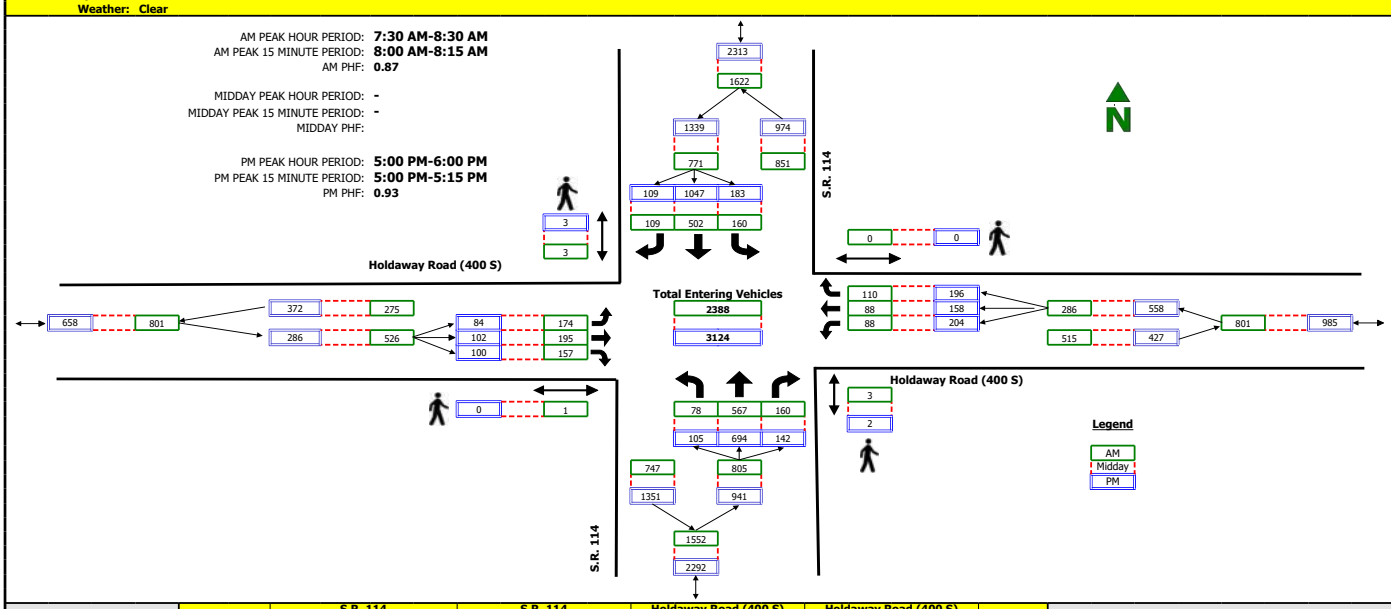
Intersection: S.R. 114 / Holdaway Road (400 S)
North/South: S.R. 114
East/West: Holdaway Road (400 S)
Jurisdiction: Vineyard
Project Title: Vineyard TMP
Project No: UT23-2453
Weather: Clear

Date: 3-28-23, Tue
Day of Week Adjustment: 100.0%
Month of Year Adjustment: 100.0%
Adjustment Station #: 0
Growth Rate: 0.0%
Number of Years: 0

AM PEAK HOUR PERIOD: **7:30 AM-8:30 AM**
AM PEAK 15 MINUTE PERIOD: **8:00 AM-8:15 AM**
AM PHF: **0.87**

MIDDAY PEAK HOUR PERIOD: **-**
MIDDAY PEAK 15 MINUTE PERIOD: **-**
MIDDAY PHF:

PM PEAK HOUR PERIOD: **5:00 PM-6:00 PM**
PM PEAK 15 MINUTE PERIOD: **5:00 PM-5:15 PM**
PM PHF: **0.93**



RAW COUNT SUMMARIES	S.R. 114 Northbound				S.R. 114 Southbound				Holdaway Road (400 S) Eastbound				Holdaway Road (400 S) Westbound				TOTAL
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	

AM PERIOD COUNTS

Period	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	TOTAL
7:00 - 7:15	8	91	24	0	17	64	10	1	10	7	7	0	15	6	10	0	269
7:15 - 7:30	8	118	29	0	22	83	8	0	15	15	14	0	24	12	16	0	364
7:30 - 7:45	17	144	35	0	34	102	31	0	37	42	34	0	13	14	34	0	537
7:45 - 8:00	29	131	38	3	55	126	32	0	44	65	36	0	21	29	33	0	639
8:00 - 8:15	23	146	45	0	32	148	34	3	69	68	52	0	22	19	27	0	685
8:15 - 8:30	9	146	42	0	39	126	12	0	24	20	35	1	32	26	16	0	527
8:30 - 8:45	5	169	42	0	58	122	11	0	18	24	26	0	16	10	31	0	532
8:45 - 9:00	8	182	41	0	48	97	18	0	42	32	38	0	18	15	26	1	565

MIDDAY PERIOD COUNTS

Period	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	TOTAL
9:00 - 9:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15 - 9:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:30 - 9:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:45 - 10:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:00 - 10:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15 - 10:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:30 - 10:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:45 - 11:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:00 - 11:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 - 11:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 - 11:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 - 12:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00 - 12:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 - 12:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 - 12:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 - 13:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:00 - 13:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:15 - 13:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:30 - 13:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:45 - 14:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14:00 - 14:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14:15 - 14:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14:30 - 14:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14:45 - 15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:00 - 15:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:15 - 15:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:30 - 15:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:45 - 16:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

PM PERIOD COUNTS

Period	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	TOTAL
16:00 - 16:15	12	181	32	0	35	232	28	2	34	17	19	1	56	46	53	0	745
16:15 - 16:30	23	179	24	0	41	219	20	0	24	21	15	1	43	26	31	0	666
16:30 - 16:45	25	160	25	0	31	229	19	5	19	17	14	0	42	33	41	0	655
16:45 - 17:00	31	163	29	0	44	254	25	2	15	23	27	1	48	34	29	0	722
17:00 - 17:15	22	191	29	2	50	274	27	2	25	29	33	0	61	42	59	0	842
17:15 - 17:30	32	184	41	0	42	280	25	0	12	13	16	0	50	33	56	0	784
17:30 - 17:45	26	156	39	0	43	240	20	1	27	25	25	0	49	46	45	0	741
17:45 - 18:00	25	163	33	0	48	253	37	0	20	35	26	0	44	37	36	0	757

TrafficCounts

2364 North 1450 East
Lehi, UT 84043
801.636.0891

Intersection Turning Movement Summary

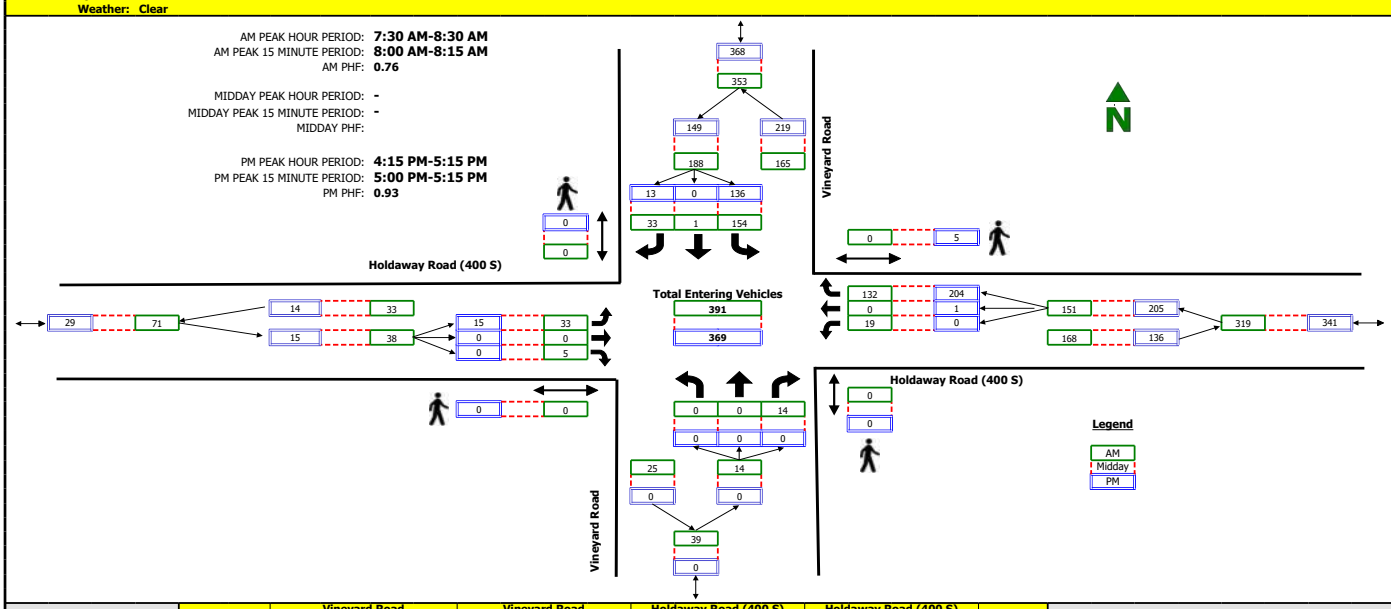
Intersection: Vineyard Road / Holdaway Road (400 S)
North/South: Vineyard Road
East/West: Holdaway Road (400 S)
Jurisdiction: Vineyard
Project Title: Vineyard TMP
Project No: UT23-2453
Weather: Clear

Date: 3-28-23, Tue
Day of Week Adjustment: 100.0%
Month of Year Adjustment: 100.0%
Adjustment Station #: 0
Growth Rate: 0.0%
Number of Years: 0

AM PEAK HOUR PERIOD: **7:30 AM-8:30 AM**
AM PEAK 15 MINUTE PERIOD: **8:00 AM-8:15 AM**
AM PHF: **0.76**

MIDDAY PEAK HOUR PERIOD: **-**
MIDDAY PEAK 15 MINUTE PERIOD: **-**
MIDDAY PHF:

PM PEAK HOUR PERIOD: **4:15 PM-5:15 PM**
PM PEAK 15 MINUTE PERIOD: **5:00 PM-5:15 PM**
PM PHF: **0.93**



RAW COUNT SUMMARIES	Vineyard Road Northbound				Vineyard Road Southbound				Holdaway Road (400 S) Eastbound				Holdaway Road (400 S) Westbound				TOTAL
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	

AM PEAK PERIOD COUNTS

Period	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	TOTAL
7:00 - 7:15	0	0	0	0	13	0	0	0	0	0	0	0	1	0	5	1	19
7:15 - 7:30	0	0	0	0	31	0	0	0	0	0	0	0	1	0	9	0	41
7:30 - 7:45	0	0	1	0	39	0	6	0	7	0	0	0	1	0	28	0	82
7:45 - 8:00	0	0	2	0	37	0	13	0	12	0	1	0	13	0	36	0	114
8:00 - 8:15	0	0	7	0	42	1	13	0	11	0	4	0	5	0	45	0	128
8:15 - 8:30	0	0	4	0	36	0	1	0	3	0	0	0	0	0	23	0	67
8:30 - 8:45	0	0	0	0	40	0	0	0	1	0	0	0	0	0	18	1	59
8:45 - 9:00	0	0	1	0	70	0	2	0	0	0	0	0	1	0	27	0	101

MIDDAY PERIOD COUNTS

Period	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	TOTAL
9:00 - 9:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15 - 9:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:30 - 9:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:45 - 10:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:00 - 10:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15 - 10:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:30 - 10:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:45 - 11:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:00 - 11:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 - 11:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 - 11:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 - 12:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00 - 12:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 - 12:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 - 12:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 - 13:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:00 - 13:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:15 - 13:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:30 - 13:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:45 - 14:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14:00 - 14:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14:15 - 14:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14:30 - 14:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14:45 - 15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:00 - 15:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:15 - 15:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:30 - 15:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:45 - 16:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

PM PEAK PERIOD COUNTS

Period	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	TOTAL
16:00 - 16:15	1	0	0	0	30	0	1	1	1	0	0	0	0	0	42	2	75
16:15 - 16:30	0	0	0	0	41	0	4	0	8	0	0	0	0	1	39	2	93
16:30 - 16:45	0	0	0	0	24	0	2	0	1	0	0	0	0	0	60	2	87
16:45 - 17:00	0	0	0	0	34	0	3	0	5	0	0	0	0	0	48	1	90
17:00 - 17:15	0	0	0	0	37	0	4	0	1	0	0	0	0	0	57	0	99
17:15 - 17:30	0	0	0	0	24	0	1	1	2	0	0	0	0	0	43	0	70
17:30 - 17:45	0	0	0	0	34	0	3	1	2	0	0	0	0	0	54	0	93
17:45 - 18:00	0	0	0	0	37	0	3	0	1	0	0	0	0	0	52	1	93

Daily Vehicle Volume Report

Study Date: Thursday, 03/02/2023
Unit ID:
Location: 1600 North Location

	Eastbound Volume	Westbound Volume	Total Volume
00:00 - 00:14	4	3	**7**
00:15 - 00:29	4	3	**7**
00:30 - 00:44	1	2	**3**
00:45 - 00:59	6	2	**8**
01:00 - 01:14	1	2	**3**
01:15 - 01:29	3	5	**8**
01:30 - 01:44	7	4	**11**
01:45 - 01:59	2	3	**5**
02:00 - 02:14	3	2	**5**
02:15 - 02:29	14	3	**17**
02:30 - 02:44	2	6	**8**
02:45 - 02:59	2	31	**33**
03:00 - 03:14	12	5	**17**
03:15 - 03:29	14	3	**17**
03:30 - 03:44	8	11	**19**
03:45 - 03:59	2	8	**10**
04:00 - 04:14	0	3	**3**
04:15 - 04:29	0	10	**10**
04:30 - 04:44	1	27	**28**
04:45 - 04:59	3	37	**40**
05:00 - 05:14	3	14	**17**
05:15 - 05:29	7	25	**32**
05:30 - 05:44	4	48	**52**
05:45 - 05:59	23	85	**108**
06:00 - 06:14	9	42	**51**
06:15 - 06:29	5	23	**28**
06:30 - 06:44	7	47	**54**
06:45 - 06:59	14	104	**118**
07:00 - 07:14	30	41	**71**
07:15 - 07:29	39	55	**94**
07:30 - 07:44	40	40	**80**
07:45 - 07:59	33	76	**109**
08:00 - 08:14	31	81	**112**
08:15 - 08:29	26	74	**100**
08:30 - 08:44	31	69	**100**
08:45 - 08:59	37	73	**110**
09:00 - 09:14	32	64	**96**
09:15 - 09:29	32	58	**90**
09:30 - 09:44	31	49	**80**
09:45 - 09:59	31	40	**71**
10:00 - 10:14	29	51	**80**
10:15 - 10:29	33	30	**63**
10:30 - 10:44	32	30	**62**
10:45 - 10:59	28	30	**58**
11:00 - 11:14	53	40	**93**
11:15 - 11:29	28	58	**86**
11:30 - 11:44	41	36	**77**
11:45 - 11:59	45	27	**72**
12:00 - 12:14	53	36	**89**
12:15 - 12:29	50	35	**85**
12:30 - 12:44	38	45	**83**
12:45 - 12:59	47	46	**93**

Daily Vehicle Volume Report

Study Date: Thursday, 03/02/2023
Unit ID:
Location: 1600 North Location

	Eastbound Volume	Westbound Volume	Total Volume
13:00 - 13:14	53	49	**102**
13:15 - 13:29	31	36	**67**
13:30 - 13:44	36	55	**91**
13:45 - 13:59	44	58	**102**
14:00 - 14:14	38	53	**91**
14:15 - 14:29	45	65	**110**
14:30 - 14:44	76	83	**159**
14:45 - 14:59	22	73	**95**
15:00 - 15:14	71	46	**117**
15:15 - 15:29	53	33	**86**
15:30 - 15:44	104	37	**141**
15:45 - 15:59	62	55	**117**
16:00 - 16:14	90	43	**133**
16:15 - 16:29	65	50	**115**
16:30 - 16:44	69	36	**105**
16:45 - 16:59	63	20	**83**
17:00 - 17:14	116	28	**144**
17:15 - 17:29	87	25	**112**
17:30 - 17:44	67	20	**87**
17:45 - 17:59	56	26	**82**
18:00 - 18:14	54	20	**74**
18:15 - 18:29	24	9	**33**
18:30 - 18:44	33	9	**42**
18:45 - 18:59	18	14	**32**
19:00 - 19:14	21	7	**28**
19:15 - 19:29	22	16	**38**
19:30 - 19:44	23	11	**34**
19:45 - 19:59	18	4	**22**
20:00 - 20:14	15	4	**19**
20:15 - 20:29	19	5	**24**
20:30 - 20:44	33	1	**34**
20:45 - 20:59	9	7	**16**
21:00 - 21:14	5	3	**8**
21:15 - 21:29	6	4	**10**
21:30 - 21:44	5	1	**6**
21:45 - 21:59	1	3	**4**
22:00 - 22:14	5	3	**8**
22:15 - 22:29	4	1	**5**
22:30 - 22:44	2	3	**5**
22:45 - 22:59	3	4	**7**
23:00 - 23:14	12	11	**23**
23:15 - 23:29	60	8	**68**
23:30 - 23:44	16	3	**19**
23:45 - 23:59	2	2	**4**
Totals	**2689**	**2786**	**5475**
AM Peak Time	**10:56 - 11:55**	**07:50 - 08:49**	**07:51 - 08:50**
AM Peak Volume	**169**	**305**	**429**
PM Peak Time	**16:51 - 17:50**	**14:03 - 15:02**	**15:28 - 16:27**
PM Peak Volume	**347**	**283**	**517**

Daily Vehicle Volume Report

Study Date: Thursday, 03/02/2023
Unit ID:
Location: 1600 North Location

Daily Eastbound Classes Report

Study Date: Thursday, 03/02/2023
Unit ID:
Location: 1600 North Location

	#1	#2	#3	#4	#5	#6	#7	#8	#9	#10	#11	#12	#13	Total
00:00 - 00:14	0	4	0	0	0	0	0	0	0	0	0	0	0	**4**
00:15 - 00:29	0	4	0	0	0	0	0	0	0	0	0	0	0	**4**
00:30 - 00:44	0	1	0	0	0	0	0	0	0	0	0	0	0	**1**
00:45 - 00:59	0	4	0	0	2	0	0	0	0	0	0	0	0	**6**
01:00 - 01:14	0	1	0	0	0	0	0	0	0	0	0	0	0	**1**
01:15 - 01:29	0	3	0	0	0	0	0	0	0	0	0	0	0	**3**
01:30 - 01:44	0	7	0	0	0	0	0	0	0	0	0	0	0	**7**
01:45 - 01:59	0	1	0	0	0	0	0	0	0	0	1	0	0	**2**
02:00 - 02:14	0	2	0	0	0	0	0	0	0	0	1	0	0	**3**
02:15 - 02:29	0	13	1	0	0	0	0	0	0	0	0	0	0	**14**
02:30 - 02:44	0	1	0	0	0	0	0	0	0	0	1	0	0	**2**
02:45 - 02:59	0	2	0	0	0	0	0	0	0	0	0	0	0	**2**
03:00 - 03:14	0	11	1	0	0	0	0	0	0	0	0	0	0	**12**
03:15 - 03:29	0	12	1	0	0	0	0	1	0	0	0	0	0	**14**
03:30 - 03:44	0	6	1	0	1	0	0	0	0	0	0	0	0	**8**
03:45 - 03:59	0	2	0	0	0	0	0	0	0	0	0	0	0	**2**
04:00 - 04:14	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
04:15 - 04:29	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
04:30 - 04:44	0	1	0	0	0	0	0	0	0	0	0	0	0	**1**
04:45 - 04:59	0	3	0	0	0	0	0	0	0	0	0	0	0	**3**
05:00 - 05:14	0	2	0	0	0	0	0	0	0	0	1	0	0	**3**
05:15 - 05:29	0	3	1	1	2	0	0	0	0	0	0	0	0	**7**
05:30 - 05:44	0	4	0	0	0	0	0	0	0	0	0	0	0	**4**
05:45 - 05:59	0	22	0	0	1	0	0	0	0	0	0	0	0	**23**
06:00 - 06:14	0	5	0	0	2	1	0	1	0	0	0	0	0	**9**
06:15 - 06:29	0	2	2	0	1	0	0	0	0	0	0	0	0	**5**
06:30 - 06:44	0	5	0	0	2	0	0	0	0	0	0	0	0	**7**
06:45 - 06:59	4	7	1	0	0	0	0	2	0	0	0	0	0	**14**
07:00 - 07:14	2	19	2	0	5	2	0	0	0	0	0	0	0	**30**
07:15 - 07:29	0	23	7	1	5	0	0	0	0	1	0	1	1	**39**
07:30 - 07:44	3	16	3	2	11	0	2	0	0	1	0	0	2	**40**
07:45 - 07:59	0	13	3	0	14	1	0	1	1	0	0	0	0	**33**
08:00 - 08:14	0	8	4	0	19	0	0	0	0	0	0	0	0	**31**
08:15 - 08:29	0	7	2	1	14	0	0	0	0	0	0	0	2	**26**
08:30 - 08:44	0	9	6	0	11	0	0	2	0	0	0	0	3	**31**
08:45 - 08:59	0	5	6	4	17	0	0	2	1	0	0	1	1	**37**
09:00 - 09:14	0	10	6	2	11	0	0	1	0	0	0	0	2	**32**
09:15 - 09:29	0	6	4	1	17	0	0	0	2	0	0	1	1	**32**
09:30 - 09:44	0	10	3	2	13	0	0	3	0	0	0	0	0	**31**
09:45 - 09:59	0	13	3	2	10	0	0	1	0	1	0	0	1	**31**
10:00 - 10:14	0	12	3	1	8	2	1	1	0	0	0	1	0	**29**
10:15 - 10:29	0	12	8	2	5	0	0	3	1	0	0	0	2	**33**
10:30 - 10:44	0	13	4	2	8	1	0	2	1	1	0	0	0	**32**
10:45 - 10:59	0	10	5	1	9	1	0	2	0	0	0	0	0	**28**
11:00 - 11:14	0	29	9	0	11	0	0	2	0	0	0	1	1	**53**
11:15 - 11:29	0	11	4	0	9	0	1	3	0	0	0	0	0	**28**
11:30 - 11:44	0	16	4	3	13	1	0	3	1	0	0	0	0	**41**
11:45 - 11:59	0	27	5	0	9	0	0	1	1	1	0	0	1	**45**
12:00 - 12:14	0	30	7	1	13	0	0	1	0	0	0	0	1	**53**
12:15 - 12:29	7	22	4	1	13	0	0	1	0	0	0	1	1	**50**
12:30 - 12:44	0	21	5	1	5	0	0	4	1	0	0	0	1	**38**
12:45 - 12:59	1	28	4	2	10	1	0	0	1	0	0	0	0	**47**

Daily Eastbound Classes Report

Study Date: Thursday, 03/02/2023
Unit ID:
Location: 1600 North Location

	#1	#2	#3	#4	#5	#6	#7	#8	#9	#10	#11	#12	#13	Total
13:00 - 13:14	0	30	4	0	15	0	0	1	1	1	0	0	1	**53**
13:15 - 13:29	1	13	8	1	2	1	0	2	1	1	0	1	0	**31**
13:30 - 13:44	2	17	2	2	9	1	0	2	0	0	1	0	0	**36**
13:45 - 13:59	1	19	2	3	12	1	1	2	0	1	0	1	1	**44**
14:00 - 14:14	0	18	6	2	8	1	0	1	2	0	0	0	0	**38**
14:15 - 14:29	0	26	9	0	9	0	0	1	0	0	0	0	0	**45**
14:30 - 14:44	4	52	6	0	10	2	0	1	0	1	0	0	0	**76**
14:45 - 14:59	3	11	4	0	3	0	0	0	0	0	0	0	1	**22**
15:00 - 15:14	0	50	8	1	8	1	0	2	0	0	0	0	1	**71**
15:15 - 15:29	1	32	3	0	14	3	0	0	0	0	0	0	0	**53**
15:30 - 15:44	0	83	8	2	8	0	0	3	0	0	0	0	0	**104**
15:45 - 15:59	0	45	4	1	11	0	0	1	0	0	0	0	0	**62**
16:00 - 16:14	0	71	8	0	8	2	0	1	0	0	0	0	0	**90**
16:15 - 16:29	2	39	10	1	12	0	0	1	0	0	0	0	0	**65**
16:30 - 16:44	0	46	6	1	12	2	0	2	0	0	0	0	0	**69**
16:45 - 16:59	0	42	11	0	10	0	0	0	0	0	0	0	0	**63**
17:00 - 17:14	1	86	12	0	16	0	0	0	1	0	0	0	0	**116**
17:15 - 17:29	0	52	14	1	19	0	0	0	1	0	0	0	0	**87**
17:30 - 17:44	0	48	7	0	11	0	0	1	0	0	0	0	0	**67**
17:45 - 17:59	0	37	6	1	12	0	0	0	0	0	0	0	0	**56**
18:00 - 18:14	0	37	8	0	7	0	0	2	0	0	0	0	0	**54**
18:15 - 18:29	0	17	2	0	4	0	0	0	1	0	0	0	0	**24**
18:30 - 18:44	0	22	8	0	3	0	0	0	0	0	0	0	0	**33**
18:45 - 18:59	0	10	6	0	1	0	0	0	0	0	1	0	0	**18**
19:00 - 19:14	0	16	1	0	3	0	0	1	0	0	0	0	0	**21**
19:15 - 19:29	0	16	3	0	3	0	0	0	0	0	0	0	0	**22**
19:30 - 19:44	0	14	5	0	2	1	0	1	0	0	0	0	0	**23**
19:45 - 19:59	0	11	5	1	1	0	0	0	0	0	0	0	0	**18**
20:00 - 20:14	0	9	2	1	1	0	0	2	0	0	0	0	0	**15**
20:15 - 20:29	0	14	2	0	3	0	0	0	0	0	0	0	0	**19**
20:30 - 20:44	0	28	3	0	1	0	0	0	0	0	0	1	0	**33**
20:45 - 20:59	0	9	0	0	0	0	0	0	0	0	0	0	0	**9**
21:00 - 21:14	0	4	0	0	0	0	0	1	0	0	0	0	0	**5**
21:15 - 21:29	0	5	0	0	0	0	0	0	0	0	1	0	0	**6**
21:30 - 21:44	0	2	0	0	2	0	0	0	0	0	1	0	0	**5**
21:45 - 21:59	0	0	0	0	1	0	0	0	0	0	0	0	0	**1**
22:00 - 22:14	0	1	2	0	2	0	0	0	0	0	0	0	0	**5**
22:15 - 22:29	0	0	0	1	1	0	0	1	0	0	1	0	0	**4**
22:30 - 22:44	0	1	0	0	1	0	0	0	0	0	0	0	0	**2**
22:45 - 22:59	0	3	0	0	0	0	0	0	0	0	0	0	0	**3**
23:00 - 23:14	0	10	1	0	1	0	0	0	0	0	0	0	0	**12**
23:15 - 23:29	0	57	2	0	0	0	0	1	0	0	0	0	0	**60**
23:30 - 23:44	0	15	1	0	0	0	0	0	0	0	0	0	0	**16**
23:45 - 23:59	0	2	0	0	0	0	0	0	0	0	0	0	0	**2**
Totals	**32**	**1618**	**308**	**49**	**517**	**25**	**5**	**67**	**17**	**9**	**9**	**9**	**24**	**2689**
Percent of Total	**1.2**	**60.2**	**11.5**	**1.8**	**19.2**	**0.9**	**0.2**	**2.5**	**0.6**	**0.3**	**0.3**	**0.3**	**0.9**	**100**
Percent of AM	**1.1**	**47.1**	**11.7**	**3.0**	**27.3**	**1.1**	**0.5**	**3.7**	**0.9**	**0.6**	**0.5**	**0.6**	**2.0**	**100**
Percent of PM	**1.2**	**66.1**	**11.3**	**1.3**	**15.5**	**0.9**	**0.1**	**2.0**	**0.5**	**0.2**	**0.3**	**0.2**	**0.4**	**100**

Daily Eastbound Classes Report

Study Date: Thursday, 03/02/2023
Unit ID:
Location: 1600 North Location

Truck Summary:

Total Trucks: 731 % Trucks: 27.2 AM % Trucks: 40.1 PM % Trucks: 21.3

Classification Scheme: FHWA (ID: 1)

#1	Motorcycles - 2 Axles	#6	Single Unit Truck - 3 Axles	#11	Multi-Unit - 5 Axles or Less
#2	Passenger Cars - 2 Axles	#7	Single Unit - 4 Axles	#12	Multi-Unit - 6 Axles
#3	Pickup Trucks, Vans - 2 Axles	#8	Single Unit - 4 Axles or Less	#13	Multi-Unit - 7 Axles or More
#4	Buses	#9	Double Unit - 5 Axles		
#5	Single Unit - 2 Axles, 6 Tires	#10	Double Unit - 6 Axles or More		

Daily Westbound Classes Report

Study Date: Thursday, 03/02/2023
Unit ID:
Location: 1600 North Location

	#1	#2	#3	#4	#5	#6	#7	#8	#9	#10	#11	#12	#13	Total
00:00 - 00:14	0	2	0	0	1	0	0	0	0	0	0	0	0	**3**
00:15 - 00:29	0	1	2	0	0	0	0	0	0	0	0	0	0	**3**
00:30 - 00:44	0	1	0	0	1	0	0	0	0	0	0	0	0	**2**
00:45 - 00:59	0	0	0	0	1	0	0	0	1	0	0	0	0	**2**
01:00 - 01:14	0	1	0	0	1	0	0	0	0	0	0	0	0	**2**
01:15 - 01:29	0	3	0	0	0	0	0	1	0	0	1	0	0	**5**
01:30 - 01:44	0	3	0	1	0	0	0	0	0	0	0	0	0	**4**
01:45 - 01:59	0	1	0	0	0	0	0	1	0	0	1	0	0	**3**
02:00 - 02:14	0	2	0	0	0	0	0	0	0	0	0	0	0	**2**
02:15 - 02:29	0	2	0	0	0	0	0	0	0	0	1	0	0	**3**
02:30 - 02:44	0	6	0	0	0	0	0	0	0	0	0	0	0	**6**
02:45 - 02:59	0	28	3	0	0	0	0	0	0	0	0	0	0	**31**
03:00 - 03:14	0	4	1	0	0	0	0	0	0	0	0	0	0	**5**
03:15 - 03:29	0	2	0	0	1	0	0	0	0	0	0	0	0	**3**
03:30 - 03:44	0	10	1	0	0	0	0	0	0	0	0	0	0	**11**
03:45 - 03:59	0	7	0	0	1	0	0	0	0	0	0	0	0	**8**
04:00 - 04:14	0	3	0	0	0	0	0	0	0	0	0	0	0	**3**
04:15 - 04:29	0	8	1	0	1	0	0	0	0	0	0	0	0	**10**
04:30 - 04:44	0	24	2	0	0	0	0	0	0	0	1	0	0	**27**
04:45 - 04:59	0	36	1	0	0	0	0	0	0	0	0	0	0	**37**
05:00 - 05:14	0	10	4	0	0	0	0	0	0	0	0	0	0	**14**
05:15 - 05:29	0	25	0	0	0	0	0	0	0	0	0	0	0	**25**
05:30 - 05:44	0	43	5	0	0	0	0	0	0	0	0	0	0	**48**
05:45 - 05:59	0	72	7	0	6	0	0	0	0	0	0	0	0	**85**
06:00 - 06:14	0	32	4	0	5	1	0	0	0	0	0	0	0	**42**
06:15 - 06:29	0	16	0	0	7	0	0	0	0	0	0	0	0	**23**
06:30 - 06:44	0	30	8	0	9	0	0	0	0	0	0	0	0	**47**
06:45 - 06:59	1	73	13	2	15	0	0	0	0	0	0	0	0	**104**
07:00 - 07:14	0	26	5	2	6	0	0	2	0	0	0	0	0	**41**
07:15 - 07:29	1	34	6	1	12	0	0	1	0	0	0	0	0	**55**
07:30 - 07:44	0	28	6	0	4	1	0	1	0	0	0	0	0	**40**
07:45 - 07:59	0	56	10	1	8	0	0	1	0	0	0	0	0	**76**
08:00 - 08:14	0	57	8	2	10	0	0	3	1	0	0	0	0	**81**
08:15 - 08:29	0	50	8	1	13	0	0	1	0	1	0	0	0	**74**
08:30 - 08:44	0	46	5	1	11	1	0	3	1	0	0	0	1	**69**
08:45 - 08:59	0	46	7	1	17	0	0	1	1	0	0	0	0	**73**
09:00 - 09:14	0	45	4	0	14	0	1	0	0	0	0	0	0	**64**
09:15 - 09:29	1	35	7	2	13	0	0	0	0	0	0	0	0	**58**
09:30 - 09:44	1	31	4	1	11	0	0	0	1	0	0	0	0	**49**
09:45 - 09:59	0	23	3	3	8	0	0	1	2	0	0	0	0	**40**
10:00 - 10:14	0	23	11	1	9	0	0	3	3	0	0	0	1	**51**
10:15 - 10:29	0	18	2	0	7	0	0	1	1	1	0	0	0	**30**
10:30 - 10:44	0	10	4	2	9	0	0	2	2	1	0	0	0	**30**
10:45 - 10:59	0	17	2	1	8	0	0	0	2	0	0	0	0	**30**
11:00 - 11:14	0	25	4	1	7	0	0	3	0	0	0	0	0	**40**
11:15 - 11:29	1	31	6	3	12	1	0	2	1	1	0	0	0	**58**
11:30 - 11:44	0	20	3	2	11	0	0	0	0	0	0	0	0	**36**
11:45 - 11:59	0	17	2	1	5	0	0	0	1	0	0	1	0	**27**
12:00 - 12:14	0	26	2	1	6	0	0	1	0	0	0	0	0	**36**
12:15 - 12:29	0	17	2	4	9	0	0	2	0	1	0	0	0	**35**
12:30 - 12:44	0	17	5	1	16	0	0	5	0	0	0	0	1	**45**
12:45 - 12:59	1	28	5	1	10	0	0	0	0	1	0	0	0	**46**

Daily Westbound Classes Report

Study Date: Thursday, 03/02/2023
Unit ID:
Location: 1600 North Location

	#1	#2	#3	#4	#5	#6	#7	#8	#9	#10	#11	#12	#13	Total
13:00 - 13:14	0	30	7	0	9	0	0	3	0	0	0	0	0	**49**
13:15 - 13:29	0	18	8	2	7	0	0	1	0	0	0	0	0	**36**
13:30 - 13:44	0	28	6	4	13	1	0	2	0	1	0	0	0	**55**
13:45 - 13:59	2	28	7	2	13	1	0	3	2	0	0	0	0	**58**
14:00 - 14:14	0	29	5	2	10	2	0	2	2	1	0	0	0	**53**
14:15 - 14:29	0	47	4	0	9	0	0	4	1	0	0	0	0	**65**
14:30 - 14:44	0	63	6	0	13	0	0	0	1	0	0	0	0	**83**
14:45 - 14:59	0	59	1	2	5	0	0	4	2	0	0	0	0	**73**
15:00 - 15:14	1	30	6	2	4	0	1	1	1	0	0	0	0	**46**
15:15 - 15:29	0	19	4	2	7	0	0	1	0	0	0	0	0	**33**
15:30 - 15:44	1	22	6	0	6	0	0	2	0	0	0	0	0	**37**
15:45 - 15:59	0	32	4	1	16	0	0	2	0	0	0	0	0	**55**
16:00 - 16:14	0	27	4	0	9	0	1	2	0	0	0	0	0	**43**
16:15 - 16:29	0	35	5	0	9	0	0	0	1	0	0	0	0	**50**
16:30 - 16:44	0	26	4	0	5	0	0	1	0	0	0	0	0	**36**
16:45 - 16:59	0	15	4	0	1	0	0	0	0	0	0	0	0	**20**
17:00 - 17:14	0	16	2	2	8	0	0	0	0	0	0	0	0	**28**
17:15 - 17:29	0	16	2	0	6	0	0	1	0	0	0	0	0	**25**
17:30 - 17:44	0	16	1	0	2	0	0	0	1	0	0	0	0	**20**
17:45 - 17:59	0	15	3	1	6	0	0	1	0	0	0	0	0	**26**
18:00 - 18:14	1	16	3	0	0	0	0	0	0	0	0	0	0	**20**
18:15 - 18:29	0	4	2	0	2	0	0	0	0	0	1	0	0	**9**
18:30 - 18:44	0	6	1	0	2	0	0	0	0	0	0	0	0	**9**
18:45 - 18:59	0	6	1	0	3	0	0	4	0	0	0	0	0	**14**
19:00 - 19:14	0	3	2	0	2	0	0	0	0	0	0	0	0	**7**
19:15 - 19:29	1	9	2	0	4	0	0	0	0	0	0	0	0	**16**
19:30 - 19:44	0	7	1	1	1	0	0	1	0	0	0	0	0	**11**
19:45 - 19:59	0	2	0	0	1	0	0	1	0	0	0	0	0	**4**
20:00 - 20:14	0	2	0	0	1	0	0	1	0	0	0	0	0	**4**
20:15 - 20:29	0	5	0	0	0	0	0	0	0	0	0	0	0	**5**
20:30 - 20:44	0	1	0	0	0	0	0	0	0	0	0	0	0	**1**
20:45 - 20:59	0	5	0	0	0	0	0	1	0	0	1	0	0	**7**
21:00 - 21:14	0	1	0	0	2	0	0	0	0	0	0	0	0	**3**
21:15 - 21:29	0	3	1	0	0	0	0	0	0	0	0	0	0	**4**
21:30 - 21:44	0	1	0	0	0	0	0	0	0	0	0	0	0	**1**
21:45 - 21:59	0	2	0	0	1	0	0	0	0	0	0	0	0	**3**
22:00 - 22:14	0	2	0	0	0	0	0	0	0	0	1	0	0	**3**
22:15 - 22:29	0	0	1	0	0	0	0	0	0	0	0	0	0	**1**
22:30 - 22:44	0	2	0	0	0	0	0	1	0	0	0	0	0	**3**
22:45 - 22:59	0	3	0	0	1	0	0	0	0	0	0	0	0	**4**
23:00 - 23:14	0	8	2	0	0	0	0	1	0	0	0	0	0	**11**
23:15 - 23:29	0	8	0	0	0	0	0	0	0	0	0	0	0	**8**
23:30 - 23:44	0	3	0	0	0	0	0	0	0	0	0	0	0	**3**
23:45 - 23:59	0	0	0	0	0	0	0	0	0	0	1	1	0	**2**
Totals	**12**	**1841**	**278**	**57**	**463**	**8**	**3**	**75**	**28**	**8**	**8**	**2**	**3**	**2786**
Percent of Total	**0.4**	**66.1**	**10.0**	**2.0**	**16.6**	**0.3**	**0.1**	**2.7**	**1.0**	**0.3**	**0.3**	**0.1**	**0.1**	**100**
Percent of AM	**0.3**	**68.5**	**10.1**	**1.8**	**15.4**	**0.3**	**0.1**	**1.7**	**1.1**	**0.3**	**0.3**	**0.1**	**0.1**	**100**
Percent of PM	**0.6**	**62.9**	**9.9**	**2.3**	**18.2**	**0.3**	**0.2**	**4.0**	**0.9**	**0.3**	**0.3**	**0.1**	**0.1**	**100**

Daily Westbound Classes Report

Study Date: Thursday, 03/02/2023
Unit ID:
Location: 1600 North Location

Truck Summary:

Total Trucks: 655 % Trucks: 23.5 AM % Trucks: 21.1 PM % Trucks: 26.7

Classification Scheme: FHWA (ID: 1)

#1	Motorcycles - 2 Axles	#6	Single Unit Truck - 3 Axles	#11	Multi-Unit - 5 Axles or Less
#2	Passenger Cars - 2 Axles	#7	Single Unit - 4 Axles	#12	Multi-Unit - 6 Axles
#3	Pickup Trucks, Vans - 2 Axles	#8	Single Unit - 4 Axles or Less	#13	Multi-Unit - 7 Axles or More
#4	Buses	#9	Double Unit - 5 Axles		
#5	Single Unit - 2 Axles, 6 Tires	#10	Double Unit - 6 Axles or More		

Daily Total Classes Report

Study Date: Thursday, 03/02/2023
Unit ID:
Location: 1600 North Location

	#1	#2	#3	#4	#5	#6	#7	#8	#9	#10	#11	#12	#13	Total
00:00 - 00:14	0	6	0	0	1	0	0	0	0	0	0	0	0	**7**
00:15 - 00:29	0	5	2	0	0	0	0	0	0	0	0	0	0	**7**
00:30 - 00:44	0	2	0	0	1	0	0	0	0	0	0	0	0	**3**
00:45 - 00:59	0	4	0	0	3	0	0	0	1	0	0	0	0	**8**
01:00 - 01:14	0	2	0	0	1	0	0	0	0	0	0	0	0	**3**
01:15 - 01:29	0	6	0	0	0	0	0	1	0	0	1	0	0	**8**
01:30 - 01:44	0	10	0	1	0	0	0	0	0	0	0	0	0	**11**
01:45 - 01:59	0	2	0	0	0	0	0	1	0	0	2	0	0	**5**
02:00 - 02:14	0	4	0	0	0	0	0	0	0	0	1	0	0	**5**
02:15 - 02:29	0	15	1	0	0	0	0	0	0	0	1	0	0	**17**
02:30 - 02:44	0	7	0	0	0	0	0	0	0	0	1	0	0	**8**
02:45 - 02:59	0	30	3	0	0	0	0	0	0	0	0	0	0	**33**
03:00 - 03:14	0	15	2	0	0	0	0	0	0	0	0	0	0	**17**
03:15 - 03:29	0	14	1	0	1	0	0	1	0	0	0	0	0	**17**
03:30 - 03:44	0	16	2	0	1	0	0	0	0	0	0	0	0	**19**
03:45 - 03:59	0	9	0	0	1	0	0	0	0	0	0	0	0	**10**
04:00 - 04:14	0	3	0	0	0	0	0	0	0	0	0	0	0	**3**
04:15 - 04:29	0	8	1	0	1	0	0	0	0	0	0	0	0	**10**
04:30 - 04:44	0	25	2	0	0	0	0	0	0	0	1	0	0	**28**
04:45 - 04:59	0	39	1	0	0	0	0	0	0	0	0	0	0	**40**
05:00 - 05:14	0	12	4	0	0	0	0	0	0	0	1	0	0	**17**
05:15 - 05:29	0	28	1	1	2	0	0	0	0	0	0	0	0	**32**
05:30 - 05:44	0	47	5	0	0	0	0	0	0	0	0	0	0	**52**
05:45 - 05:59	0	94	7	0	7	0	0	0	0	0	0	0	0	**108**
06:00 - 06:14	0	37	4	0	7	2	0	1	0	0	0	0	0	**51**
06:15 - 06:29	0	18	2	0	8	0	0	0	0	0	0	0	0	**28**
06:30 - 06:44	0	35	8	0	11	0	0	0	0	0	0	0	0	**54**
06:45 - 06:59	5	80	14	2	15	0	0	2	0	0	0	0	0	**118**
07:00 - 07:14	2	45	7	2	11	2	0	2	0	0	0	0	0	**71**
07:15 - 07:29	1	57	13	2	17	0	0	1	0	1	0	1	1	**94**
07:30 - 07:44	3	44	9	2	15	1	2	1	0	1	0	0	2	**80**
07:45 - 07:59	0	69	13	1	22	1	0	2	1	0	0	0	0	**109**
08:00 - 08:14	0	65	12	2	29	0	0	3	1	0	0	0	0	**112**
08:15 - 08:29	0	57	10	2	27	0	0	1	0	1	0	0	2	**100**
08:30 - 08:44	0	55	11	1	22	1	0	5	1	0	0	0	4	**100**
08:45 - 08:59	0	51	13	5	34	0	0	3	2	0	0	1	1	**110**
09:00 - 09:14	0	55	10	2	25	0	1	1	0	0	0	0	2	**96**
09:15 - 09:29	1	41	11	3	30	0	0	0	2	0	0	1	1	**90**
09:30 - 09:44	1	41	7	3	24	0	0	3	1	0	0	0	0	**80**
09:45 - 09:59	0	36	6	5	18	0	0	2	2	1	0	0	1	**71**
10:00 - 10:14	0	35	14	2	17	2	1	4	3	0	0	1	1	**80**
10:15 - 10:29	0	30	10	2	12	0	0	4	2	1	0	0	2	**63**
10:30 - 10:44	0	23	8	4	17	1	0	4	3	2	0	0	0	**62**
10:45 - 10:59	0	27	7	2	17	1	0	2	2	0	0	0	0	**58**
11:00 - 11:14	0	54	13	1	18	0	0	5	0	0	0	1	1	**93**
11:15 - 11:29	1	42	10	3	21	1	1	5	1	1	0	0	0	**86**
11:30 - 11:44	0	36	7	5	24	1	0	3	1	0	0	0	0	**77**
11:45 - 11:59	0	44	7	1	14	0	0	1	2	1	0	1	1	**72**
12:00 - 12:14	0	56	9	2	19	0	0	2	0	0	0	0	1	**89**
12:15 - 12:29	7	39	6	5	22	0	0	3	0	1	0	1	1	**85**
12:30 - 12:44	0	38	10	2	21	0	0	9	1	0	0	0	2	**83**
12:45 - 12:59	2	56	9	3	20	1	0	0	1	1	0	0	0	**93**

Daily Total Classes Report

Study Date: Thursday, 03/02/2023
Unit ID:
Location: 1600 North Location

	#1	#2	#3	#4	#5	#6	#7	#8	#9	#10	#11	#12	#13	Total
13:00 - 13:14	0	60	11	0	24	0	0	4	1	1	0	0	1	**102**
13:15 - 13:29	1	31	16	3	9	1	0	3	1	1	0	1	0	**67**
13:30 - 13:44	2	45	8	6	22	2	0	4	0	1	1	0	0	**91**
13:45 - 13:59	3	47	9	5	25	2	1	5	2	1	0	1	1	**102**
14:00 - 14:14	0	47	11	4	18	3	0	3	4	1	0	0	0	**91**
14:15 - 14:29	0	73	13	0	18	0	0	5	1	0	0	0	0	**110**
14:30 - 14:44	4	115	12	0	23	2	0	1	1	1	0	0	0	**159**
14:45 - 14:59	3	70	5	2	8	0	0	4	2	0	0	0	1	**95**
15:00 - 15:14	1	80	14	3	12	1	1	3	1	0	0	0	1	**117**
15:15 - 15:29	1	51	7	2	21	3	0	1	0	0	0	0	0	**86**
15:30 - 15:44	1	105	14	2	14	0	0	5	0	0	0	0	0	**141**
15:45 - 15:59	0	77	8	2	27	0	0	3	0	0	0	0	0	**117**
16:00 - 16:14	0	98	12	0	17	2	1	3	0	0	0	0	0	**133**
16:15 - 16:29	2	74	15	1	21	0	0	1	1	0	0	0	0	**115**
16:30 - 16:44	0	72	10	1	17	2	0	3	0	0	0	0	0	**105**
16:45 - 16:59	0	57	15	0	11	0	0	0	0	0	0	0	0	**83**
17:00 - 17:14	1	102	14	2	24	0	0	0	1	0	0	0	0	**144**
17:15 - 17:29	0	68	16	1	25	0	0	1	1	0	0	0	0	**112**
17:30 - 17:44	0	64	8	0	13	0	0	1	1	0	0	0	0	**87**
17:45 - 17:59	0	52	9	2	18	0	0	1	0	0	0	0	0	**82**
18:00 - 18:14	1	53	11	0	7	0	0	2	0	0	0	0	0	**74**
18:15 - 18:29	0	21	4	0	6	0	0	0	1	0	1	0	0	**33**
18:30 - 18:44	0	28	9	0	5	0	0	0	0	0	0	0	0	**42**
18:45 - 18:59	0	16	7	0	4	0	0	4	0	0	1	0	0	**32**
19:00 - 19:14	0	19	3	0	5	0	0	1	0	0	0	0	0	**28**
19:15 - 19:29	1	25	5	0	7	0	0	0	0	0	0	0	0	**38**
19:30 - 19:44	0	21	6	1	3	1	0	2	0	0	0	0	0	**34**
19:45 - 19:59	0	13	5	1	2	0	0	1	0	0	0	0	0	**22**
20:00 - 20:14	0	11	2	1	2	0	0	3	0	0	0	0	0	**19**
20:15 - 20:29	0	19	2	0	3	0	0	0	0	0	0	0	0	**24**
20:30 - 20:44	0	29	3	0	1	0	0	0	0	0	0	1	0	**34**
20:45 - 20:59	0	14	0	0	0	0	0	1	0	0	1	0	0	**16**
21:00 - 21:14	0	5	0	0	2	0	0	1	0	0	0	0	0	**8**
21:15 - 21:29	0	8	1	0	0	0	0	0	0	0	1	0	0	**10**
21:30 - 21:44	0	3	0	0	2	0	0	0	0	0	1	0	0	**6**
21:45 - 21:59	0	2	0	0	2	0	0	0	0	0	0	0	0	**4**
22:00 - 22:14	0	3	2	0	2	0	0	0	0	0	1	0	0	**8**
22:15 - 22:29	0	0	1	1	1	0	0	1	0	0	1	0	0	**5**
22:30 - 22:44	0	3	0	0	1	0	0	1	0	0	0	0	0	**5**
22:45 - 22:59	0	6	0	0	1	0	0	0	0	0	0	0	0	**7**
23:00 - 23:14	0	18	3	0	1	0	0	1	0	0	0	0	0	**23**
23:15 - 23:29	0	65	2	0	0	0	0	1	0	0	0	0	0	**68**
23:30 - 23:44	0	18	1	0	0	0	0	0	0	0	0	0	0	**19**
23:45 - 23:59	0	2	0	0	0	0	0	0	0	0	1	1	0	**4**
Totals	**44**	**3459**	**586**	**106**	**980**	**33**	**8**	**142**	**45**	**17**	**17**	**11**	**27**	**5475**
Percent of Total	**0.8**	**63.2**	**10.7**	**1.9**	**17.9**	**0.6**	**0.1**	**2.6**	**0.8**	**0.3**	**0.3**	**0.2**	**0.5**	**100**
Percent of AM	**0.6**	**61.1**	**10.6**	**2.2**	**19.6**	**0.5**	**0.2**	**2.4**	**1.0**	**0.4**	**0.3**	**0.2**	**0.8**	**100**
Percent of PM	**1.0**	**64.8**	**10.7**	**1.7**	**16.6**	**0.7**	**0.1**	**2.8**	**0.7**	**0.3**	**0.3**	**0.2**	**0.3**	**100**

Daily Total Classes Report

Study Date: Thursday, 03/02/2023
Unit ID:
Location: 1600 North Location

Truck Summary:

Total Trucks: 1386 % Trucks: 25.3 AM % Trucks: 27.7 PM % Trucks: 23.4

Classification Scheme: FHWA (ID: 1)

#1	Motorcycles - 2 Axles	#6	Single Unit Truck - 3 Axles	#11	Multi-Unit - 5 Axles or Less
#2	Passenger Cars - 2 Axles	#7	Single Unit - 4 Axles	#12	Multi-Unit - 6 Axles
#3	Pickup Trucks, Vans - 2 Axles	#8	Single Unit - 4 Axles or Less	#13	Multi-Unit - 7 Axles or More
#4	Buses	#9	Double Unit - 5 Axles		
#5	Single Unit - 2 Axles, 6 Tires	#10	Double Unit - 6 Axles or More		

Daily Eastbound Speeds (MPH)

Study Date: Thursday, 03/02/2023
Unit ID:
Location: 1600 North Location

Posted Speed: 25

	5-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-99	Total
00:00 - 00:14	0	0	1	0	1	2	0	0	0	0	0	0	0	0	0	**4**
00:15 - 00:29	0	0	0	1	0	0	2	1	0	0	0	0	0	0	0	**4**
00:30 - 00:44	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	**1**
00:45 - 00:59	0	0	0	0	0	3	2	1	0	0	0	0	0	0	0	**6**
01:00 - 01:14	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	**1**
01:15 - 01:29	0	0	0	0	0	1	1	1	0	0	0	0	0	0	0	**3**
01:30 - 01:44	0	0	3	1	1	1	1	0	0	0	0	0	0	0	0	**7**
01:45 - 01:59	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	**2**
02:00 - 02:14	0	0	0	0	0	1	0	2	0	0	0	0	0	0	0	**3**
02:15 - 02:29	0	0	0	1	3	3	4	2	1	0	0	0	0	0	0	**14**
02:30 - 02:44	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	**2**
02:45 - 02:59	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	**2**
03:00 - 03:14	0	0	6	1	1	2	2	0	0	0	0	0	0	0	0	**12**
03:15 - 03:29	0	0	8	5	0	1	0	0	0	0	0	0	0	0	0	**14**
03:30 - 03:44	0	0	4	0	2	1	1	0	0	0	0	0	0	0	0	**8**
03:45 - 03:59	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	**2**
04:00 - 04:14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
04:15 - 04:29	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
04:30 - 04:44	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	**1**
04:45 - 04:59	0	0	0	0	2	0	1	0	0	0	0	0	0	0	0	**3**
05:00 - 05:14	0	0	0	1	2	0	0	0	0	0	0	0	0	0	0	**3**
05:15 - 05:29	0	0	0	1	1	3	2	0	0	0	0	0	0	0	0	**7**
05:30 - 05:44	0	0	0	1	1	1	1	0	0	0	0	0	0	0	0	**4**
05:45 - 05:59	0	0	0	0	6	12	4	1	0	0	0	0	0	0	0	**23**
06:00 - 06:14	0	0	0	2	4	1	2	0	0	0	0	0	0	0	0	**9**
06:15 - 06:29	0	1	0	0	2	0	0	2	0	0	0	0	0	0	0	**5**
06:30 - 06:44	0	0	0	0	0	5	1	1	0	0	0	0	0	0	0	**7**
06:45 - 06:59	1	0	1	0	3	4	1	0	1	0	0	0	0	0	0	**11**
07:00 - 07:14	0	0	1	4	10	7	4	2	0	0	0	0	0	0	0	**28**
07:15 - 07:29	0	0	2	6	10	11	8	2	0	0	0	0	0	0	0	**39**
07:30 - 07:44	0	1	0	15	6	13	3	1	1	0	0	0	0	0	0	**40**
07:45 - 07:59	0	0	0	5	11	11	2	3	1	0	0	0	0	0	0	**33**
08:00 - 08:14	0	0	0	4	5	17	4	0	0	0	0	0	1	0	0	**31**
08:15 - 08:29	0	1	2	3	10	5	5	0	0	0	0	0	0	0	0	**26**
08:30 - 08:44	0	0	1	9	4	11	5	1	0	0	0	0	0	0	0	**31**
08:45 - 08:59	0	0	1	7	8	14	6	0	1	0	0	0	0	0	0	**37**
09:00 - 09:14	0	1	1	2	15	6	5	1	0	0	0	1	0	0	0	**32**
09:15 - 09:29	0	2	1	4	13	7	3	1	0	1	0	0	0	0	0	**32**
09:30 - 09:44	0	0	2	3	6	12	6	2	0	0	0	0	0	0	0	**31**
09:45 - 09:59	0	0	4	2	13	8	4	0	0	0	0	0	0	0	0	**31**
10:00 - 10:14	0	0	2	5	7	5	2	5	3	0	0	0	0	0	0	**29**
10:15 - 10:29	0	1	2	5	12	9	3	1	0	0	0	0	0	0	0	**33**
10:30 - 10:44	0	0	3	5	7	11	4	2	0	0	0	0	0	0	0	**32**
10:45 - 10:59	0	0	2	3	7	8	5	3	0	0	0	0	0	0	0	**28**
11:00 - 11:14	1	1	0	3	14	18	9	6	0	0	1	0	0	0	0	**53**
11:15 - 11:29	0	0	2	0	10	6	8	1	1	0	0	0	0	0	0	**28**
11:30 - 11:44	0	1	2	1	16	8	9	3	1	0	0	0	0	0	0	**41**
11:45 - 11:59	0	3	3	4	10	12	8	4	0	1	0	0	0	0	0	**45**
12:00 - 12:14	0	0	1	5	12	18	13	2	1	0	1	0	0	0	0	**53**
12:15 - 12:29	4	1	0	6	16	13	3	2	2	0	0	0	0	0	0	**47**
12:30 - 12:44	0	0	2	5	8	14	6	3	0	0	0	0	0	0	0	**38**

Daily Eastbound Speeds (MPH)

Study Date: Thursday, 03/02/2023
Unit ID:
Location: 1600 North Location

Posted Speed: 25

	5-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-99	Total
12:45 - 12:59	0	1	0	2	17	16	8	3	0	0	0	0	0	0	0	**47**
13:00 - 13:14	0	1	3	15	14	15	4	0	1	0	0	0	0	0	0	**53**
13:15 - 13:29	0	2	0	4	9	4	6	4	0	1	0	0	0	0	0	**30**
13:30 - 13:44	0	0	0	5	11	14	5	1	0	0	0	0	0	0	0	**36**
13:45 - 13:59	1	0	1	5	16	9	9	1	1	0	0	0	0	0	0	**43**
14:00 - 14:14	0	2	2	7	5	11	8	2	1	0	0	0	0	0	0	**38**
14:15 - 14:29	0	0	0	7	12	15	8	3	0	0	0	0	0	0	0	**45**
14:30 - 14:44	6	10	6	13	13	15	8	4	0	0	0	0	0	0	0	**75**
14:45 - 14:59	4	1	1	0	6	7	1	0	0	0	0	0	0	0	0	**20**
15:00 - 15:14	0	0	4	13	22	19	10	3	0	0	0	0	0	0	0	**71**
15:15 - 15:29	0	1	4	3	8	19	13	4	0	0	0	0	0	0	0	**52**
15:30 - 15:44	0	5	15	23	34	20	6	1	0	0	0	0	0	0	0	**104**
15:45 - 15:59	0	0	0	4	17	28	9	2	1	0	0	0	0	0	1	**62**
16:00 - 16:14	12	6	6	21	20	20	4	1	0	0	0	0	0	0	0	**90**
16:15 - 16:29	2	0	2	5	17	26	12	1	0	0	0	0	0	0	0	**65**
16:30 - 16:44	14	5	12	8	9	7	9	5	0	0	0	0	0	0	0	**69**
16:45 - 16:59	4	2	5	20	13	15	4	0	0	0	0	0	0	0	0	**63**
17:00 - 17:14	2	5	23	27	40	15	3	0	1	0	0	0	0	0	0	**116**
17:15 - 17:29	0	5	7	10	37	23	5	0	0	0	0	0	0	0	0	**87**
17:30 - 17:44	0	0	0	3	17	21	20	5	1	0	0	0	0	0	0	**67**
17:45 - 17:59	0	0	0	2	10	14	22	8	0	0	0	0	0	0	0	**56**
18:00 - 18:14	0	0	0	2	12	23	17	0	0	0	0	0	0	0	0	**54**
18:15 - 18:29	0	0	2	1	7	5	4	5	0	0	0	0	0	0	0	**24**
18:30 - 18:44	0	0	0	0	7	13	9	3	0	0	1	0	0	0	0	**33**
18:45 - 18:59	0	0	0	2	2	12	1	0	0	1	0	0	0	0	0	**18**
19:00 - 19:14	0	0	1	1	10	2	4	3	0	0	0	0	0	0	0	**21**
19:15 - 19:29	0	0	0	1	7	10	1	2	1	0	0	0	0	0	0	**22**
19:30 - 19:44	0	0	0	2	3	6	10	1	1	0	0	0	0	0	0	**23**
19:45 - 19:59	0	0	0	2	5	5	3	3	0	0	0	0	0	0	0	**18**
20:00 - 20:14	0	0	0	2	1	7	2	3	0	0	0	0	0	0	0	**15**
20:15 - 20:29	0	0	0	0	4	8	4	3	0	0	0	0	0	0	0	**19**
20:30 - 20:44	0	0	0	5	8	11	6	1	2	0	0	0	0	0	0	**33**
20:45 - 20:59	0	0	0	0	4	3	2	0	0	0	0	0	0	0	0	**9**
21:00 - 21:14	0	0	1	0	1	1	1	0	1	0	0	0	0	0	0	**5**
21:15 - 21:29	0	0	0	0	0	3	2	1	0	0	0	0	0	0	0	**6**
21:30 - 21:44	0	0	0	0	2	2	1	0	0	0	0	0	0	0	0	**5**
21:45 - 21:59	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	**1**
22:00 - 22:14	0	0	0	1	1	1	2	0	0	0	0	0	0	0	0	**5**
22:15 - 22:29	0	0	0	1	3	0	0	0	0	0	0	0	0	0	0	**4**
22:30 - 22:44	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	**2**
22:45 - 22:59	0	0	0	0	0	2	1	0	0	0	0	0	0	0	0	**3**
23:00 - 23:14	0	0	0	0	5	3	3	0	0	1	0	0	0	0	0	**12**
23:15 - 23:29	0	0	2	6	25	17	7	3	0	0	0	0	0	0	0	**60**
23:30 - 23:44	0	0	0	1	4	6	3	2	0	0	0	0	0	0	0	**16**
23:45 - 23:59	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	**2**
Totals	**51**	**59**	**154**	**346**	**720**	**763**	**410**	**135**	**25**	**6**	**3**	**1**	**1**	**0**	**1**	**2675**
Percent of Total	**1.9**	**2.2**	**5.8**	**12.9**	**26.9**	**28.5**	**15.3**	**5.0**	**0.9**	**0.2**	**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**100**
Percent of AM	**0.2**	**1.4**	**6.4**	**12.6**	**27.0**	**29.1**	**15.4**	**5.8**	**1.3**	**0.2**	**0.1**	**0.1**	**0.1**	**0.0**	**0.0**	**100**
Percent of PM	**2.7**	**2.6**	**5.4**	**13.1**	**26.9**	**28.3**	**15.3**	**4.7**	**0.8**	**0.2**	**0.1**	**0.0**	**0.0**	**0.0**	**0.1**	**100**

Daily Eastbound Speeds (MPH)

Study Date: Thursday, 03/02/2023
Unit ID:
Location: 1600 North Location

Posted Speed: 25

Standard Deviation:	8.0 MPH	Ten Mile Pace:	30 to 39 MPH	85th Percentile:	42.2 MPH
Mean Speed:	34.6 MPH	Percent in Ten Mile Pace:	55.4%		
Median Speed:	35.0 MPH			15th Percentile:	27.0 MPH
Modal Speed:	37.5 MPH			90th Percentile:	43.8 MPH
				95th Percentile:	46.4 MPH

Daily Westbound Speeds (MPH)

Study Date: Thursday, 03/02/2023
Unit ID:
Location: 1600 North Location
Posted Speed: 25

	5-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-99	Total
00:00 - 00:14	0	0	0	0	2	1	0	0	0	0	0	0	0	0	0	**3**
00:15 - 00:29	0	0	0	0	1	1	0	1	0	0	0	0	0	0	0	**3**
00:30 - 00:44	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	**2**
00:45 - 00:59	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	**2**
01:00 - 01:14	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	**2**
01:15 - 01:29	0	0	0	0	1	3	0	1	0	0	0	0	0	0	0	**5**
01:30 - 01:44	0	0	0	0	2	1	0	1	0	0	0	0	0	0	0	**4**
01:45 - 01:59	0	0	0	0	1	1	1	0	0	0	0	0	0	0	0	**3**
02:00 - 02:14	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	**2**
02:15 - 02:29	0	0	0	0	0	1	2	0	0	0	0	0	0	0	0	**3**
02:30 - 02:44	0	0	0	0	4	1	1	0	0	0	0	0	0	0	0	**6**
02:45 - 02:59	0	0	0	2	9	2	15	2	1	0	0	0	0	0	0	**31**
03:00 - 03:14	0	0	0	1	0	2	1	1	0	0	0	0	0	0	0	**5**
03:15 - 03:29	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	**3**
03:30 - 03:44	0	0	0	1	2	1	4	1	1	1	0	0	0	0	0	**11**
03:45 - 03:59	0	0	0	0	3	2	1	0	2	0	0	0	0	0	0	**8**
04:00 - 04:14	0	0	0	0	2	1	0	0	0	0	0	0	0	0	0	**3**
04:15 - 04:29	0	0	0	2	1	4	3	0	0	0	0	0	0	0	0	**10**
04:30 - 04:44	0	0	0	3	6	9	8	1	0	0	0	0	0	0	0	**27**
04:45 - 04:59	0	0	1	1	13	11	10	1	0	0	0	0	0	0	0	**37**
05:00 - 05:14	0	0	0	3	2	3	3	3	0	0	0	0	0	0	0	**14**
05:15 - 05:29	0	0	1	7	5	9	3	0	0	0	0	0	0	0	0	**25**
05:30 - 05:44	0	0	2	5	7	22	11	0	1	0	0	0	0	0	0	**48**
05:45 - 05:59	0	0	5	10	23	31	15	0	1	0	0	0	0	0	0	**85**
06:00 - 06:14	0	1	1	2	12	9	12	1	3	1	0	0	0	0	0	**42**
06:15 - 06:29	0	0	0	0	5	9	9	0	0	0	0	0	0	0	0	**23**
06:30 - 06:44	0	0	0	1	18	12	12	4	0	0	0	0	0	0	0	**47**
06:45 - 06:59	0	0	1	10	37	33	16	7	0	0	0	0	0	0	0	**104**
07:00 - 07:14	0	0	0	6	9	8	10	7	0	0	1	0	0	0	0	**41**
07:15 - 07:29	0	0	0	6	10	25	11	3	0	0	0	0	0	0	0	**55**
07:30 - 07:44	0	0	0	1	5	16	14	4	0	0	0	0	0	0	0	**40**
07:45 - 07:59	0	0	0	0	16	39	18	1	2	0	0	0	0	0	0	**76**
08:00 - 08:14	0	0	0	6	26	34	12	2	1	0	0	0	0	0	0	**81**
08:15 - 08:29	0	0	0	2	18	29	19	5	0	0	1	0	0	0	0	**74**
08:30 - 08:44	0	1	1	3	17	30	14	3	0	0	0	0	0	0	0	**69**
08:45 - 08:59	0	0	2	10	20	27	11	2	0	1	0	0	0	0	0	**73**
09:00 - 09:14	0	0	0	3	14	29	16	1	1	0	0	0	0	0	0	**64**
09:15 - 09:29	1	1	1	12	7	20	11	1	3	0	0	0	1	0	0	**58**
09:30 - 09:44	0	0	0	2	15	21	6	4	1	0	0	0	0	0	0	**49**
09:45 - 09:59	0	0	0	2	13	15	7	1	2	0	0	0	0	0	0	**40**
10:00 - 10:14	0	0	0	7	9	23	10	0	1	0	0	0	0	0	1	**51**
10:15 - 10:29	0	0	1	6	9	5	3	6	0	0	0	0	0	0	0	**30**
10:30 - 10:44	1	1	2	3	11	6	5	1	0	0	0	0	0	0	0	**30**
10:45 - 10:59	0	0	2	1	7	10	9	1	0	0	0	0	0	0	0	**30**
11:00 - 11:14	0	0	0	6	12	14	6	0	2	0	0	0	0	0	0	**40**
11:15 - 11:29	0	1	3	7	22	13	10	1	1	0	0	0	0	0	0	**58**
11:30 - 11:44	0	0	0	6	6	9	12	3	0	0	0	0	0	0	0	**36**
11:45 - 11:59	0	0	0	3	6	12	6	0	0	0	0	0	0	0	0	**27**
12:00 - 12:14	0	0	1	2	5	19	8	1	0	0	0	0	0	0	0	**36**
12:15 - 12:29	0	0	0	8	10	9	5	2	0	1	0	0	0	0	0	**35**
12:30 - 12:44	0	0	0	10	14	9	9	3	0	0	0	0	0	0	0	**45**

Daily Westbound Speeds (MPH)

Study Date: Thursday, 03/02/2023
Unit ID:
Location: 1600 North Location

Posted Speed: 25

	5-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-99	Total
12:45 - 12:59	0	0	3	3	15	14	7	4	0	0	0	0	0	0	0	**46**
13:00 - 13:14	0	0	0	10	16	6	12	5	0	0	0	0	0	0	0	**49**
13:15 - 13:29	0	0	0	2	8	16	9	1	0	0	0	0	0	0	0	**36**
13:30 - 13:44	0	0	4	1	22	16	8	4	0	0	0	0	0	0	0	**55**
13:45 - 13:59	1	1	6	23	13	8	4	2	0	0	0	0	0	0	0	**58**
14:00 - 14:14	0	0	1	13	14	19	5	1	0	0	0	0	0	0	0	**53**
14:15 - 14:29	0	0	0	13	24	17	7	2	1	0	0	0	1	0	0	**65**
14:30 - 14:44	0	0	3	6	33	26	14	1	0	0	0	0	0	0	0	**83**
14:45 - 14:59	0	0	0	5	31	26	8	3	0	0	0	0	0	0	0	**73**
15:00 - 15:14	1	1	3	4	14	12	8	2	1	0	0	0	0	0	0	**46**
15:15 - 15:29	0	0	0	3	6	13	7	4	0	0	0	0	0	0	0	**33**
15:30 - 15:44	0	0	0	0	15	13	7	2	0	0	0	0	0	0	0	**37**
15:45 - 15:59	0	0	4	5	12	21	13	0	0	0	0	0	0	0	0	**55**
16:00 - 16:14	0	1	7	9	16	6	2	2	0	0	0	0	0	0	0	**43**
16:15 - 16:29	0	1	8	12	13	8	6	2	0	0	0	0	0	0	0	**50**
16:30 - 16:44	1	1	2	8	11	10	2	1	0	0	0	0	0	0	0	**36**
16:45 - 16:59	0	0	0	1	4	10	3	2	0	0	0	0	0	0	0	**20**
17:00 - 17:14	0	0	0	1	7	12	7	1	0	0	0	0	0	0	0	**28**
17:15 - 17:29	0	0	0	3	8	8	5	0	1	0	0	0	0	0	0	**25**
17:30 - 17:44	0	0	0	1	1	7	6	4	1	0	0	0	0	0	0	**20**
17:45 - 17:59	0	0	0	2	3	12	6	1	1	1	0	0	0	0	0	**26**
18:00 - 18:14	1	0	0	0	6	7	6	0	0	0	0	0	0	0	0	**20**
18:15 - 18:29	0	0	0	0	1	4	3	1	0	0	0	0	0	0	0	**9**
18:30 - 18:44	0	0	0	2	2	5	0	0	0	0	0	0	0	0	0	**9**
18:45 - 18:59	0	0	0	0	4	6	3	0	1	0	0	0	0	0	0	**14**
19:00 - 19:14	0	0	1	0	3	2	1	0	0	0	0	0	0	0	0	**7**
19:15 - 19:29	0	0	0	3	2	7	4	0	0	0	0	0	0	0	0	**16**
19:30 - 19:44	0	0	0	1	4	4	1	0	1	0	0	0	0	0	0	**11**
19:45 - 19:59	0	0	0	0	2	0	1	1	0	0	0	0	0	0	0	**4**
20:00 - 20:14	0	0	0	0	0	2	2	0	0	0	0	0	0	0	0	**4**
20:15 - 20:29	0	0	0	1	0	1	3	0	0	0	0	0	0	0	0	**5**
20:30 - 20:44	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	**1**
20:45 - 20:59	0	0	1	0	1	2	2	1	0	0	0	0	0	0	0	**7**
21:00 - 21:14	0	0	0	0	0	1	1	1	0	0	0	0	0	0	0	**3**
21:15 - 21:29	0	0	0	1	2	1	0	0	0	0	0	0	0	0	0	**4**
21:30 - 21:44	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	**1**
21:45 - 21:59	0	0	0	1	0	1	0	1	0	0	0	0	0	0	0	**3**
22:00 - 22:14	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	**3**
22:15 - 22:29	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	**1**
22:30 - 22:44	0	0	0	1	1	1	0	0	0	0	0	0	0	0	0	**3**
22:45 - 22:59	0	0	0	0	3	0	1	0	0	0	0	0	0	0	0	**4**
23:00 - 23:14	0	0	0	0	3	2	2	4	0	0	0	0	0	0	0	**11**
23:15 - 23:29	0	0	0	0	2	2	3	1	0	0	0	0	0	0	0	**8**
23:30 - 23:44	0	0	0	0	0	1	2	0	0	0	0	0	0	0	0	**3**
23:45 - 23:59	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	**2**
Totals	**7**	**10**	**67**	**298**	**765**	**926**	**542**	**130**	**31**	**5**	**2**	**0**	**2**	**0**	**1**	**2786**
Percent of Total	**0.3**	**0.4**	**2.4**	**10.7**	**27.5**	**33.2**	**19.5**	**4.7**	**1.1**	**0.2**	**0.1**	**0.0**	**0.1**	**0.0**	**0.0**	**100**
Percent of AM	**0.2**	**0.3**	**1.5**	**9.0**	**25.9**	**35.4**	**21.4**	**4.4**	**1.5**	**0.2**	**0.1**	**0.0**	**0.1**	**0.0**	**0.1**	**100**
Percent of PM	**0.3**	**0.4**	**3.6**	**12.9**	**29.5**	**30.4**	**16.9**	**5.0**	**0.6**	**0.2**	**0.0**	**0.0**	**0.1**	**0.0**	**0.0**	**100**

Daily Westbound Speeds (MPH)

Study Date: Thursday, 03/02/2023
Unit ID:
Location: 1600 North Location

Posted Speed: 25

Standard Deviation:	6.5 MPH	Ten Mile Pace:	30 to 39 MPH	85th Percentile:	42.7 MPH
Mean Speed:	36.3 MPH	Percent in Ten Mile Pace:	60.7%		
Median Speed:	36.3 MPH			15th Percentile:	30.2 MPH
Modal Speed:	37.5 MPH			90th Percentile:	44.0 MPH
				95th Percentile:	46.2 MPH

Daily Total Speeds (MPH)

Study Date: Thursday, 03/02/2023
Unit ID:
Location: 1600 North Location
Posted Speed: 25

	5-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-99	Total
00:00 - 00:14	0	0	1	0	3	3	0	0	0	0	0	0	0	0	0	**7**
00:15 - 00:29	0	0	0	1	1	1	2	2	0	0	0	0	0	0	0	**7**
00:30 - 00:44	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	**3**
00:45 - 00:59	1	0	0	0	0	3	3	1	0	0	0	0	0	0	0	**8**
01:00 - 01:14	0	0	0	2	1	0	0	0	0	0	0	0	0	0	0	**3**
01:15 - 01:29	0	0	0	0	1	4	1	2	0	0	0	0	0	0	0	**8**
01:30 - 01:44	0	0	3	1	3	2	1	1	0	0	0	0	0	0	0	**11**
01:45 - 01:59	0	0	0	1	1	2	1	0	0	0	0	0	0	0	0	**5**
02:00 - 02:14	0	0	0	0	1	1	0	2	1	0	0	0	0	0	0	**5**
02:15 - 02:29	0	0	0	1	3	4	6	2	1	0	0	0	0	0	0	**17**
02:30 - 02:44	0	0	0	1	5	1	1	0	0	0	0	0	0	0	0	**8**
02:45 - 02:59	0	0	0	2	10	3	15	2	1	0	0	0	0	0	0	**33**
03:00 - 03:14	0	0	6	2	1	4	3	1	0	0	0	0	0	0	0	**17**
03:15 - 03:29	0	0	8	5	0	4	0	0	0	0	0	0	0	0	0	**17**
03:30 - 03:44	0	0	4	1	4	2	5	1	1	1	0	0	0	0	0	**19**
03:45 - 03:59	0	0	0	0	3	2	2	0	3	0	0	0	0	0	0	**10**
04:00 - 04:14	0	0	0	0	2	1	0	0	0	0	0	0	0	0	0	**3**
04:15 - 04:29	0	0	0	2	1	4	3	0	0	0	0	0	0	0	0	**10**
04:30 - 04:44	0	0	0	3	6	10	8	1	0	0	0	0	0	0	0	**28**
04:45 - 04:59	0	0	1	1	15	11	11	1	0	0	0	0	0	0	0	**40**
05:00 - 05:14	0	0	0	4	4	3	3	3	0	0	0	0	0	0	0	**17**
05:15 - 05:29	0	0	1	8	6	12	5	0	0	0	0	0	0	0	0	**32**
05:30 - 05:44	0	0	2	6	8	23	12	0	1	0	0	0	0	0	0	**52**
05:45 - 05:59	0	0	5	10	29	43	19	1	1	0	0	0	0	0	0	**108**
06:00 - 06:14	0	1	1	4	16	10	14	1	3	1	0	0	0	0	0	**51**
06:15 - 06:29	0	1	0	0	7	9	9	2	0	0	0	0	0	0	0	**28**
06:30 - 06:44	0	0	0	1	18	17	13	5	0	0	0	0	0	0	0	**54**
06:45 - 06:59	1	0	2	10	40	37	17	7	1	0	0	0	0	0	0	**115**
07:00 - 07:14	0	0	1	10	19	15	14	9	0	0	1	0	0	0	0	**69**
07:15 - 07:29	0	0	2	12	20	36	19	5	0	0	0	0	0	0	0	**94**
07:30 - 07:44	0	1	0	16	11	29	17	5	1	0	0	0	0	0	0	**80**
07:45 - 07:59	0	0	0	5	27	50	20	4	3	0	0	0	0	0	0	**109**
08:00 - 08:14	0	0	0	10	31	51	16	2	1	0	0	0	1	0	0	**112**
08:15 - 08:29	0	1	2	5	28	34	24	5	0	0	1	0	0	0	0	**100**
08:30 - 08:44	0	1	2	12	21	41	19	4	0	0	0	0	0	0	0	**100**
08:45 - 08:59	0	0	3	17	28	41	17	2	1	1	0	0	0	0	0	**110**
09:00 - 09:14	0	1	1	5	29	35	21	2	1	0	0	1	0	0	0	**96**
09:15 - 09:29	1	3	2	16	20	27	14	2	3	1	0	0	1	0	0	**90**
09:30 - 09:44	0	0	2	5	21	33	12	6	1	0	0	0	0	0	0	**80**
09:45 - 09:59	0	0	4	4	26	23	11	1	2	0	0	0	0	0	0	**71**
10:00 - 10:14	0	0	2	12	16	28	12	5	4	0	0	0	0	0	1	**80**
10:15 - 10:29	0	1	3	11	21	14	6	7	0	0	0	0	0	0	0	**63**
10:30 - 10:44	1	1	5	8	18	17	9	3	0	0	0	0	0	0	0	**62**
10:45 - 10:59	0	0	4	4	14	18	14	4	0	0	0	0	0	0	0	**58**
11:00 - 11:14	1	1	0	9	26	32	15	6	2	0	1	0	0	0	0	**93**
11:15 - 11:29	0	1	5	7	32	19	18	2	2	0	0	0	0	0	0	**86**
11:30 - 11:44	0	1	2	7	22	17	21	6	1	0	0	0	0	0	0	**77**
11:45 - 11:59	0	3	3	7	16	24	14	4	0	1	0	0	0	0	0	**72**
12:00 - 12:14	0	0	2	7	17	37	21	3	1	0	1	0	0	0	0	**89**
12:15 - 12:29	4	1	0	14	26	22	8	4	2	1	0	0	0	0	0	**82**
12:30 - 12:44	0	0	2	15	22	23	15	6	0	0	0	0	0	0	0	**83**

Daily Total Speeds (MPH)

Study Date: Thursday, 03/02/2023
Unit ID:
Location: 1600 North Location

Posted Speed: 25

	5-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-99	Total
12:45 - 12:59	0	1	3	5	32	30	15	7	0	0	0	0	0	0	0	**93**
13:00 - 13:14	0	1	3	25	30	21	16	5	1	0	0	0	0	0	0	**102**
13:15 - 13:29	0	2	0	6	17	20	15	5	0	1	0	0	0	0	0	**66**
13:30 - 13:44	0	0	4	6	33	30	13	5	0	0	0	0	0	0	0	**91**
13:45 - 13:59	2	1	7	28	29	17	13	3	1	0	0	0	0	0	0	**101**
14:00 - 14:14	0	2	3	20	19	30	13	3	1	0	0	0	0	0	0	**91**
14:15 - 14:29	0	0	0	20	36	32	15	5	1	0	0	0	1	0	0	**110**
14:30 - 14:44	6	10	9	19	46	41	22	5	0	0	0	0	0	0	0	**158**
14:45 - 14:59	4	1	1	5	37	33	9	3	0	0	0	0	0	0	0	**93**
15:00 - 15:14	1	1	7	17	36	31	18	5	1	0	0	0	0	0	0	**117**
15:15 - 15:29	0	1	4	6	14	32	20	8	0	0	0	0	0	0	0	**85**
15:30 - 15:44	0	5	15	23	49	33	13	3	0	0	0	0	0	0	0	**141**
15:45 - 15:59	0	0	4	9	29	49	22	2	1	0	0	0	0	0	1	**117**
16:00 - 16:14	12	7	13	30	36	26	6	3	0	0	0	0	0	0	0	**133**
16:15 - 16:29	2	1	10	17	30	34	18	3	0	0	0	0	0	0	0	**115**
16:30 - 16:44	15	6	14	16	20	17	11	6	0	0	0	0	0	0	0	**105**
16:45 - 16:59	4	2	5	21	17	25	7	2	0	0	0	0	0	0	0	**83**
17:00 - 17:14	2	5	23	28	47	27	10	1	1	0	0	0	0	0	0	**144**
17:15 - 17:29	0	5	7	13	45	31	10	0	1	0	0	0	0	0	0	**112**
17:30 - 17:44	0	0	0	4	18	28	26	9	2	0	0	0	0	0	0	**87**
17:45 - 17:59	0	0	0	4	13	26	28	9	1	1	0	0	0	0	0	**82**
18:00 - 18:14	1	0	0	2	18	30	23	0	0	0	0	0	0	0	0	**74**
18:15 - 18:29	0	0	2	1	8	9	7	6	0	0	0	0	0	0	0	**33**
18:30 - 18:44	0	0	0	2	9	18	9	3	0	0	1	0	0	0	0	**42**
18:45 - 18:59	0	0	0	2	6	18	4	0	1	1	0	0	0	0	0	**32**
19:00 - 19:14	0	0	2	1	13	4	5	3	0	0	0	0	0	0	0	**28**
19:15 - 19:29	0	0	0	4	9	17	5	2	1	0	0	0	0	0	0	**38**
19:30 - 19:44	0	0	0	3	7	10	11	1	2	0	0	0	0	0	0	**34**
19:45 - 19:59	0	0	0	2	7	5	4	4	0	0	0	0	0	0	0	**22**
20:00 - 20:14	0	0	0	2	1	9	4	3	0	0	0	0	0	0	0	**19**
20:15 - 20:29	0	0	0	1	4	9	7	3	0	0	0	0	0	0	0	**24**
20:30 - 20:44	0	0	0	5	9	11	6	1	2	0	0	0	0	0	0	**34**
20:45 - 20:59	0	0	1	0	5	5	4	1	0	0	0	0	0	0	0	**16**
21:00 - 21:14	0	0	1	0	1	2	2	1	1	0	0	0	0	0	0	**8**
21:15 - 21:29	0	0	0	1	2	4	2	1	0	0	0	0	0	0	0	**10**
21:30 - 21:44	0	0	0	0	2	2	2	0	0	0	0	0	0	0	0	**6**
21:45 - 21:59	0	0	0	1	0	1	1	1	0	0	0	0	0	0	0	**4**
22:00 - 22:14	0	0	0	1	4	1	2	0	0	0	0	0	0	0	0	**8**
22:15 - 22:29	0	0	0	1	4	0	0	0	0	0	0	0	0	0	0	**5**
22:30 - 22:44	0	0	0	1	1	1	0	1	0	1	0	0	0	0	0	**5**
22:45 - 22:59	0	0	0	0	3	2	2	0	0	0	0	0	0	0	0	**7**
23:00 - 23:14	0	0	0	0	8	5	5	4	0	1	0	0	0	0	0	**23**
23:15 - 23:29	0	0	2	6	27	19	10	4	0	0	0	0	0	0	0	**68**
23:30 - 23:44	0	0	0	1	4	7	5	2	0	0	0	0	0	0	0	**19**
23:45 - 23:59	0	0	0	1	0	2	1	0	0	0	0	0	0	0	0	**4**
Totals	**58**	**69**	**221**	**644**	**1485**	**1689**	**952**	**265**	**56**	**11**	**5**	**1**	**3**	**0**	**2**	**5461**
Percent of Total	**1.1**	**1.3**	**4.0**	**11.8**	**27.2**	**30.9**	**17.4**	**4.9**	**1.0**	**0.2**	**0.1**	**0.0**	**0.1**	**0.0**	**0.0**	**100**
Percent of AM	**0.2**	**0.7**	**3.2**	**10.3**	**26.3**	**33.2**	**19.3**	**4.9**	**1.4**	**0.2**	**0.1**	**0.0**	**0.1**	**0.0**	**0.0**	**100**
Percent of PM	**1.7**	**1.7**	**4.7**	**13.0**	**27.9**	**29.1**	**15.9**	**4.8**	**0.7**	**0.2**	**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**100**

Daily Total Speeds (MPH)

Study Date: Thursday, 03/02/2023
Unit ID:
Location: 1600 North Location

Posted Speed: 25

Standard Deviation:	7.3 MPH	Ten Mile Pace:	30 to 39 MPH	85th Percentile:	42.5 MPH
Mean Speed:	35.4 MPH	Percent in Ten Mile Pace:	58.1%		
Median Speed:	35.7 MPH			15th Percentile:	28.7 MPH
Modal Speed:	37.5 MPH			90th Percentile:	43.9 MPH
				95th Percentile:	46.3 MPH

Daily Vehicle Volume Report

Study Date: Thursday, 03/02/2023
Unit ID:
Location: Center Street Location

	Eastbound Volume	Westbound Volume	Total Volume
00:00 - 00:14	4	12	**16**
00:15 - 00:29	12	2	**14**
00:30 - 00:44	3	6	**9**
00:45 - 00:59	6	4	**10**
01:00 - 01:14	6	4	**10**
01:15 - 01:29	2	4	**6**
01:30 - 01:44	0	2	**2**
01:45 - 01:59	1	0	**1**
02:00 - 02:14	3	2	**5**
02:15 - 02:29	1	5	**6**
02:30 - 02:44	4	1	**5**
02:45 - 02:59	1	1	**2**
03:00 - 03:14	0	2	**2**
03:15 - 03:29	0	1	**1**
03:30 - 03:44	1	1	**2**
03:45 - 03:59	2	0	**2**
04:00 - 04:14	4	0	**4**
04:15 - 04:29	3	0	**3**
04:30 - 04:44	2	1	**3**
04:45 - 04:59	7	1	**8**
05:00 - 05:14	10	2	**12**
05:15 - 05:29	12	2	**14**
05:30 - 05:44	14	2	**16**
05:45 - 05:59	26	2	**28**
06:00 - 06:14	16	6	**22**
06:15 - 06:29	16	5	**21**
06:30 - 06:44	34	6	**40**
06:45 - 06:59	49	12	**61**
07:00 - 07:14	52	13	**65**
07:15 - 07:29	80	17	**97**
07:30 - 07:44	128	30	**158**
07:45 - 07:59	147	53	**200**
08:00 - 08:14	114	58	**172**
08:15 - 08:29	99	33	**132**
08:30 - 08:44	76	34	**110**
08:45 - 08:59	92	26	**118**
09:00 - 09:14	87	21	**108**
09:15 - 09:29	66	40	**106**
09:30 - 09:44	90	27	**117**
09:45 - 09:59	72	25	**97**
10:00 - 10:14	47	39	**86**
10:15 - 10:29	44	32	**76**
10:30 - 10:44	44	38	**82**
10:45 - 10:59	62	45	**107**
11:00 - 11:14	49	41	**90**
11:15 - 11:29	60	34	**94**
11:30 - 11:44	70	47	**117**
11:45 - 11:59	59	42	**101**
12:00 - 12:14	48	54	**102**
12:15 - 12:29	45	41	**86**
12:30 - 12:44	38	42	**80**
12:45 - 12:59	45	41	**86**

Daily Vehicle Volume Report

Study Date: Thursday, 03/02/2023
Unit ID:
Location: Center Street Location

	Eastbound Volume	Westbound Volume	Total Volume
13:00 - 13:14	34	53	**87**
13:15 - 13:29	48	43	**91**
13:30 - 13:44	54	55	**109**
13:45 - 13:59	60	43	**103**
14:00 - 14:14	71	44	**115**
14:15 - 14:29	72	88	**160**
14:30 - 14:44	85	96	**181**
14:45 - 14:59	64	77	**141**
15:00 - 15:14	62	64	**126**
15:15 - 15:29	59	61	**120**
15:30 - 15:44	73	63	**136**
15:45 - 15:59	74	86	**160**
16:00 - 16:14	68	80	**148**
16:15 - 16:29	66	94	**160**
16:30 - 16:44	77	66	**143**
16:45 - 16:59	70	50	**120**
17:00 - 17:14	65	72	**137**
17:15 - 17:29	67	83	**150**
17:30 - 17:44	89	99	**188**
17:45 - 17:59	78	97	**175**
18:00 - 18:14	66	99	**165**
18:15 - 18:29	60	69	**129**
18:30 - 18:44	68	71	**139**
18:45 - 18:59	86	48	**134**
19:00 - 19:14	62	79	**141**
19:15 - 19:29	52	68	**120**
19:30 - 19:44	47	46	**93**
19:45 - 19:59	46	50	**96**
20:00 - 20:14	29	42	**71**
20:15 - 20:29	38	63	**101**
20:30 - 20:44	29	42	**71**
20:45 - 20:59	45	46	**91**
21:00 - 21:14	20	46	**66**
21:15 - 21:29	24	46	**70**
21:30 - 21:44	37	42	**79**
21:45 - 21:59	25	40	**65**
22:00 - 22:14	41	39	**80**
22:15 - 22:29	22	31	**53**
22:30 - 22:44	11	18	**29**
22:45 - 22:59	14	16	**30**
23:00 - 23:14	12	20	**32**
23:15 - 23:29	7	14	**21**
23:30 - 23:44	15	13	**28**
23:45 - 23:59	10	9	**19**
Totals	**4155**	**3430**	**7585**
AM Peak Time	**07:28 - 08:27**	**07:41 - 08:40**	**07:28 - 08:27**
AM Peak Volume	**493**	**189**	**665**
PM Peak Time	**17:06 - 18:05**	**17:15 - 18:14**	**17:20 - 18:19**
PM Peak Volume	**310**	**378**	**680**

Daily Vehicle Volume Report

Study Date: Thursday, 03/02/2023
Unit ID:
Location: Center Street Location

Daily Eastbound Classes Report

Study Date: Thursday, 03/02/2023
Unit ID:
Location: Center Street Location

	#1	#2	#3	#4	#5	#6	#7	#8	#9	#10	#11	#12	#13	Total
00:00 - 00:14	0	4	0	0	0	0	0	0	0	0	0	0	0	**4**
00:15 - 00:29	0	12	0	0	0	0	0	0	0	0	0	0	0	**12**
00:30 - 00:44	0	3	0	0	0	0	0	0	0	0	0	0	0	**3**
00:45 - 00:59	0	5	0	0	1	0	0	0	0	0	0	0	0	**6**
01:00 - 01:14	0	6	0	0	0	0	0	0	0	0	0	0	0	**6**
01:15 - 01:29	0	2	0	0	0	0	0	0	0	0	0	0	0	**2**
01:30 - 01:44	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
01:45 - 01:59	0	1	0	0	0	0	0	0	0	0	0	0	0	**1**
02:00 - 02:14	0	2	0	0	1	0	0	0	0	0	0	0	0	**3**
02:15 - 02:29	0	1	0	0	0	0	0	0	0	0	0	0	0	**1**
02:30 - 02:44	0	4	0	0	0	0	0	0	0	0	0	0	0	**4**
02:45 - 02:59	0	0	1	0	0	0	0	0	0	0	0	0	0	**1**
03:00 - 03:14	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
03:15 - 03:29	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
03:30 - 03:44	0	1	0	0	0	0	0	0	0	0	0	0	0	**1**
03:45 - 03:59	0	2	0	0	0	0	0	0	0	0	0	0	0	**2**
04:00 - 04:14	0	3	0	0	1	0	0	0	0	0	0	0	0	**4**
04:15 - 04:29	0	2	0	0	1	0	0	0	0	0	0	0	0	**3**
04:30 - 04:44	0	2	0	0	0	0	0	0	0	0	0	0	0	**2**
04:45 - 04:59	0	4	2	0	1	0	0	0	0	0	0	0	0	**7**
05:00 - 05:14	0	9	1	0	0	0	0	0	0	0	0	0	0	**10**
05:15 - 05:29	0	9	3	0	0	0	0	0	0	0	0	0	0	**12**
05:30 - 05:44	0	13	0	0	1	0	0	0	0	0	0	0	0	**14**
05:45 - 05:59	0	20	3	0	3	0	0	0	0	0	0	0	0	**26**
06:00 - 06:14	0	13	1	0	2	0	0	0	0	0	0	0	0	**16**
06:15 - 06:29	0	11	1	1	3	0	0	0	0	0	0	0	0	**16**
06:30 - 06:44	0	25	1	0	8	0	0	0	0	0	0	0	0	**34**
06:45 - 06:59	0	39	4	2	4	0	0	0	0	0	0	0	0	**49**
07:00 - 07:14	0	39	3	1	8	0	0	1	0	0	0	0	0	**52**
07:15 - 07:29	0	71	5	1	3	0	0	0	0	0	0	0	0	**80**
07:30 - 07:44	0	110	5	0	13	0	0	0	0	0	0	0	0	**128**
07:45 - 07:59	0	117	11	5	13	1	0	0	0	0	0	0	0	**147**
08:00 - 08:14	0	96	10	0	8	0	0	0	0	0	0	0	0	**114**
08:15 - 08:29	0	80	4	2	12	1	0	0	0	0	0	0	0	**99**
08:30 - 08:44	0	61	8	0	6	0	0	1	0	0	0	0	0	**76**
08:45 - 08:59	0	77	4	1	10	0	0	0	0	0	0	0	0	**92**
09:00 - 09:14	0	73	7	0	7	0	0	0	0	0	0	0	0	**87**
09:15 - 09:29	0	44	7	1	14	0	0	0	0	0	0	0	0	**66**
09:30 - 09:44	0	74	9	0	7	0	0	0	0	0	0	0	0	**90**
09:45 - 09:59	0	60	5	1	6	0	0	0	0	0	0	0	0	**72**
10:00 - 10:14	0	38	3	0	6	0	0	0	0	0	0	0	0	**47**
10:15 - 10:29	0	35	3	1	5	0	0	0	0	0	0	0	0	**44**
10:30 - 10:44	0	32	4	1	6	0	0	1	0	0	0	0	0	**44**
10:45 - 10:59	0	50	5	2	5	0	0	0	0	0	0	0	0	**62**
11:00 - 11:14	0	42	5	0	2	0	0	0	0	0	0	0	0	**49**
11:15 - 11:29	0	46	4	1	7	1	0	1	0	0	0	0	0	**60**
11:30 - 11:44	0	58	5	0	7	0	0	0	0	0	0	0	0	**70**
11:45 - 11:59	0	44	10	0	4	1	0	0	0	0	0	0	0	**59**
12:00 - 12:14	0	33	6	1	8	0	0	0	0	0	0	0	0	**48**
12:15 - 12:29	0	33	6	2	4	0	0	0	0	0	0	0	0	**45**
12:30 - 12:44	0	36	1	0	1	0	0	0	0	0	0	0	0	**38**
12:45 - 12:59	1	39	1	1	2	0	0	1	0	0	0	0	0	**45**

Daily Eastbound Classes Report

Study Date: Thursday, 03/02/2023
Unit ID:
Location: Center Street Location

	#1	#2	#3	#4	#5	#6	#7	#8	#9	#10	#11	#12	#13	Total
13:00 - 13:14	0	28	4	0	2	0	0	0	0	0	0	0	0	**34**
13:15 - 13:29	1	37	2	1	7	0	0	0	0	0	0	0	0	**48**
13:30 - 13:44	0	46	6	0	2	0	0	0	0	0	0	0	0	**54**
13:45 - 13:59	0	53	5	0	2	0	0	0	0	0	0	0	0	**60**
14:00 - 14:14	0	60	6	0	5	0	0	0	0	0	0	0	0	**71**
14:15 - 14:29	0	57	8	1	6	0	0	0	0	0	0	0	0	**72**
14:30 - 14:44	0	68	4	4	9	0	0	0	0	0	0	0	0	**85**
14:45 - 14:59	0	57	3	1	3	0	0	0	0	0	0	0	0	**64**
15:00 - 15:14	0	51	2	2	7	0	0	0	0	0	0	0	0	**62**
15:15 - 15:29	0	43	7	2	7	0	0	0	0	0	0	0	0	**59**
15:30 - 15:44	0	59	7	0	7	0	0	0	0	0	0	0	0	**73**
15:45 - 15:59	1	55	12	1	5	0	0	0	0	0	0	0	0	**74**
16:00 - 16:14	0	55	9	0	4	0	0	0	0	0	0	0	0	**68**
16:15 - 16:29	0	54	4	2	6	0	0	0	0	0	0	0	0	**66**
16:30 - 16:44	0	64	5	0	8	0	0	0	0	0	0	0	0	**77**
16:45 - 16:59	0	60	5	1	3	1	0	0	0	0	0	0	0	**70**
17:00 - 17:14	0	53	3	0	8	1	0	0	0	0	0	0	0	**65**
17:15 - 17:29	0	54	9	1	3	0	0	0	0	0	0	0	0	**67**
17:30 - 17:44	0	72	9	0	8	0	0	0	0	0	0	0	0	**89**
17:45 - 17:59	0	64	10	1	3	0	0	0	0	0	0	0	0	**78**
18:00 - 18:14	0	53	7	0	6	0	0	0	0	0	0	0	0	**66**
18:15 - 18:29	0	46	8	1	5	0	0	0	0	0	0	0	0	**60**
18:30 - 18:44	0	56	9	0	3	0	0	0	0	0	0	0	0	**68**
18:45 - 18:59	0	71	8	1	6	0	0	0	0	0	0	0	0	**86**
19:00 - 19:14	0	50	5	0	7	0	0	0	0	0	0	0	0	**62**
19:15 - 19:29	0	43	6	2	1	0	0	0	0	0	0	0	0	**52**
19:30 - 19:44	0	38	2	0	7	0	0	0	0	0	0	0	0	**47**
19:45 - 19:59	0	43	2	0	1	0	0	0	0	0	0	0	0	**46**
20:00 - 20:14	0	27	0	0	2	0	0	0	0	0	0	0	0	**29**
20:15 - 20:29	0	33	1	1	2	1	0	0	0	0	0	0	0	**38**
20:30 - 20:44	0	24	4	0	1	0	0	0	0	0	0	0	0	**29**
20:45 - 20:59	1	40	2	0	2	0	0	0	0	0	0	0	0	**45**
21:00 - 21:14	0	17	1	0	2	0	0	0	0	0	0	0	0	**20**
21:15 - 21:29	0	24	0	0	0	0	0	0	0	0	0	0	0	**24**
21:30 - 21:44	0	33	2	0	2	0	0	0	0	0	0	0	0	**37**
21:45 - 21:59	0	23	1	0	1	0	0	0	0	0	0	0	0	**25**
22:00 - 22:14	0	37	1	0	3	0	0	0	0	0	0	0	0	**41**
22:15 - 22:29	0	15	4	0	3	0	0	0	0	0	0	0	0	**22**
22:30 - 22:44	0	10	0	0	1	0	0	0	0	0	0	0	0	**11**
22:45 - 22:59	0	11	1	0	2	0	0	0	0	0	0	0	0	**14**
23:00 - 23:14	0	12	0	0	0	0	0	0	0	0	0	0	0	**12**
23:15 - 23:29	0	6	1	0	0	0	0	0	0	0	0	0	0	**7**
23:30 - 23:44	0	12	2	0	1	0	0	0	0	0	0	0	0	**15**
23:45 - 23:59	0	10	0	0	0	0	0	0	0	0	0	0	0	**10**
Totals	**4**	**3405**	**335**	**46**	**353**	**7**	**0**	**5**	**0**	**0**	**0**	**0**	**0**	**4155**
Percent of Total	**0.1**	**81.9**	**8.1**	**1.1**	**8.5**	**0.2**	**0.0**	**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**100**
Percent of AM	**0.0**	**81.0**	**7.5**	**1.1**	**9.8**	**0.2**	**0.0**	**0.2**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**100**
Percent of PM	**0.2**	**82.6**	**8.5**	**1.1**	**7.5**	**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**100**

Daily Eastbound Classes Report

Study Date: Thursday, 03/02/2023
Unit ID:
Location: Center Street Location

Truck Summary:

Total Trucks: 411 % Trucks: 9.9 AM % Trucks: 11.4 PM % Trucks: 8.7

Classification Scheme: FHWA (ID: 1)

#1	Motorcycles - 2 Axles	#6	Single Unit Truck - 3 Axles	#11	Multi-Unit - 5 Axles or Less
#2	Passenger Cars - 2 Axles	#7	Single Unit - 4 Axles	#12	Multi-Unit - 6 Axles
#3	Pickup Trucks, Vans - 2 Axles	#8	Single Unit - 4 Axles or Less	#13	Multi-Unit - 7 Axles or More
#4	Buses	#9	Double Unit - 5 Axles		
#5	Single Unit - 2 Axles, 6 Tires	#10	Double Unit - 6 Axles or More		

Daily Westbound Classes Report

Study Date: Thursday, 03/02/2023
Unit ID:
Location: Center Street Location

	#1	#2	#3	#4	#5	#6	#7	#8	#9	#10	#11	#12	#13	Total
00:00 - 00:14	0	11	0	0	1	0	0	0	0	0	0	0	0	**12**
00:15 - 00:29	0	2	0	0	0	0	0	0	0	0	0	0	0	**2**
00:30 - 00:44	0	4	1	0	1	0	0	0	0	0	0	0	0	**6**
00:45 - 00:59	0	4	0	0	0	0	0	0	0	0	0	0	0	**4**
01:00 - 01:14	0	4	0	0	0	0	0	0	0	0	0	0	0	**4**
01:15 - 01:29	0	2	2	0	0	0	0	0	0	0	0	0	0	**4**
01:30 - 01:44	0	1	0	0	1	0	0	0	0	0	0	0	0	**2**
01:45 - 01:59	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
02:00 - 02:14	0	2	0	0	0	0	0	0	0	0	0	0	0	**2**
02:15 - 02:29	0	5	0	0	0	0	0	0	0	0	0	0	0	**5**
02:30 - 02:44	0	1	0	0	0	0	0	0	0	0	0	0	0	**1**
02:45 - 02:59	0	1	0	0	0	0	0	0	0	0	0	0	0	**1**
03:00 - 03:14	0	2	0	0	0	0	0	0	0	0	0	0	0	**2**
03:15 - 03:29	0	1	0	0	0	0	0	0	0	0	0	0	0	**1**
03:30 - 03:44	0	1	0	0	0	0	0	0	0	0	0	0	0	**1**
03:45 - 03:59	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
04:00 - 04:14	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
04:15 - 04:29	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
04:30 - 04:44	0	0	0	0	1	0	0	0	0	0	0	0	0	**1**
04:45 - 04:59	0	1	0	0	0	0	0	0	0	0	0	0	0	**1**
05:00 - 05:14	0	2	0	0	0	0	0	0	0	0	0	0	0	**2**
05:15 - 05:29	0	2	0	0	0	0	0	0	0	0	0	0	0	**2**
05:30 - 05:44	0	1	1	0	0	0	0	0	0	0	0	0	0	**2**
05:45 - 05:59	0	2	0	0	0	0	0	0	0	0	0	0	0	**2**
06:00 - 06:14	0	4	0	1	1	0	0	0	0	0	0	0	0	**6**
06:15 - 06:29	0	3	1	0	1	0	0	0	0	0	0	0	0	**5**
06:30 - 06:44	0	4	0	1	0	0	0	0	1	0	0	0	0	**6**
06:45 - 06:59	0	9	0	1	2	0	0	0	0	0	0	0	0	**12**
07:00 - 07:14	0	7	2	1	3	0	0	0	0	0	0	0	0	**13**
07:15 - 07:29	0	11	2	1	3	0	0	0	0	0	0	0	0	**17**
07:30 - 07:44	3	18	3	2	4	0	0	0	0	0	0	0	0	**30**
07:45 - 07:59	0	46	5	0	1	0	0	1	0	0	0	0	0	**53**
08:00 - 08:14	0	46	4	0	6	2	0	0	0	0	0	0	0	**58**
08:15 - 08:29	0	26	5	0	2	0	0	0	0	0	0	0	0	**33**
08:30 - 08:44	0	26	6	0	2	0	0	0	0	0	0	0	0	**34**
08:45 - 08:59	0	20	5	1	0	0	0	0	0	0	0	0	0	**26**
09:00 - 09:14	0	14	0	1	6	0	0	0	0	0	0	0	0	**21**
09:15 - 09:29	0	31	3	0	6	0	0	0	0	0	0	0	0	**40**
09:30 - 09:44	0	16	3	1	7	0	0	0	0	0	0	0	0	**27**
09:45 - 09:59	0	20	4	0	1	0	0	0	0	0	0	0	0	**25**
10:00 - 10:14	0	28	4	1	5	1	0	0	0	0	0	0	0	**39**
10:15 - 10:29	0	24	7	0	1	0	0	0	0	0	0	0	0	**32**
10:30 - 10:44	0	26	5	1	6	0	0	0	0	0	0	0	0	**38**
10:45 - 10:59	0	38	1	2	4	0	0	0	0	0	0	0	0	**45**
11:00 - 11:14	0	30	5	0	6	0	0	0	0	0	0	0	0	**41**
11:15 - 11:29	0	32	1	0	1	0	0	0	0	0	0	0	0	**34**
11:30 - 11:44	0	42	3	1	1	0	0	0	0	0	0	0	0	**47**
11:45 - 11:59	0	38	2	0	1	1	0	0	0	0	0	0	0	**42**
12:00 - 12:14	0	43	3	1	7	0	0	0	0	0	0	0	0	**54**
12:15 - 12:29	0	31	4	0	6	0	0	0	0	0	0	0	0	**41**
12:30 - 12:44	0	33	2	2	4	0	1	0	0	0	0	0	0	**42**
12:45 - 12:59	0	32	3	0	6	0	0	0	0	0	0	0	0	**41**

Daily Westbound Classes Report

Study Date: Thursday, 03/02/2023
Unit ID:
Location: Center Street Location

	#1	#2	#3	#4	#5	#6	#7	#8	#9	#10	#11	#12	#13	Total
13:00 - 13:14	0	43	4	0	6	0	0	0	0	0	0	0	0	**53**
13:15 - 13:29	1	32	8	0	2	0	0	0	0	0	0	0	0	**43**
13:30 - 13:44	0	47	2	1	5	0	0	0	0	0	0	0	0	**55**
13:45 - 13:59	0	38	4	0	1	0	0	0	0	0	0	0	0	**43**
14:00 - 14:14	0	40	1	1	2	0	0	0	0	0	0	0	0	**44**
14:15 - 14:29	1	71	8	2	5	1	0	0	0	0	0	0	0	**88**
14:30 - 14:44	0	83	4	0	8	0	0	1	0	0	0	0	0	**96**
14:45 - 14:59	0	58	8	3	6	0	0	1	1	0	0	0	0	**77**
15:00 - 15:14	0	50	2	6	6	0	0	0	0	0	0	0	0	**64**
15:15 - 15:29	0	55	3	1	1	0	0	1	0	0	0	0	0	**61**
15:30 - 15:44	0	50	3	1	7	1	1	0	0	0	0	0	0	**63**
15:45 - 15:59	0	75	2	2	7	0	0	0	0	0	0	0	0	**86**
16:00 - 16:14	0	73	4	1	2	0	0	0	0	0	0	0	0	**80**
16:15 - 16:29	0	79	7	2	5	0	0	0	1	0	0	0	0	**94**
16:30 - 16:44	0	52	8	0	5	0	0	1	0	0	0	0	0	**66**
16:45 - 16:59	0	40	4	0	5	1	0	0	0	0	0	0	0	**50**
17:00 - 17:14	1	58	7	1	5	0	0	0	0	0	0	0	0	**72**
17:15 - 17:29	0	74	4	0	4	1	0	0	0	0	0	0	0	**83**
17:30 - 17:44	0	77	9	0	11	0	0	2	0	0	0	0	0	**99**
17:45 - 17:59	0	76	13	1	6	1	0	0	0	0	0	0	0	**97**
18:00 - 18:14	0	85	6	1	6	0	0	1	0	0	0	0	0	**99**
18:15 - 18:29	0	58	7	0	4	0	0	0	0	0	0	0	0	**69**
18:30 - 18:44	5	61	4	0	0	1	0	0	0	0	0	0	0	**71**
18:45 - 18:59	1	37	2	0	8	0	0	0	0	0	0	0	0	**48**
19:00 - 19:14	0	64	10	0	5	0	0	0	0	0	0	0	0	**79**
19:15 - 19:29	0	58	6	0	4	0	0	0	0	0	0	0	0	**68**
19:30 - 19:44	0	39	5	0	2	0	0	0	0	0	0	0	0	**46**
19:45 - 19:59	0	38	8	0	2	2	0	0	0	0	0	0	0	**50**
20:00 - 20:14	0	39	1	1	1	0	0	0	0	0	0	0	0	**42**
20:15 - 20:29	2	50	8	0	3	0	0	0	0	0	0	0	0	**63**
20:30 - 20:44	0	32	6	1	3	0	0	0	0	0	0	0	0	**42**
20:45 - 20:59	0	41	3	0	2	0	0	0	0	0	0	0	0	**46**
21:00 - 21:14	0	36	6	0	4	0	0	0	0	0	0	0	0	**46**
21:15 - 21:29	0	41	3	0	2	0	0	0	0	0	0	0	0	**46**
21:30 - 21:44	0	37	3	0	2	0	0	0	0	0	0	0	0	**42**
21:45 - 21:59	0	37	2	0	1	0	0	0	0	0	0	0	0	**40**
22:00 - 22:14	0	35	4	0	0	0	0	0	0	0	0	0	0	**39**
22:15 - 22:29	0	27	3	0	1	0	0	0	0	0	0	0	0	**31**
22:30 - 22:44	0	17	1	0	0	0	0	0	0	0	0	0	0	**18**
22:45 - 22:59	0	14	2	0	0	0	0	0	0	0	0	0	0	**16**
23:00 - 23:14	0	19	0	0	1	0	0	0	0	0	0	0	0	**20**
23:15 - 23:29	0	13	1	0	0	0	0	0	0	0	0	0	0	**14**
23:30 - 23:44	0	11	2	0	0	0	0	0	0	0	0	0	0	**13**
23:45 - 23:59	0	8	1	0	0	0	0	0	0	0	0	0	0	**9**
Totals	**14**	**2815**	**286**	**43**	**247**	**12**	**2**	**8**	**3**	**0**	**0**	**0**	**0**	**3430**
Percent of Total	**0.4**	**82.1**	**8.3**	**1.3**	**7.2**	**0.3**	**0.1**	**0.2**	**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**100**
Percent of AM	**0.4**	**77.8**	**9.6**	**1.9**	**9.5**	**0.5**	**0.0**	**0.1**	**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**100**
Percent of PM	**0.4**	**83.3**	**8.0**	**1.1**	**6.5**	**0.3**	**0.1**	**0.3**	**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**100**

Daily Westbound Classes Report

Study Date: Thursday, 03/02/2023
Unit ID:
Location: Center Street Location

Truck Summary:

Total Trucks: 315 % Trucks: 9.2 AM % Trucks: 12.2 PM % Trucks: 8.3

Classification Scheme: FHWA (ID: 1)

#1	Motorcycles - 2 Axles	#6	Single Unit Truck - 3 Axles	#11	Multi-Unit - 5 Axles or Less
#2	Passenger Cars - 2 Axles	#7	Single Unit - 4 Axles	#12	Multi-Unit - 6 Axles
#3	Pickup Trucks, Vans - 2 Axles	#8	Single Unit - 4 Axles or Less	#13	Multi-Unit - 7 Axles or More
#4	Buses	#9	Double Unit - 5 Axles		
#5	Single Unit - 2 Axles, 6 Tires	#10	Double Unit - 6 Axles or More		

Daily Total Classes Report

Study Date: Thursday, 03/02/2023
Unit ID:
Location: Center Street Location

	#1	#2	#3	#4	#5	#6	#7	#8	#9	#10	#11	#12	#13	Total
00:00 - 00:14	0	15	0	0	1	0	0	0	0	0	0	0	0	**16**
00:15 - 00:29	0	14	0	0	0	0	0	0	0	0	0	0	0	**14**
00:30 - 00:44	0	7	1	0	1	0	0	0	0	0	0	0	0	**9**
00:45 - 00:59	0	9	0	0	1	0	0	0	0	0	0	0	0	**10**
01:00 - 01:14	0	10	0	0	0	0	0	0	0	0	0	0	0	**10**
01:15 - 01:29	0	4	2	0	0	0	0	0	0	0	0	0	0	**6**
01:30 - 01:44	0	1	0	0	1	0	0	0	0	0	0	0	0	**2**
01:45 - 01:59	0	1	0	0	0	0	0	0	0	0	0	0	0	**1**
02:00 - 02:14	0	4	0	0	1	0	0	0	0	0	0	0	0	**5**
02:15 - 02:29	0	6	0	0	0	0	0	0	0	0	0	0	0	**6**
02:30 - 02:44	0	5	0	0	0	0	0	0	0	0	0	0	0	**5**
02:45 - 02:59	0	1	1	0	0	0	0	0	0	0	0	0	0	**2**
03:00 - 03:14	0	2	0	0	0	0	0	0	0	0	0	0	0	**2**
03:15 - 03:29	0	1	0	0	0	0	0	0	0	0	0	0	0	**1**
03:30 - 03:44	0	2	0	0	0	0	0	0	0	0	0	0	0	**2**
03:45 - 03:59	0	2	0	0	0	0	0	0	0	0	0	0	0	**2**
04:00 - 04:14	0	3	0	0	1	0	0	0	0	0	0	0	0	**4**
04:15 - 04:29	0	2	0	0	1	0	0	0	0	0	0	0	0	**3**
04:30 - 04:44	0	2	0	0	1	0	0	0	0	0	0	0	0	**3**
04:45 - 04:59	0	5	2	0	1	0	0	0	0	0	0	0	0	**8**
05:00 - 05:14	0	11	1	0	0	0	0	0	0	0	0	0	0	**12**
05:15 - 05:29	0	11	3	0	0	0	0	0	0	0	0	0	0	**14**
05:30 - 05:44	0	14	1	0	1	0	0	0	0	0	0	0	0	**16**
05:45 - 05:59	0	22	3	0	3	0	0	0	0	0	0	0	0	**28**
06:00 - 06:14	0	17	1	1	3	0	0	0	0	0	0	0	0	**22**
06:15 - 06:29	0	14	2	1	4	0	0	0	0	0	0	0	0	**21**
06:30 - 06:44	0	29	1	1	8	0	0	0	1	0	0	0	0	**40**
06:45 - 06:59	0	48	4	3	6	0	0	0	0	0	0	0	0	**61**
07:00 - 07:14	0	46	5	2	11	0	0	1	0	0	0	0	0	**65**
07:15 - 07:29	0	82	7	2	6	0	0	0	0	0	0	0	0	**97**
07:30 - 07:44	3	128	8	2	17	0	0	0	0	0	0	0	0	**158**
07:45 - 07:59	0	163	16	5	14	1	0	1	0	0	0	0	0	**200**
08:00 - 08:14	0	142	14	0	14	2	0	0	0	0	0	0	0	**172**
08:15 - 08:29	0	106	9	2	14	1	0	0	0	0	0	0	0	**132**
08:30 - 08:44	0	87	14	0	8	0	0	1	0	0	0	0	0	**110**
08:45 - 08:59	0	97	9	2	10	0	0	0	0	0	0	0	0	**118**
09:00 - 09:14	0	87	7	1	13	0	0	0	0	0	0	0	0	**108**
09:15 - 09:29	0	75	10	1	20	0	0	0	0	0	0	0	0	**106**
09:30 - 09:44	0	90	12	1	14	0	0	0	0	0	0	0	0	**117**
09:45 - 09:59	0	80	9	1	7	0	0	0	0	0	0	0	0	**97**
10:00 - 10:14	0	66	7	1	11	1	0	0	0	0	0	0	0	**86**
10:15 - 10:29	0	59	10	1	6	0	0	0	0	0	0	0	0	**76**
10:30 - 10:44	0	58	9	2	12	0	0	1	0	0	0	0	0	**82**
10:45 - 10:59	0	88	6	4	9	0	0	0	0	0	0	0	0	**107**
11:00 - 11:14	0	72	10	0	8	0	0	0	0	0	0	0	0	**90**
11:15 - 11:29	0	78	5	1	8	1	0	1	0	0	0	0	0	**94**
11:30 - 11:44	0	100	8	1	8	0	0	0	0	0	0	0	0	**117**
11:45 - 11:59	0	82	12	0	5	2	0	0	0	0	0	0	0	**101**
12:00 - 12:14	0	76	9	2	15	0	0	0	0	0	0	0	0	**102**
12:15 - 12:29	0	64	10	2	10	0	0	0	0	0	0	0	0	**86**
12:30 - 12:44	0	69	3	2	5	0	1	0	0	0	0	0	0	**80**
12:45 - 12:59	1	71	4	1	8	0	0	1	0	0	0	0	0	**86**

Daily Total Classes Report

Study Date: Thursday, 03/02/2023
Unit ID:
Location: Center Street Location

	#1	#2	#3	#4	#5	#6	#7	#8	#9	#10	#11	#12	#13	Total
13:00 - 13:14	0	71	8	0	8	0	0	0	0	0	0	0	0	**87**
13:15 - 13:29	2	69	10	1	9	0	0	0	0	0	0	0	0	**91**
13:30 - 13:44	0	93	8	1	7	0	0	0	0	0	0	0	0	**109**
13:45 - 13:59	0	91	9	0	3	0	0	0	0	0	0	0	0	**103**
14:00 - 14:14	0	100	7	1	7	0	0	0	0	0	0	0	0	**115**
14:15 - 14:29	1	128	16	3	11	1	0	0	0	0	0	0	0	**160**
14:30 - 14:44	0	151	8	4	17	0	0	1	0	0	0	0	0	**181**
14:45 - 14:59	0	115	11	4	9	0	0	1	1	0	0	0	0	**141**
15:00 - 15:14	0	101	4	8	13	0	0	0	0	0	0	0	0	**126**
15:15 - 15:29	0	98	10	3	8	0	0	1	0	0	0	0	0	**120**
15:30 - 15:44	0	109	10	1	14	1	1	0	0	0	0	0	0	**136**
15:45 - 15:59	1	130	14	3	12	0	0	0	0	0	0	0	0	**160**
16:00 - 16:14	0	128	13	1	6	0	0	0	0	0	0	0	0	**148**
16:15 - 16:29	0	133	11	4	11	0	0	0	1	0	0	0	0	**160**
16:30 - 16:44	0	116	13	0	13	0	0	1	0	0	0	0	0	**143**
16:45 - 16:59	0	100	9	1	8	2	0	0	0	0	0	0	0	**120**
17:00 - 17:14	1	111	10	1	13	1	0	0	0	0	0	0	0	**137**
17:15 - 17:29	0	128	13	1	7	1	0	0	0	0	0	0	0	**150**
17:30 - 17:44	0	149	18	0	19	0	0	2	0	0	0	0	0	**188**
17:45 - 17:59	0	140	23	2	9	1	0	0	0	0	0	0	0	**175**
18:00 - 18:14	0	138	13	1	12	0	0	1	0	0	0	0	0	**165**
18:15 - 18:29	0	104	15	1	9	0	0	0	0	0	0	0	0	**129**
18:30 - 18:44	5	117	13	0	3	1	0	0	0	0	0	0	0	**139**
18:45 - 18:59	1	108	10	1	14	0	0	0	0	0	0	0	0	**134**
19:00 - 19:14	0	114	15	0	12	0	0	0	0	0	0	0	0	**141**
19:15 - 19:29	0	101	12	2	5	0	0	0	0	0	0	0	0	**120**
19:30 - 19:44	0	77	7	0	9	0	0	0	0	0	0	0	0	**93**
19:45 - 19:59	0	81	10	0	3	2	0	0	0	0	0	0	0	**96**
20:00 - 20:14	0	66	1	1	3	0	0	0	0	0	0	0	0	**71**
20:15 - 20:29	2	83	9	1	5	1	0	0	0	0	0	0	0	**101**
20:30 - 20:44	0	56	10	1	4	0	0	0	0	0	0	0	0	**71**
20:45 - 20:59	1	81	5	0	4	0	0	0	0	0	0	0	0	**91**
21:00 - 21:14	0	53	7	0	6	0	0	0	0	0	0	0	0	**66**
21:15 - 21:29	0	65	3	0	2	0	0	0	0	0	0	0	0	**70**
21:30 - 21:44	0	70	5	0	4	0	0	0	0	0	0	0	0	**79**
21:45 - 21:59	0	60	3	0	2	0	0	0	0	0	0	0	0	**65**
22:00 - 22:14	0	72	5	0	3	0	0	0	0	0	0	0	0	**80**
22:15 - 22:29	0	42	7	0	4	0	0	0	0	0	0	0	0	**53**
22:30 - 22:44	0	27	1	0	1	0	0	0	0	0	0	0	0	**29**
22:45 - 22:59	0	25	3	0	2	0	0	0	0	0	0	0	0	**30**
23:00 - 23:14	0	31	0	0	1	0	0	0	0	0	0	0	0	**32**
23:15 - 23:29	0	19	2	0	0	0	0	0	0	0	0	0	0	**21**
23:30 - 23:44	0	23	4	0	1	0	0	0	0	0	0	0	0	**28**
23:45 - 23:59	0	18	1	0	0	0	0	0	0	0	0	0	0	**19**
Totals	**18**	**6220**	**621**	**89**	**600**	**19**	**2**	**13**	**3**	**0**	**0**	**0**	**0**	**7585**
Percent of Total	**0.2**	**82.0**	**8.2**	**1.2**	**7.9**	**0.3**	**0.0**	**0.2**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**100**
Percent of AM	**0.1**	**80.1**	**8.2**	**1.4**	**9.7**	**0.3**	**0.0**	**0.2**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**100**
Percent of PM	**0.3**	**83.0**	**8.2**	**1.1**	**7.0**	**0.2**	**0.0**	**0.2**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**100**

Daily Total Classes Report

Study Date: Thursday, 03/02/2023
Unit ID:
Location: Center Street Location

Truck Summary:

Total Trucks: 726 % Trucks: 9.6 AM % Trucks: 11.6 PM % Trucks: 8.5

Classification Scheme: FHWA (ID: 1)

#1	Motorcycles - 2 Axles	#6	Single Unit Truck - 3 Axles	#11	Multi-Unit - 5 Axles or Less
#2	Passenger Cars - 2 Axles	#7	Single Unit - 4 Axles	#12	Multi-Unit - 6 Axles
#3	Pickup Trucks, Vans - 2 Axles	#8	Single Unit - 4 Axles or Less	#13	Multi-Unit - 7 Axles or More
#4	Buses	#9	Double Unit - 5 Axles		
#5	Single Unit - 2 Axles, 6 Tires	#10	Double Unit - 6 Axles or More		

Daily Eastbound Speeds (MPH)

Study Date: Thursday, 03/02/2023
Unit ID:
Location: Center Street Location
Posted Speed: 35

	5-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-99	Total
00:00 - 00:14	0	0	0	0	0	3	1	0	0	0	0	0	0	0	0	**4**
00:15 - 00:29	0	0	0	0	2	6	4	0	0	0	0	0	0	0	0	**12**
00:30 - 00:44	0	0	0	0	0	2	1	0	0	0	0	0	0	0	0	**3**
00:45 - 00:59	0	0	0	0	2	1	3	0	0	0	0	0	0	0	0	**6**
01:00 - 01:14	0	0	0	0	3	1	1	1	0	0	0	0	0	0	0	**6**
01:15 - 01:29	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	**2**
01:30 - 01:44	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
01:45 - 01:59	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	**1**
02:00 - 02:14	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	**3**
02:15 - 02:29	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	**1**
02:30 - 02:44	0	0	0	0	0	3	0	0	1	0	0	0	0	0	0	**4**
02:45 - 02:59	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	**1**
03:00 - 03:14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
03:15 - 03:29	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
03:30 - 03:44	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	**1**
03:45 - 03:59	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	**2**
04:00 - 04:14	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	**4**
04:15 - 04:29	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	**3**
04:30 - 04:44	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	**2**
04:45 - 04:59	0	0	0	0	1	3	3	0	0	0	0	0	0	0	0	**7**
05:00 - 05:14	0	0	0	1	3	2	3	1	0	0	0	0	0	0	0	**10**
05:15 - 05:29	0	0	0	2	4	3	3	0	0	0	0	0	0	0	0	**12**
05:30 - 05:44	0	0	0	1	4	8	0	1	0	0	0	0	0	0	0	**14**
05:45 - 05:59	0	0	0	2	3	12	8	1	0	0	0	0	0	0	0	**26**
06:00 - 06:14	0	0	0	0	2	10	3	1	0	0	0	0	0	0	0	**16**
06:15 - 06:29	0	0	0	0	3	8	5	0	0	0	0	0	0	0	0	**16**
06:30 - 06:44	0	0	0	2	5	12	14	1	0	0	0	0	0	0	0	**34**
06:45 - 06:59	0	0	1	0	9	19	13	5	2	0	0	0	0	0	0	**49**
07:00 - 07:14	0	0	0	1	13	22	11	5	0	0	0	0	0	0	0	**52**
07:15 - 07:29	0	0	0	2	19	41	12	6	0	0	0	0	0	0	0	**80**
07:30 - 07:44	0	0	0	0	24	69	25	9	0	1	0	0	0	0	0	**128**
07:45 - 07:59	0	1	0	3	18	78	44	3	0	0	0	0	0	0	0	**147**
08:00 - 08:14	0	0	0	0	16	64	29	5	0	0	0	0	0	0	0	**114**
08:15 - 08:29	0	0	0	2	10	56	28	3	0	0	0	0	0	0	0	**99**
08:30 - 08:44	0	0	0	0	8	43	21	4	0	0	0	0	0	0	0	**76**
08:45 - 08:59	0	0	0	1	9	41	34	5	2	0	0	0	0	0	0	**92**
09:00 - 09:14	0	0	0	0	1	41	40	5	0	0	0	0	0	0	0	**87**
09:15 - 09:29	0	0	0	1	6	28	25	6	0	0	0	0	0	0	0	**66**
09:30 - 09:44	0	0	0	0	3	36	37	10	4	0	0	0	0	0	0	**90**
09:45 - 09:59	0	0	0	0	5	20	38	8	1	0	0	0	0	0	0	**72**
10:00 - 10:14	0	0	0	0	4	20	17	6	0	0	0	0	0	0	0	**47**
10:15 - 10:29	0	0	0	0	4	15	21	4	0	0	0	0	0	0	0	**44**
10:30 - 10:44	0	0	0	0	7	23	11	3	0	0	0	0	0	0	0	**44**
10:45 - 10:59	0	0	0	2	3	25	26	5	1	0	0	0	0	0	0	**62**
11:00 - 11:14	0	0	0	0	2	20	22	2	2	1	0	0	0	0	0	**49**
11:15 - 11:29	0	0	0	1	6	26	23	4	0	0	0	0	0	0	0	**60**
11:30 - 11:44	0	0	0	0	8	31	25	5	1	0	0	0	0	0	0	**70**
11:45 - 11:59	0	0	0	0	7	23	20	7	1	1	0	0	0	0	0	**59**
12:00 - 12:14	0	0	0	0	1	18	18	10	1	0	0	0	0	0	0	**48**
12:15 - 12:29	0	0	0	1	5	21	10	7	1	0	0	0	0	0	0	**45**
12:30 - 12:44	0	0	0	0	1	17	14	6	0	0	0	0	0	0	0	**38**

Daily Eastbound Speeds (MPH)

Study Date: Thursday, 03/02/2023
Unit ID:
Location: Center Street Location
Posted Speed: 35

	5-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-99	Total
12:45 - 12:59	0	0	0	0	4	18	17	4	1	0	0	0	0	0	0	**44**
13:00 - 13:14	0	0	0	0	2	17	9	3	3	0	0	0	0	0	0	**34**
13:15 - 13:29	0	0	0	0	6	13	21	5	1	1	0	0	0	0	0	**47**
13:30 - 13:44	0	0	0	0	6	21	21	5	1	0	0	0	0	0	0	**54**
13:45 - 13:59	0	0	0	0	2	31	19	8	0	0	0	0	0	0	0	**60**
14:00 - 14:14	0	0	0	1	9	39	16	5	1	0	0	0	0	0	0	**71**
14:15 - 14:29	0	0	0	0	6	33	23	7	2	1	0	0	0	0	0	**72**
14:30 - 14:44	0	0	0	0	21	34	26	3	1	0	0	0	0	0	0	**85**
14:45 - 14:59	0	1	0	0	10	29	15	7	1	1	0	0	0	0	0	**64**
15:00 - 15:14	0	0	0	0	6	27	20	6	2	1	0	0	0	0	0	**62**
15:15 - 15:29	0	0	0	0	5	32	14	7	0	0	1	0	0	0	0	**59**
15:30 - 15:44	0	0	0	1	6	35	26	3	2	0	0	0	0	0	0	**73**
15:45 - 15:59	0	0	1	2	8	30	28	4	1	0	0	0	0	0	0	**74**
16:00 - 16:14	0	0	0	0	6	28	24	9	1	0	0	0	0	0	0	**68**
16:15 - 16:29	0	0	0	0	6	26	24	8	2	0	0	0	0	0	0	**66**
16:30 - 16:44	0	0	0	0	11	24	37	4	1	0	0	0	0	0	0	**77**
16:45 - 16:59	0	0	0	2	4	29	26	6	2	1	0	0	0	0	0	**70**
17:00 - 17:14	0	0	0	1	5	31	24	3	1	0	0	0	0	0	0	**65**
17:15 - 17:29	0	0	0	0	6	35	17	8	0	1	0	0	0	0	0	**67**
17:30 - 17:44	0	0	0	3	7	44	29	6	0	0	0	0	0	0	0	**89**
17:45 - 17:59	0	0	0	0	1	33	35	7	2	0	0	0	0	0	0	**78**
18:00 - 18:14	0	0	0	0	17	16	30	3	0	0	0	0	0	0	0	**66**
18:15 - 18:29	0	0	0	1	4	21	26	8	0	0	0	0	0	0	0	**60**
18:30 - 18:44	0	0	0	2	13	28	20	5	0	0	0	0	0	0	0	**68**
18:45 - 18:59	0	0	0	0	10	46	20	5	3	1	1	0	0	0	0	**86**
19:00 - 19:14	0	0	0	0	9	30	21	2	0	0	0	0	0	0	0	**62**
19:15 - 19:29	0	0	0	2	13	23	12	1	0	0	0	0	0	0	1	**52**
19:30 - 19:44	0	0	0	0	11	24	11	1	0	0	0	0	0	0	0	**47**
19:45 - 19:59	0	0	0	0	8	24	10	4	0	0	0	0	0	0	0	**46**
20:00 - 20:14	0	0	0	3	2	14	10	0	0	0	0	0	0	0	0	**29**
20:15 - 20:29	0	0	0	1	10	19	4	4	0	0	0	0	0	0	0	**38**
20:30 - 20:44	0	1	0	2	5	14	6	1	0	0	0	0	0	0	0	**29**
20:45 - 20:59	0	1	0	0	8	15	17	3	1	0	0	0	0	0	0	**45**
21:00 - 21:14	0	0	0	3	4	6	4	3	0	0	0	0	0	0	0	**20**
21:15 - 21:29	0	0	1	0	7	7	8	1	0	0	0	0	0	0	0	**24**
21:30 - 21:44	0	0	0	1	7	18	10	0	1	0	0	0	0	0	0	**37**
21:45 - 21:59	0	0	0	0	4	8	11	1	1	0	0	0	0	0	0	**25**
22:00 - 22:14	0	0	0	0	8	20	13	0	0	0	0	0	0	0	0	**41**
22:15 - 22:29	0	0	0	0	4	7	9	2	0	0	0	0	0	0	0	**22**
22:30 - 22:44	0	0	0	0	2	6	2	1	0	0	0	0	0	0	0	**11**
22:45 - 22:59	0	0	0	0	5	6	2	1	0	0	0	0	0	0	0	**14**
23:00 - 23:14	0	0	0	0	1	8	3	0	0	0	0	0	0	0	0	**12**
23:15 - 23:29	0	0	0	0	0	2	5	0	0	0	0	0	0	0	0	**7**
23:30 - 23:44	0	0	0	0	2	8	4	1	0	0	0	0	0	0	0	**15**
23:45 - 23:59	0	0	0	0	3	5	1	0	1	0	0	0	0	0	0	**10**
Totals	**0**	**4**	**4**	**47**	**519**	**1867**	**1344**	**306**	**49**	**10**	**2**	**0**	**0**	**0**	**1**	**4153**
Percent of Total	**0.0**	**0.1**	**0.1**	**1.1**	**12.5**	**45.0**	**32.4**	**7.4**	**1.2**	**0.2**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**100**
Percent of AM	**0.0**	**0.1**	**0.1**	**1.2**	**12.3**	**46.5**	**32.2**	**6.6**	**0.8**	**0.2**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**100**
Percent of PM	**0.0**	**0.1**	**0.1**	**1.1**	**12.7**	**43.8**	**32.5**	**7.9**	**1.4**	**0.3**	**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**100**

Daily Eastbound Speeds (MPH)

Study Date: Thursday, 03/02/2023
Unit ID:
Location: Center Street Location

Posted Speed: 35

Standard Deviation:	4.9 MPH	Ten Mile Pace:	35 to 44 MPH	85th Percentile:	44.0 MPH
Mean Speed:	39.3 MPH	Percent in Ten Mile Pace:	77.3%		
Median Speed:	39.0 MPH			15th Percentile:	35.1 MPH
Modal Speed:	37.5 MPH			90th Percentile:	44.8 MPH
				95th Percentile:	47.6 MPH

Daily Westbound Speeds (MPH)

Study Date: Thursday, 03/02/2023
Unit ID:
Location: Center Street Location

Posted Speed: 35

	5-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-99	Total
00:00 - 00:14	0	0	1	0	2	7	2	0	0	0	0	0	0	0	0	**12**
00:15 - 00:29	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	**2**
00:30 - 00:44	0	0	0	0	2	3	0	1	0	0	0	0	0	0	0	**6**
00:45 - 00:59	0	0	0	0	1	2	0	1	0	0	0	0	0	0	0	**4**
01:00 - 01:14	0	0	0	0	0	3	1	0	0	0	0	0	0	0	0	**4**
01:15 - 01:29	0	0	0	0	1	2	1	0	0	0	0	0	0	0	0	**4**
01:30 - 01:44	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	**2**
01:45 - 01:59	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
02:00 - 02:14	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	**2**
02:15 - 02:29	0	0	0	0	1	3	1	0	0	0	0	0	0	0	0	**5**
02:30 - 02:44	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	**1**
02:45 - 02:59	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	**1**
03:00 - 03:14	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	**2**
03:15 - 03:29	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	**1**
03:30 - 03:44	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	**1**
03:45 - 03:59	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
04:00 - 04:14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
04:15 - 04:29	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
04:30 - 04:44	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	**1**
04:45 - 04:59	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	**1**
05:00 - 05:14	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	**2**
05:15 - 05:29	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	**2**
05:30 - 05:44	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	**2**
05:45 - 05:59	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	**2**
06:00 - 06:14	0	0	0	0	2	2	2	0	0	0	0	0	0	0	0	**6**
06:15 - 06:29	0	0	0	0	1	4	0	0	0	0	0	0	0	0	0	**5**
06:30 - 06:44	0	0	0	1	2	1	2	0	0	0	0	0	0	0	0	**6**
06:45 - 06:59	0	0	0	0	1	8	2	1	0	0	0	0	0	0	0	**12**
07:00 - 07:14	0	0	0	1	1	3	6	1	1	0	0	0	0	0	0	**13**
07:15 - 07:29	0	0	0	1	3	8	5	0	0	0	0	0	0	0	0	**17**
07:30 - 07:44	2	0	0	2	7	8	10	0	0	0	0	0	0	0	0	**29**
07:45 - 07:59	0	0	0	0	5	27	19	2	0	0	0	0	0	0	0	**53**
08:00 - 08:14	0	0	0	0	5	27	18	7	0	0	1	0	0	0	0	**58**
08:15 - 08:29	0	0	0	1	2	18	8	3	1	0	0	0	0	0	0	**33**
08:30 - 08:44	0	0	0	2	5	10	12	5	0	0	0	0	0	0	0	**34**
08:45 - 08:59	0	0	1	0	4	11	7	2	1	0	0	0	0	0	0	**26**
09:00 - 09:14	0	0	0	0	3	10	5	3	0	0	0	0	0	0	0	**21**
09:15 - 09:29	0	0	0	1	3	12	17	7	0	0	0	0	0	0	0	**40**
09:30 - 09:44	0	0	0	0	6	7	10	3	1	0	0	0	0	0	0	**27**
09:45 - 09:59	0	0	0	0	2	13	9	1	0	0	0	0	0	0	0	**25**
10:00 - 10:14	0	0	0	1	6	16	14	2	0	0	0	0	0	0	0	**39**
10:15 - 10:29	0	0	0	0	3	21	5	3	0	0	0	0	0	0	0	**32**
10:30 - 10:44	0	0	0	0	4	22	8	4	0	0	0	0	0	0	0	**38**
10:45 - 10:59	0	0	0	0	6	21	16	2	0	0	0	0	0	0	0	**45**
11:00 - 11:14	0	0	0	0	3	17	18	2	1	0	0	0	0	0	0	**41**
11:15 - 11:29	0	0	0	0	5	15	10	3	1	0	0	0	0	0	0	**34**
11:30 - 11:44	0	0	0	0	6	21	16	3	1	0	0	0	0	0	0	**47**
11:45 - 11:59	0	0	0	0	4	20	12	5	1	0	0	0	0	0	0	**42**
12:00 - 12:14	0	0	0	0	1	24	25	4	0	0	0	0	0	0	0	**54**
12:15 - 12:29	0	0	0	0	3	17	15	5	1	0	0	0	0	0	0	**41**
12:30 - 12:44	0	0	0	0	5	13	18	5	1	0	0	0	0	0	0	**42**

Daily Westbound Speeds (MPH)

Study Date: Thursday, 03/02/2023
Unit ID:
Location: Center Street Location

Posted Speed: 35

	5-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-99	Total
12:45 - 12:59	0	0	0	0	7	19	8	5	2	0	0	0	0	0	0	**41**
13:00 - 13:14	0	0	0	0	2	26	21	4	0	0	0	0	0	0	0	**53**
13:15 - 13:29	0	0	0	0	0	20	18	3	1	0	0	0	0	0	0	**42**
13:30 - 13:44	0	0	0	1	1	20	25	7	0	1	0	0	0	0	0	**55**
13:45 - 13:59	0	0	0	0	2	17	19	4	0	1	0	0	0	0	0	**43**
14:00 - 14:14	0	0	0	0	6	12	20	6	0	0	0	0	0	0	0	**44**
14:15 - 14:29	0	0	1	1	12	46	24	3	1	0	0	0	0	0	0	**88**
14:30 - 14:44	0	0	0	0	9	46	34	6	0	1	0	0	0	0	0	**96**
14:45 - 14:59	1	0	1	1	8	28	28	8	1	1	0	0	0	0	0	**77**
15:00 - 15:14	1	1	0	3	7	30	20	1	0	1	0	0	0	0	0	**64**
15:15 - 15:29	0	0	0	1	7	26	16	8	2	1	0	0	0	0	0	**61**
15:30 - 15:44	0	0	0	0	6	23	26	4	4	0	0	0	0	0	0	**63**
15:45 - 15:59	0	0	1	1	6	37	35	5	1	0	0	0	0	0	0	**86**
16:00 - 16:14	0	0	0	0	5	30	36	8	1	0	0	0	0	0	0	**80**
16:15 - 16:29	0	0	1	0	8	36	31	14	4	0	0	0	0	0	0	**94**
16:30 - 16:44	0	0	0	1	7	21	31	6	0	0	0	0	0	0	0	**66**
16:45 - 16:59	0	0	0	0	5	28	12	3	2	0	0	0	0	0	0	**50**
17:00 - 17:14	1	0	0	0	4	36	24	7	0	0	0	0	0	0	0	**72**
17:15 - 17:29	0	0	0	1	5	41	32	4	0	0	0	0	0	0	0	**83**
17:30 - 17:44	0	0	0	0	5	65	25	4	0	0	0	0	0	0	0	**99**
17:45 - 17:59	0	0	0	1	8	44	30	10	4	0	0	0	0	0	0	**97**
18:00 - 18:14	0	0	1	0	7	50	35	4	2	0	0	0	0	0	0	**99**
18:15 - 18:29	0	0	0	0	3	26	33	6	1	0	0	0	0	0	0	**69**
18:30 - 18:44	3	0	0	0	4	44	14	4	0	0	0	0	0	0	0	**69**
18:45 - 18:59	0	1	0	0	6	24	15	2	0	0	0	0	0	0	0	**48**
19:00 - 19:14	0	0	1	0	11	44	21	2	0	0	0	0	0	0	0	**79**
19:15 - 19:29	0	0	0	2	9	46	11	0	0	0	0	0	0	0	0	**68**
19:30 - 19:44	0	0	0	0	9	29	7	1	0	0	0	0	0	0	0	**46**
19:45 - 19:59	0	0	0	0	8	26	14	2	0	0	0	0	0	0	0	**50**
20:00 - 20:14	0	0	0	0	9	22	8	2	1	0	0	0	0	0	0	**42**
20:15 - 20:29	1	0	0	0	11	34	14	2	0	0	0	0	0	0	0	**62**
20:30 - 20:44	0	0	0	1	9	24	8	0	0	0	0	0	0	0	0	**42**
20:45 - 20:59	0	0	0	1	9	31	2	3	0	0	0	0	0	0	0	**46**
21:00 - 21:14	0	0	0	0	9	22	12	3	0	0	0	0	0	0	0	**46**
21:15 - 21:29	0	0	1	1	6	26	12	0	0	0	0	0	0	0	0	**46**
21:30 - 21:44	0	0	0	0	8	21	12	1	0	0	0	0	0	0	0	**42**
21:45 - 21:59	0	0	0	0	3	24	10	3	0	0	0	0	0	0	0	**40**
22:00 - 22:14	0	0	0	0	9	18	11	1	0	0	0	0	0	0	0	**39**
22:15 - 22:29	0	0	0	0	8	13	9	0	1	0	0	0	0	0	0	**31**
22:30 - 22:44	0	0	0	1	3	8	5	1	0	0	0	0	0	0	0	**18**
22:45 - 22:59	0	0	0	0	4	9	3	0	0	0	0	0	0	0	0	**16**
23:00 - 23:14	0	0	0	2	3	8	6	1	0	0	0	0	0	0	0	**20**
23:15 - 23:29	0	0	0	0	2	8	2	1	1	0	0	0	0	0	0	**14**
23:30 - 23:44	0	0	0	1	2	3	7	0	0	0	0	0	0	0	0	**13**
23:45 - 23:59	0	0	0	0	2	4	2	1	0	0	0	0	0	0	0	**9**
Totals	**9**	**2**	**9**	**30**	**384**	**1620**	**1087**	**237**	**39**	**7**	**1**	**0**	**0**	**0**	**0**	**3425**
Percent of Total	**0.3**	**0.1**	**0.3**	**0.9**	**11.2**	**47.3**	**31.7**	**6.9**	**1.1**	**0.2**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**100**
Percent of AM	**0.3**	**0.0**	**0.3**	**1.3**	**12.9**	**45.0**	**30.9**	**8.1**	**1.0**	**0.1**	**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**100**
Percent of PM	**0.3**	**0.1**	**0.3**	**0.8**	**10.7**	**48.0**	**32.0**	**6.6**	**1.2**	**0.2**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**100**

Daily Westbound Speeds (MPH)

Study Date: Thursday, 03/02/2023
Unit ID:
Location: Center Street Location

Posted Speed: 35

Standard Deviation:	4.9 MPH	Ten Mile Pace:	35 to 44 MPH	85th Percentile:	43.9 MPH
Mean Speed:	39.2 MPH	Percent in Ten Mile Pace:	79.0%		
Median Speed:	38.9 MPH			15th Percentile:	35.2 MPH
Modal Speed:	37.5 MPH			90th Percentile:	44.7 MPH
				95th Percentile:	47.4 MPH

Daily Total Speeds (MPH)

Study Date: Thursday, 03/02/2023
Unit ID:
Location: Center Street Location
Posted Speed: 35

	5-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-99	Total
00:00 - 00:14	0	0	1	0	2	10	3	0	0	0	0	0	0	0	0	**16**
00:15 - 00:29	0	0	0	0	2	7	5	0	0	0	0	0	0	0	0	**14**
00:30 - 00:44	0	0	0	0	2	5	1	1	0	0	0	0	0	0	0	**9**
00:45 - 00:59	0	0	0	0	3	3	3	1	0	0	0	0	0	0	0	**10**
01:00 - 01:14	0	0	0	0	3	4	2	1	0	0	0	0	0	0	0	**10**
01:15 - 01:29	0	0	1	0	1	3	1	0	0	0	0	0	0	0	0	**6**
01:30 - 01:44	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	**2**
01:45 - 01:59	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	**1**
02:00 - 02:14	0	0	0	0	3	1	0	0	0	1	0	0	0	0	0	**5**
02:15 - 02:29	0	0	0	0	1	3	2	0	0	0	0	0	0	0	0	**6**
02:30 - 02:44	0	0	0	0	1	3	0	0	1	0	0	0	0	0	0	**5**
02:45 - 02:59	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	**2**
03:00 - 03:14	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	**2**
03:15 - 03:29	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	**1**
03:30 - 03:44	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	**2**
03:45 - 03:59	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	**2**
04:00 - 04:14	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	**4**
04:15 - 04:29	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	**3**
04:30 - 04:44	0	0	0	0	0	2	1	0	0	0	0	0	0	0	0	**3**
04:45 - 04:59	0	0	0	0	1	4	3	0	0	0	0	0	0	0	0	**8**
05:00 - 05:14	0	0	0	1	5	2	3	1	0	0	0	0	0	0	0	**12**
05:15 - 05:29	0	0	0	2	4	4	4	0	0	0	0	0	0	0	0	**14**
05:30 - 05:44	0	0	0	1	4	10	0	1	0	0	0	0	0	0	0	**16**
05:45 - 05:59	0	0	0	2	3	14	8	1	0	0	0	0	0	0	0	**28**
06:00 - 06:14	0	0	0	0	4	12	5	1	0	0	0	0	0	0	0	**22**
06:15 - 06:29	0	0	0	0	4	12	5	0	0	0	0	0	0	0	0	**21**
06:30 - 06:44	0	0	0	3	7	13	16	1	0	0	0	0	0	0	0	**40**
06:45 - 06:59	0	0	1	0	10	27	15	6	2	0	0	0	0	0	0	**61**
07:00 - 07:14	0	0	0	2	14	25	17	6	1	0	0	0	0	0	0	**65**
07:15 - 07:29	0	0	0	3	22	49	17	6	0	0	0	0	0	0	0	**97**
07:30 - 07:44	2	0	0	2	31	77	35	9	0	1	0	0	0	0	0	**157**
07:45 - 07:59	0	1	0	3	23	105	63	5	0	0	0	0	0	0	0	**200**
08:00 - 08:14	0	0	0	0	21	91	47	12	0	0	1	0	0	0	0	**172**
08:15 - 08:29	0	0	0	3	12	74	36	6	1	0	0	0	0	0	0	**132**
08:30 - 08:44	0	0	0	2	13	53	33	9	0	0	0	0	0	0	0	**110**
08:45 - 08:59	0	0	1	1	13	52	41	7	3	0	0	0	0	0	0	**118**
09:00 - 09:14	0	0	0	0	4	51	45	8	0	0	0	0	0	0	0	**108**
09:15 - 09:29	0	0	0	2	9	40	42	13	0	0	0	0	0	0	0	**106**
09:30 - 09:44	0	0	0	0	9	43	47	13	5	0	0	0	0	0	0	**117**
09:45 - 09:59	0	0	0	0	7	33	47	9	1	0	0	0	0	0	0	**97**
10:00 - 10:14	0	0	0	1	10	36	31	8	0	0	0	0	0	0	0	**86**
10:15 - 10:29	0	0	0	0	7	36	26	7	0	0	0	0	0	0	0	**76**
10:30 - 10:44	0	0	0	0	11	45	19	7	0	0	0	0	0	0	0	**82**
10:45 - 10:59	0	0	0	2	9	46	42	7	1	0	0	0	0	0	0	**107**
11:00 - 11:14	0	0	0	0	5	37	40	4	3	1	0	0	0	0	0	**90**
11:15 - 11:29	0	0	0	1	11	41	33	7	1	0	0	0	0	0	0	**94**
11:30 - 11:44	0	0	0	0	14	52	41	8	2	0	0	0	0	0	0	**117**
11:45 - 11:59	0	0	0	0	11	43	32	12	2	1	0	0	0	0	0	**101**
12:00 - 12:14	0	0	0	0	2	42	43	14	1	0	0	0	0	0	0	**102**
12:15 - 12:29	0	0	0	1	8	38	25	12	2	0	0	0	0	0	0	**86**
12:30 - 12:44	0	0	0	0	6	30	32	11	1	0	0	0	0	0	0	**80**

Daily Total Speeds (MPH)

Study Date: Thursday, 03/02/2023
Unit ID:
Location: Center Street Location
Posted Speed: 35

	5-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-99	Total
12:45 - 12:59	0	0	0	0	11	37	25	9	3	0	0	0	0	0	0	**85**
13:00 - 13:14	0	0	0	0	4	43	30	7	3	0	0	0	0	0	0	**87**
13:15 - 13:29	0	0	0	0	6	33	39	8	2	1	0	0	0	0	0	**89**
13:30 - 13:44	0	0	0	1	7	41	46	12	1	1	0	0	0	0	0	**109**
13:45 - 13:59	0	0	0	0	4	48	38	12	0	1	0	0	0	0	0	**103**
14:00 - 14:14	0	0	0	1	15	51	36	11	1	0	0	0	0	0	0	**115**
14:15 - 14:29	0	0	1	1	18	79	47	10	3	1	0	0	0	0	0	**160**
14:30 - 14:44	0	0	0	0	30	80	60	9	1	1	0	0	0	0	0	**181**
14:45 - 14:59	1	1	1	1	18	57	43	15	2	2	0	0	0	0	0	**141**
15:00 - 15:14	1	1	0	3	13	57	40	7	2	2	0	0	0	0	0	**126**
15:15 - 15:29	0	0	0	1	12	58	30	15	2	1	1	0	0	0	0	**120**
15:30 - 15:44	0	0	0	1	12	58	52	7	6	0	0	0	0	0	0	**136**
15:45 - 15:59	0	0	2	3	14	67	63	9	2	0	0	0	0	0	0	**160**
16:00 - 16:14	0	0	0	0	11	58	60	17	2	0	0	0	0	0	0	**148**
16:15 - 16:29	0	0	1	0	14	62	55	22	6	0	0	0	0	0	0	**160**
16:30 - 16:44	0	0	0	1	18	45	68	10	1	0	0	0	0	0	0	**143**
16:45 - 16:59	0	0	0	2	9	57	38	9	4	1	0	0	0	0	0	**120**
17:00 - 17:14	1	0	0	1	9	67	48	10	1	0	0	0	0	0	0	**137**
17:15 - 17:29	0	0	0	1	11	76	49	12	0	1	0	0	0	0	0	**150**
17:30 - 17:44	0	0	0	3	12	109	54	10	0	0	0	0	0	0	0	**188**
17:45 - 17:59	0	0	0	1	9	77	65	17	6	0	0	0	0	0	0	**175**
18:00 - 18:14	0	0	1	0	24	66	65	7	2	0	0	0	0	0	0	**165**
18:15 - 18:29	0	0	0	1	7	47	59	14	1	0	0	0	0	0	0	**129**
18:30 - 18:44	3	0	0	2	17	72	34	9	0	0	0	0	0	0	0	**137**
18:45 - 18:59	0	1	0	0	16	70	35	7	3	1	1	0	0	0	0	**134**
19:00 - 19:14	0	0	1	0	20	74	42	4	0	0	0	0	0	0	0	**141**
19:15 - 19:29	0	0	0	4	22	69	23	1	0	0	0	0	0	0	1	**120**
19:30 - 19:44	0	0	0	0	20	53	18	2	0	0	0	0	0	0	0	**93**
19:45 - 19:59	0	0	0	0	16	50	24	6	0	0	0	0	0	0	0	**96**
20:00 - 20:14	0	0	0	3	11	36	18	2	1	0	0	0	0	0	0	**71**
20:15 - 20:29	1	0	0	1	21	53	18	6	0	0	0	0	0	0	0	**100**
20:30 - 20:44	0	1	0	3	14	38	14	1	0	0	0	0	0	0	0	**71**
20:45 - 20:59	0	1	0	1	17	46	19	6	1	0	0	0	0	0	0	**91**
21:00 - 21:14	0	0	0	3	13	28	16	6	0	0	0	0	0	0	0	**66**
21:15 - 21:29	0	0	2	1	13	33	20	1	0	0	0	0	0	0	0	**70**
21:30 - 21:44	0	0	0	1	15	39	22	1	1	0	0	0	0	0	0	**79**
21:45 - 21:59	0	0	0	0	7	32	21	4	1	0	0	0	0	0	0	**65**
22:00 - 22:14	0	0	0	0	17	38	24	1	0	0	0	0	0	0	0	**80**
22:15 - 22:29	0	0	0	0	12	20	18	2	1	0	0	0	0	0	0	**53**
22:30 - 22:44	0	0	0	1	5	14	7	2	0	0	0	0	0	0	0	**29**
22:45 - 22:59	0	0	0	0	9	15	5	1	0	0	0	0	0	0	0	**30**
23:00 - 23:14	0	0	0	2	4	16	9	1	0	0	0	0	0	0	0	**32**
23:15 - 23:29	0	0	0	0	2	10	7	1	1	0	0	0	0	0	0	**21**
23:30 - 23:44	0	0	0	1	4	11	11	1	0	0	0	0	0	0	0	**28**
23:45 - 23:59	0	0	0	0	5	9	3	1	1	0	0	0	0	0	0	**19**
Totals	**9**	**6**	**13**	**77**	**903**	**3487**	**2431**	**543**	**88**	**17**	**3**	**0**	**0**	**0**	**1**	**7578**
Percent of Total	**0.1**	**0.1**	**0.2**	**1.0**	**11.9**	**46.0**	**32.1**	**7.2**	**1.2**	**0.2**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**100**
Percent of AM	**0.1**	**0.0**	**0.2**	**1.2**	**12.5**	**46.1**	**31.8**	**7.1**	**0.9**	**0.2**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**100**
Percent of PM	**0.1**	**0.1**	**0.2**	**0.9**	**11.6**	**46.0**	**32.2**	**7.2**	**1.3**	**0.3**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**100**

Daily Total Speeds (MPH)

Study Date: Thursday, 03/02/2023
Unit ID:
Location: Center Street Location

Posted Speed: 35

Standard Deviation:	4.9 MPH	Ten Mile Pace:	35 to 44 MPH	85th Percentile:	44.0 MPH
Mean Speed:	39.3 MPH	Percent in Ten Mile Pace:	78.1%		
Median Speed:	39.0 MPH			15th Percentile:	35.2 MPH
Modal Speed:	37.5 MPH			90th Percentile:	44.8 MPH
				95th Percentile:	47.5 MPH

Daily Vehicle Volume Report

Study Date: Thursday, 03/02/2023
Unit ID:
Location: Main Street Location NB

	Northbound Volume
00:00 - 00:14	8
00:15 - 00:29	0
00:30 - 00:44	6
00:45 - 00:59	2
01:00 - 01:14	1
01:15 - 01:29	4
01:30 - 01:44	2
01:45 - 01:59	2
02:00 - 02:14	1
02:15 - 02:29	4
02:30 - 02:44	2
02:45 - 02:59	3
03:00 - 03:14	1
03:15 - 03:29	0
03:30 - 03:44	0
03:45 - 03:59	3
04:00 - 04:14	1
04:15 - 04:29	2
04:30 - 04:44	6
04:45 - 04:59	8
05:00 - 05:14	9
05:15 - 05:29	8
05:30 - 05:44	13
05:45 - 05:59	21
06:00 - 06:14	20
06:15 - 06:29	17
06:30 - 06:44	23
06:45 - 06:59	27
07:00 - 07:14	32
07:15 - 07:29	58
07:30 - 07:44	65
07:45 - 07:59	63
08:00 - 08:14	82
08:15 - 08:29	90
08:30 - 08:44	72
08:45 - 08:59	81
09:00 - 09:14	43
09:15 - 09:29	35
09:30 - 09:44	40
09:45 - 09:59	38
10:00 - 10:14	35
10:15 - 10:29	40
10:30 - 10:44	34
10:45 - 10:59	37
11:00 - 11:14	26
11:15 - 11:29	50
11:30 - 11:44	46
11:45 - 11:59	38
12:00 - 12:14	30
12:15 - 12:29	36
12:30 - 12:44	26
12:45 - 12:59	30

Daily Vehicle Volume Report

Study Date: Thursday, 03/02/2023
Unit ID:
Location: Main Street Location NB

	Northbound Volume
13:00 - 13:14	33
13:15 - 13:29	27
13:30 - 13:44	28
13:45 - 13:59	32
14:00 - 14:14	32
14:15 - 14:29	47
14:30 - 14:44	66
14:45 - 14:59	53
15:00 - 15:14	48
15:15 - 15:29	45
15:30 - 15:44	44
15:45 - 15:59	52
16:00 - 16:14	61
16:15 - 16:29	46
16:30 - 16:44	42
16:45 - 16:59	45
17:00 - 17:14	45
17:15 - 17:29	63
17:30 - 17:44	65
17:45 - 17:59	60
18:00 - 18:14	43
18:15 - 18:29	45
18:30 - 18:44	44
18:45 - 18:59	60
19:00 - 19:14	43
19:15 - 19:29	43
19:30 - 19:44	32
19:45 - 19:59	30
20:00 - 20:14	32
20:15 - 20:29	34
20:30 - 20:44	33
20:45 - 20:59	23
21:00 - 21:14	20
21:15 - 21:29	30
21:30 - 21:44	21
21:45 - 21:59	25
22:00 - 22:14	19
22:15 - 22:29	13
22:30 - 22:44	13
22:45 - 22:59	11
23:00 - 23:14	11
23:15 - 23:29	6
23:30 - 23:44	11
23:45 - 23:59	5
Totals	**2902**
AM Peak Time	**07:53 - 08:52**
AM Peak Volume	**327**
PM Peak Time	**17:10 - 18:09**
PM Peak Volume	**240**

Daily Vehicle Volume Report

Study Date: Thursday, 03/02/2023
Unit ID:
Location: Main Street Location NB

Daily Northbound Classes Report

Study Date: Thursday, 03/02/2023
Unit ID:
Location: Main Street Location NB

	#1	#2	#3	#4	#5	#6	#7	#8	#9	#10	#11	#12	#13	Total
00:00 - 00:14	0	7	0	0	1	0	0	0	0	0	0	0	0	**8**
00:15 - 00:29	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
00:30 - 00:44	0	6	0	0	0	0	0	0	0	0	0	0	0	**6**
00:45 - 00:59	0	2	0	0	0	0	0	0	0	0	0	0	0	**2**
01:00 - 01:14	0	1	0	0	0	0	0	0	0	0	0	0	0	**1**
01:15 - 01:29	0	4	0	0	0	0	0	0	0	0	0	0	0	**4**
01:30 - 01:44	0	1	0	0	1	0	0	0	0	0	0	0	0	**2**
01:45 - 01:59	0	1	1	0	0	0	0	0	0	0	0	0	0	**2**
02:00 - 02:14	0	1	0	0	0	0	0	0	0	0	0	0	0	**1**
02:15 - 02:29	0	3	0	0	1	0	0	0	0	0	0	0	0	**4**
02:30 - 02:44	0	2	0	0	0	0	0	0	0	0	0	0	0	**2**
02:45 - 02:59	0	3	0	0	0	0	0	0	0	0	0	0	0	**3**
03:00 - 03:14	0	1	0	0	0	0	0	0	0	0	0	0	0	**1**
03:15 - 03:29	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
03:30 - 03:44	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
03:45 - 03:59	0	2	0	0	1	0	0	0	0	0	0	0	0	**3**
04:00 - 04:14	0	0	0	0	1	0	0	0	0	0	0	0	0	**1**
04:15 - 04:29	0	1	1	0	0	0	0	0	0	0	0	0	0	**2**
04:30 - 04:44	0	6	0	0	0	0	0	0	0	0	0	0	0	**6**
04:45 - 04:59	0	6	2	0	0	0	0	0	0	0	0	0	0	**8**
05:00 - 05:14	0	5	1	0	3	0	0	0	0	0	0	0	0	**9**
05:15 - 05:29	0	6	1	0	1	0	0	0	0	0	0	0	0	**8**
05:30 - 05:44	0	10	2	0	1	0	0	0	0	0	0	0	0	**13**
05:45 - 05:59	0	19	1	0	1	0	0	0	0	0	0	0	0	**21**
06:00 - 06:14	0	14	2	1	2	1	0	0	0	0	0	0	0	**20**
06:15 - 06:29	0	12	2	0	3	0	0	0	0	0	0	0	0	**17**
06:30 - 06:44	0	15	2	1	5	0	0	0	0	0	0	0	0	**23**
06:45 - 06:59	0	23	1	1	2	0	0	0	0	0	0	0	0	**27**
07:00 - 07:14	0	27	2	1	1	0	0	0	1	0	0	0	0	**32**
07:15 - 07:29	0	53	4	0	1	0	0	0	0	0	0	0	0	**58**
07:30 - 07:44	0	57	2	0	6	0	0	0	0	0	0	0	0	**65**
07:45 - 07:59	0	47	5	4	7	0	0	0	0	0	0	0	0	**63**
08:00 - 08:14	1	65	9	0	5	2	0	0	0	0	0	0	0	**82**
08:15 - 08:29	0	70	12	1	6	0	0	1	0	0	0	0	0	**90**
08:30 - 08:44	0	58	6	0	7	1	0	0	0	0	0	0	0	**72**
08:45 - 08:59	0	65	7	1	8	0	0	0	0	0	0	0	0	**81**
09:00 - 09:14	0	31	6	0	6	0	0	0	0	0	0	0	0	**43**
09:15 - 09:29	0	28	4	1	2	0	0	0	0	0	0	0	0	**35**
09:30 - 09:44	0	31	5	1	3	0	0	0	0	0	0	0	0	**40**
09:45 - 09:59	0	30	2	1	5	0	0	0	0	0	0	0	0	**38**
10:00 - 10:14	0	26	4	1	4	0	0	0	0	0	0	0	0	**35**
10:15 - 10:29	0	35	3	1	0	1	0	0	0	0	0	0	0	**40**
10:30 - 10:44	0	28	3	1	1	0	0	0	1	0	0	0	0	**34**
10:45 - 10:59	0	30	5	0	1	1	0	0	0	0	0	0	0	**37**
11:00 - 11:14	0	20	4	1	1	0	0	0	0	0	0	0	0	**26**
11:15 - 11:29	0	43	4	0	3	0	0	0	0	0	0	0	0	**50**
11:30 - 11:44	0	37	5	0	4	0	0	0	0	0	0	0	0	**46**
11:45 - 11:59	0	25	8	1	4	0	0	0	0	0	0	0	0	**38**
12:00 - 12:14	0	22	4	1	3	0	0	0	0	0	0	0	0	**30**
12:15 - 12:29	0	29	2	0	4	1	0	0	0	0	0	0	0	**36**
12:30 - 12:44	0	18	3	1	4	0	0	0	0	0	0	0	0	**26**
12:45 - 12:59	0	21	3	1	5	0	0	0	0	0	0	0	0	**30**

Daily Northbound Classes Report

Study Date: Thursday, 03/02/2023
Unit ID:
Location: Main Street Location NB

	#1	#2	#3	#4	#5	#6	#7	#8	#9	#10	#11	#12	#13	Total
13:00 - 13:14	0	21	6	0	6	0	0	0	0	0	0	0	0	**33**
13:15 - 13:29	0	21	2	1	2	1	0	0	0	0	0	0	0	**27**
13:30 - 13:44	0	19	4	1	3	0	0	1	0	0	0	0	0	**28**
13:45 - 13:59	0	26	1	0	5	0	0	0	0	0	0	0	0	**32**
14:00 - 14:14	0	25	2	1	2	1	0	1	0	0	0	0	0	**32**
14:15 - 14:29	1	41	3	0	2	0	0	0	0	0	0	0	0	**47**
14:30 - 14:44	0	57	5	0	4	0	0	0	0	0	0	0	0	**66**
14:45 - 14:59	0	42	6	1	3	0	0	0	1	0	0	0	0	**53**
15:00 - 15:14	1	35	3	3	6	0	0	0	0	0	0	0	0	**48**
15:15 - 15:29	0	35	4	1	5	0	0	0	0	0	0	0	0	**45**
15:30 - 15:44	0	36	2	0	6	0	0	0	0	0	0	0	0	**44**
15:45 - 15:59	0	42	4	2	4	0	0	0	0	0	0	0	0	**52**
16:00 - 16:14	0	45	11	2	3	0	0	0	0	0	0	0	0	**61**
16:15 - 16:29	0	40	3	0	3	0	0	0	0	0	0	0	0	**46**
16:30 - 16:44	0	33	4	1	3	1	0	0	0	0	0	0	0	**42**
16:45 - 16:59	0	37	5	1	2	0	0	0	0	0	0	0	0	**45**
17:00 - 17:14	0	36	4	1	3	0	0	1	0	0	0	0	0	**45**
17:15 - 17:29	0	50	7	0	6	0	0	0	0	0	0	0	0	**63**
17:30 - 17:44	0	54	6	0	5	0	0	0	0	0	0	0	0	**65**
17:45 - 17:59	1	47	8	1	3	0	0	0	0	0	0	0	0	**60**
18:00 - 18:14	0	36	5	0	2	0	0	0	0	0	0	0	0	**43**
18:15 - 18:29	0	37	6	1	1	0	0	0	0	0	0	0	0	**45**
18:30 - 18:44	0	36	7	1	0	0	0	0	0	0	0	0	0	**44**
18:45 - 18:59	0	49	8	0	2	1	0	0	0	0	0	0	0	**60**
19:00 - 19:14	1	33	5	0	4	0	0	0	0	0	0	0	0	**43**
19:15 - 19:29	0	33	6	1	3	0	0	0	0	0	0	0	0	**43**
19:30 - 19:44	0	28	1	1	2	0	0	0	0	0	0	0	0	**32**
19:45 - 19:59	0	28	1	0	1	0	0	0	0	0	0	0	0	**30**
20:00 - 20:14	0	30	1	1	0	0	0	0	0	0	0	0	0	**32**
20:15 - 20:29	0	29	5	0	0	0	0	0	0	0	0	0	0	**34**
20:30 - 20:44	0	30	2	1	0	0	0	0	0	0	0	0	0	**33**
20:45 - 20:59	0	17	2	0	4	0	0	0	0	0	0	0	0	**23**
21:00 - 21:14	0	15	5	0	0	0	0	0	0	0	0	0	0	**20**
21:15 - 21:29	0	24	5	0	1	0	0	0	0	0	0	0	0	**30**
21:30 - 21:44	0	20	1	0	0	0	0	0	0	0	0	0	0	**21**
21:45 - 21:59	0	24	1	0	0	0	0	0	0	0	0	0	0	**25**
22:00 - 22:14	0	15	4	0	0	0	0	0	0	0	0	0	0	**19**
22:15 - 22:29	0	13	0	0	0	0	0	0	0	0	0	0	0	**13**
22:30 - 22:44	0	12	1	0	0	0	0	0	0	0	0	0	0	**13**
22:45 - 22:59	0	8	2	0	1	0	0	0	0	0	0	0	0	**11**
23:00 - 23:14	0	9	1	0	1	0	0	0	0	0	0	0	0	**11**
23:15 - 23:29	0	6	0	0	0	0	0	0	0	0	0	0	0	**6**
23:30 - 23:44	0	11	0	0	0	0	0	0	0	0	0	0	0	**11**
23:45 - 23:59	0	4	1	0	0	0	0	0	0	0	0	0	0	**5**
Totals	**5**	**2336**	**288**	**43**	**212**	**11**	**0**	**4**	**3**	**0**	**0**	**0**	**0**	**2902**
Percent of Total	**0.2**	**80.5**	**9.9**	**1.5**	**7.3**	**0.4**	**0.0**	**0.1**	**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**100**
Percent of AM	**0.1**	**79.8**	**9.7**	**1.5**	**8.2**	**0.5**	**0.0**	**0.1**	**0.2**	**0.0**	**0.0**	**0.0**	**0.0**	**100**
Percent of PM	**0.2**	**81.0**	**10.1**	**1.5**	**6.7**	**0.3**	**0.0**	**0.2**	**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**100**

Daily Northbound Classes Report

Study Date: Thursday, 03/02/2023
Unit ID:
Location: Main Street Location NB

Truck Summary:

Total Trucks: 273 % Trucks: 9.4 AM % Trucks: 10.4 PM % Trucks: 8.7

Classification Scheme: FHWA (ID: 1)

#1	Motorcycles - 2 Axles	#6	Single Unit Truck - 3 Axles	#11	Multi-Unit - 5 Axles or Less
#2	Passenger Cars - 2 Axles	#7	Single Unit - 4 Axles	#12	Multi-Unit - 6 Axles
#3	Pickup Trucks, Vans - 2 Axles	#8	Single Unit - 4 Axles or Less	#13	Multi-Unit - 7 Axles or More
#4	Buses	#9	Double Unit - 5 Axles		
#5	Single Unit - 2 Axles, 6 Tires	#10	Double Unit - 6 Axles or More		

Daily Northbound Speeds (MPH)

Study Date: Thursday, 03/02/2023
Unit ID:
Location: Main Street Location NB
Posted Speed: 35

	5-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-99	Total
00:00 - 00:14	0	0	0	0	6	1	1	0	0	0	0	0	0	0	0	**8**
00:15 - 00:29	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
00:30 - 00:44	0	0	0	0	2	2	2	0	0	0	0	0	0	0	0	**6**
00:45 - 00:59	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	**2**
01:00 - 01:14	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	**1**
01:15 - 01:29	0	0	0	0	1	1	2	0	0	0	0	0	0	0	0	**4**
01:30 - 01:44	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	**2**
01:45 - 01:59	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	**2**
02:00 - 02:14	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	**1**
02:15 - 02:29	0	0	0	0	1	3	0	0	0	0	0	0	0	0	0	**4**
02:30 - 02:44	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	**2**
02:45 - 02:59	0	0	0	1	2	0	0	0	0	0	0	0	0	0	0	**3**
03:00 - 03:14	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	**1**
03:15 - 03:29	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
03:30 - 03:44	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
03:45 - 03:59	0	0	0	0	1	0	2	0	0	0	0	0	0	0	0	**3**
04:00 - 04:14	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	**1**
04:15 - 04:29	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	**2**
04:30 - 04:44	0	0	0	0	1	2	2	0	1	0	0	0	0	0	0	**6**
04:45 - 04:59	0	0	0	0	2	4	1	1	0	0	0	0	0	0	0	**8**
05:00 - 05:14	0	0	0	0	1	5	3	0	0	0	0	0	0	0	0	**9**
05:15 - 05:29	0	0	0	0	0	2	6	0	0	0	0	0	0	0	0	**8**
05:30 - 05:44	0	0	0	0	4	2	7	0	0	0	0	0	0	0	0	**13**
05:45 - 05:59	0	0	0	0	6	12	3	0	0	0	0	0	0	0	0	**21**
06:00 - 06:14	0	0	0	0	4	11	5	0	0	0	0	0	0	0	0	**20**
06:15 - 06:29	0	0	0	0	2	10	5	0	0	0	0	0	0	0	0	**17**
06:30 - 06:44	0	0	0	1	4	10	7	1	0	0	0	0	0	0	0	**23**
06:45 - 06:59	0	0	0	0	6	17	2	2	0	0	0	0	0	0	0	**27**
07:00 - 07:14	0	0	1	2	7	15	6	1	0	0	0	0	0	0	0	**32**
07:15 - 07:29	0	0	1	0	8	29	14	5	1	0	0	0	0	0	0	**58**
07:30 - 07:44	0	0	0	1	16	37	7	3	0	1	0	0	0	0	0	**65**
07:45 - 07:59	0	0	0	3	19	32	8	1	0	0	0	0	0	0	0	**63**
08:00 - 08:14	2	0	0	4	29	33	13	1	0	0	0	0	0	0	0	**82**
08:15 - 08:29	0	0	1	1	23	42	20	3	0	0	0	0	0	0	0	**90**
08:30 - 08:44	0	0	0	2	19	32	14	4	1	0	0	0	0	0	0	**72**
08:45 - 08:59	0	0	1	0	7	39	30	3	0	1	0	0	0	0	0	**81**
09:00 - 09:14	0	0	0	0	6	23	13	1	0	0	0	0	0	0	0	**43**
09:15 - 09:29	0	0	0	0	8	17	9	1	0	0	0	0	0	0	0	**35**
09:30 - 09:44	0	0	0	0	4	19	15	1	1	0	0	0	0	0	0	**40**
09:45 - 09:59	0	0	0	0	3	18	12	5	0	0	0	0	0	0	0	**38**
10:00 - 10:14	1	0	0	0	3	14	12	5	0	0	0	0	0	0	0	**35**
10:15 - 10:29	0	0	0	2	2	21	9	5	1	0	0	0	0	0	0	**40**
10:30 - 10:44	0	0	0	1	7	13	11	2	0	0	0	0	0	0	0	**34**
10:45 - 10:59	0	0	0	3	8	15	8	3	0	0	0	0	0	0	0	**37**
11:00 - 11:14	0	0	0	0	6	12	8	0	0	0	0	0	0	0	0	**26**
11:15 - 11:29	0	0	0	0	12	27	10	1	0	0	0	0	0	0	0	**50**
11:30 - 11:44	0	0	0	1	6	24	11	2	2	0	0	0	0	0	0	**46**
11:45 - 11:59	0	0	0	1	3	22	11	1	0	0	0	0	0	0	0	**38**
12:00 - 12:14	0	0	0	0	8	11	9	2	0	0	0	0	0	0	0	**30**
12:15 - 12:29	0	0	1	1	4	13	14	3	0	0	0	0	0	0	0	**36**
12:30 - 12:44	0	0	0	1	2	13	7	3	0	0	0	0	0	0	0	**26**

Daily Northbound Speeds (MPH)

Study Date: Thursday, 03/02/2023
Unit ID:
Location: Main Street Location NB
Posted Speed: 35

	5-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-99	Total
12:45 - 12:59	0	0	0	0	4	17	5	4	0	0	0	0	0	0	0	**30**
13:00 - 13:14	0	0	0	1	5	17	8	2	0	0	0	0	0	0	0	**33**
13:15 - 13:29	0	0	0	1	6	10	8	1	1	0	0	0	0	0	0	**27**
13:30 - 13:44	0	0	0	0	5	13	8	2	0	0	0	0	0	0	0	**28**
13:45 - 13:59	0	0	0	0	8	16	6	1	1	0	0	0	0	0	0	**32**
14:00 - 14:14	0	0	1	0	8	14	9	0	0	0	0	0	0	0	0	**32**
14:15 - 14:29	0	0	0	1	20	20	5	1	0	0	0	0	0	0	0	**47**
14:30 - 14:44	0	0	0	0	18	35	12	0	1	0	0	0	0	0	0	**66**
14:45 - 14:59	0	0	0	1	6	27	19	0	0	0	0	0	0	0	0	**53**
15:00 - 15:14	0	0	0	3	19	13	13	0	0	0	0	0	0	0	0	**48**
15:15 - 15:29	0	0	0	1	10	26	7	1	0	0	0	0	0	0	0	**45**
15:30 - 15:44	0	0	0	0	10	21	13	0	0	0	0	0	0	0	0	**44**
15:45 - 15:59	0	0	0	0	6	29	15	2	0	0	0	0	0	0	0	**52**
16:00 - 16:14	0	0	0	0	4	34	19	4	0	0	0	0	0	0	0	**61**
16:15 - 16:29	0	0	0	0	7	18	19	1	0	1	0	0	0	0	0	**46**
16:30 - 16:44	0	0	0	0	6	17	16	3	0	0	0	0	0	0	0	**42**
16:45 - 16:59	0	0	0	0	9	24	9	2	1	0	0	0	0	0	0	**45**
17:00 - 17:14	0	0	0	0	10	23	8	3	1	0	0	0	0	0	0	**45**
17:15 - 17:29	0	0	0	2	11	30	20	0	0	0	0	0	0	0	0	**63**
17:30 - 17:44	0	0	0	2	17	32	13	1	0	0	0	0	0	0	0	**65**
17:45 - 17:59	0	0	0	3	14	23	16	4	0	0	0	0	0	0	0	**60**
18:00 - 18:14	0	0	0	2	9	21	10	1	0	0	0	0	0	0	0	**43**
18:15 - 18:29	0	0	0	2	11	23	6	3	0	0	0	0	0	0	0	**45**
18:30 - 18:44	0	0	1	1	5	28	9	0	0	0	0	0	0	0	0	**44**
18:45 - 18:59	0	0	0	3	11	32	13	1	0	0	0	0	0	0	0	**60**
19:00 - 19:14	0	0	0	5	13	22	1	1	0	0	0	1	0	0	0	**43**
19:15 - 19:29	0	0	2	3	12	20	6	0	0	0	0	0	0	0	0	**43**
19:30 - 19:44	0	0	0	2	13	13	4	0	0	0	0	0	0	0	0	**32**
19:45 - 19:59	0	0	0	0	8	17	3	2	0	0	0	0	0	0	0	**30**
20:00 - 20:14	0	0	0	0	8	19	5	0	0	0	0	0	0	0	0	**32**
20:15 - 20:29	0	0	1	4	7	17	5	0	0	0	0	0	0	0	0	**34**
20:30 - 20:44	0	0	0	6	16	8	2	0	1	0	0	0	0	0	0	**33**
20:45 - 20:59	0	0	0	4	9	8	2	0	0	0	0	0	0	0	0	**23**
21:00 - 21:14	0	0	0	6	4	6	3	1	0	0	0	0	0	0	0	**20**
21:15 - 21:29	0	0	0	2	9	14	5	0	0	0	0	0	0	0	0	**30**
21:30 - 21:44	0	0	0	2	7	10	2	0	0	0	0	0	0	0	0	**21**
21:45 - 21:59	0	0	0	0	6	7	9	3	0	0	0	0	0	0	0	**25**
22:00 - 22:14	0	0	0	1	9	3	4	1	1	0	0	0	0	0	0	**19**
22:15 - 22:29	0	0	0	2	5	3	3	0	0	0	0	0	0	0	0	**13**
22:30 - 22:44	0	0	1	1	4	6	1	0	0	0	0	0	0	0	0	**13**
22:45 - 22:59	0	0	0	0	3	5	3	0	0	0	0	0	0	0	0	**11**
23:00 - 23:14	0	0	0	1	2	5	3	0	0	0	0	0	0	0	0	**11**
23:15 - 23:29	0	0	0	0	4	1	1	0	0	0	0	0	0	0	0	**6**
23:30 - 23:44	0	0	0	0	2	7	2	0	0	0	0	0	0	0	0	**11**
23:45 - 23:59	0	0	0	0	2	2	0	1	0	0	0	0	0	0	0	**5**
Totals	**3**	**0**	**12**	**89**	**639**	**1365**	**669**	**107**	**14**	**3**	**0**	**1**	**0**	**0**	**0**	**2902**
Percent of Total	**0.1**	**0.0**	**0.4**	**3.1**	**22.0**	**47.0**	**23.1**	**3.7**	**0.5**	**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**100**
Percent of AM	**0.3**	**0.0**	**0.4**	**2.1**	**20.3**	**47.7**	**24.1**	**4.4**	**0.6**	**0.2**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**100**
Percent of PM	**0.0**	**0.0**	**0.4**	**3.8**	**23.3**	**46.6**	**22.3**	**3.2**	**0.4**	**0.1**	**0.0**	**0.1**	**0.0**	**0.0**	**0.0**	**100**

Daily Northbound Speeds (MPH)

Study Date: Thursday, 03/02/2023
Unit ID:
Location: Main Street Location NB

Posted Speed: 35

Standard Deviation:	4.9 MPH	Ten Mile Pace:	35 to 44 MPH	85th Percentile:	42.7 MPH
Mean Speed:	37.6 MPH	Percent in Ten Mile Pace:	70.1%		
Median Speed:	37.6 MPH			15th Percentile:	32.6 MPH
Modal Speed:	37.5 MPH			90th Percentile:	43.8 MPH
				95th Percentile:	44.8 MPH

Daily Vehicle Volume Report

Study Date: Thursday, 03/02/2023
Unit ID:
Location: Main Street Location SB

	Southbound Volume
00:00 - 00:14	8
00:15 - 00:29	5
00:30 - 00:44	4
00:45 - 00:59	1
01:00 - 01:14	4
01:15 - 01:29	2
01:30 - 01:44	1
01:45 - 01:59	0
02:00 - 02:14	3
02:15 - 02:29	0
02:30 - 02:44	4
02:45 - 02:59	1
03:00 - 03:14	0
03:15 - 03:29	0
03:30 - 03:44	0
03:45 - 03:59	0
04:00 - 04:14	0
04:15 - 04:29	0
04:30 - 04:44	0
04:45 - 04:59	4
05:00 - 05:14	1
05:15 - 05:29	4
05:30 - 05:44	4
05:45 - 05:59	7
06:00 - 06:14	3
06:15 - 06:29	8
06:30 - 06:44	8
06:45 - 06:59	18
07:00 - 07:14	25
07:15 - 07:29	23
07:30 - 07:44	46
07:45 - 07:59	68
08:00 - 08:14	91
08:15 - 08:29	49
08:30 - 08:44	29
08:45 - 08:59	43
09:00 - 09:14	33
09:15 - 09:29	28
09:30 - 09:44	36
09:45 - 09:59	40
10:00 - 10:14	33
10:15 - 10:29	25
10:30 - 10:44	29
10:45 - 10:59	43
11:00 - 11:14	32
11:15 - 11:29	46
11:30 - 11:44	63
11:45 - 11:59	44
12:00 - 12:14	39
12:15 - 12:29	45
12:30 - 12:44	33
12:45 - 12:59	30

Daily Vehicle Volume Report

Study Date: Thursday, 03/02/2023
Unit ID:
Location: Main Street Location SB

	Southbound Volume
13:00 - 13:14	19
13:15 - 13:29	39
13:30 - 13:44	27
13:45 - 13:59	60
14:00 - 14:14	58
14:15 - 14:29	79
14:30 - 14:44	63
14:45 - 14:59	48
15:00 - 15:14	69
15:15 - 15:29	50
15:30 - 15:44	50
15:45 - 15:59	54
16:00 - 16:14	54
16:15 - 16:29	56
16:30 - 16:44	74
16:45 - 16:59	72
17:00 - 17:14	81
17:15 - 17:29	80
17:30 - 17:44	78
17:45 - 17:59	79
18:00 - 18:14	65
18:15 - 18:29	72
18:30 - 18:44	62
18:45 - 18:59	64
19:00 - 19:14	56
19:15 - 19:29	69
19:30 - 19:44	59
19:45 - 19:59	52
20:00 - 20:14	51
20:15 - 20:29	51
20:30 - 20:44	55
20:45 - 20:59	34
21:00 - 21:14	32
21:15 - 21:29	32
21:30 - 21:44	37
21:45 - 21:59	31
22:00 - 22:14	36
22:15 - 22:29	22
22:30 - 22:44	29
22:45 - 22:59	19
23:00 - 23:14	10
23:15 - 23:29	17
23:30 - 23:44	10
23:45 - 23:59	14
Totals	**3232**
AM Peak Time	**07:36 - 08:35**
AM Peak Volume	**257**
PM Peak Time	**16:56 - 17:55**
PM Peak Volume	**320**

Daily Vehicle Volume Report

Study Date: Thursday, 03/02/2023
Unit ID:
Location: Main Street Location SB

Daily Southbound Classes Report

Study Date: Thursday, 03/02/2023
Unit ID:
Location: Main Street Location SB

	#1	#2	#3	#4	#5	#6	#7	#8	#9	#10	#11	#12	#13	Total
00:00 - 00:14	0	7	0	0	1	0	0	0	0	0	0	0	0	**8**
00:15 - 00:29	0	5	0	0	0	0	0	0	0	0	0	0	0	**5**
00:30 - 00:44	0	4	0	0	0	0	0	0	0	0	0	0	0	**4**
00:45 - 00:59	0	0	0	0	1	0	0	0	0	0	0	0	0	**1**
01:00 - 01:14	0	4	0	0	0	0	0	0	0	0	0	0	0	**4**
01:15 - 01:29	0	2	0	0	0	0	0	0	0	0	0	0	0	**2**
01:30 - 01:44	0	1	0	0	0	0	0	0	0	0	0	0	0	**1**
01:45 - 01:59	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
02:00 - 02:14	0	2	0	0	1	0	0	0	0	0	0	0	0	**3**
02:15 - 02:29	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
02:30 - 02:44	0	3	0	0	1	0	0	0	0	0	0	0	0	**4**
02:45 - 02:59	0	1	0	0	0	0	0	0	0	0	0	0	0	**1**
03:00 - 03:14	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
03:15 - 03:29	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
03:30 - 03:44	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
03:45 - 03:59	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
04:00 - 04:14	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
04:15 - 04:29	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
04:30 - 04:44	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
04:45 - 04:59	0	4	0	0	0	0	0	0	0	0	0	0	0	**4**
05:00 - 05:14	0	1	0	0	0	0	0	0	0	0	0	0	0	**1**
05:15 - 05:29	0	3	1	0	0	0	0	0	0	0	0	0	0	**4**
05:30 - 05:44	0	3	0	0	1	0	0	0	0	0	0	0	0	**4**
05:45 - 05:59	0	7	0	0	0	0	0	0	0	0	0	0	0	**7**
06:00 - 06:14	0	3	0	0	0	0	0	0	0	0	0	0	0	**3**
06:15 - 06:29	0	6	0	1	1	0	0	0	0	0	0	0	0	**8**
06:30 - 06:44	0	7	0	1	0	0	0	0	0	0	0	0	0	**8**
06:45 - 06:59	0	12	3	1	2	0	0	0	0	0	0	0	0	**18**
07:00 - 07:14	0	23	0	1	1	0	0	0	0	0	0	0	0	**25**
07:15 - 07:29	0	19	0	1	3	0	0	0	0	0	0	0	0	**23**
07:30 - 07:44	0	39	3	1	3	0	0	0	0	0	0	0	0	**46**
07:45 - 07:59	0	56	6	0	6	0	0	0	0	0	0	0	0	**68**
08:00 - 08:14	0	80	4	0	7	0	0	0	0	0	0	0	0	**91**
08:15 - 08:29	0	40	5	1	3	0	0	0	0	0	0	0	0	**49**
08:30 - 08:44	0	21	3	1	4	0	0	0	0	0	0	0	0	**29**
08:45 - 08:59	0	34	2	0	7	0	0	0	0	0	0	0	0	**43**
09:00 - 09:14	0	27	3	0	2	0	0	0	1	0	0	0	0	**33**
09:15 - 09:29	0	20	1	1	5	0	1	0	0	0	0	0	0	**28**
09:30 - 09:44	0	30	2	0	4	0	0	0	0	0	0	0	0	**36**
09:45 - 09:59	0	24	9	1	5	0	0	0	1	0	0	0	0	**40**
10:00 - 10:14	0	20	7	1	5	0	0	0	0	0	0	0	0	**33**
10:15 - 10:29	0	18	4	2	1	0	0	0	0	0	0	0	0	**25**
10:30 - 10:44	0	18	6	0	5	0	0	0	0	0	0	0	0	**29**
10:45 - 10:59	1	23	6	1	11	0	0	1	0	0	0	0	0	**43**
11:00 - 11:14	1	24	2	1	4	0	0	0	0	0	0	0	0	**32**
11:15 - 11:29	0	40	5	0	1	0	0	0	0	0	0	0	0	**46**
11:30 - 11:44	0	46	11	0	6	0	0	0	0	0	0	0	0	**63**
11:45 - 11:59	2	35	5	1	1	0	0	0	0	0	0	0	0	**44**
12:00 - 12:14	0	30	3	1	4	1	0	0	0	0	0	0	0	**39**
12:15 - 12:29	0	37	2	1	5	0	0	0	0	0	0	0	0	**45**
12:30 - 12:44	0	26	4	1	2	0	0	0	0	0	0	0	0	**33**
12:45 - 12:59	0	19	3	0	6	2	0	0	0	0	0	0	0	**30**

Daily Southbound Classes Report

Study Date: Thursday, 03/02/2023
Unit ID:
Location: Main Street Location SB

	#1	#2	#3	#4	#5	#6	#7	#8	#9	#10	#11	#12	#13	Total
13:00 - 13:14	0	14	1	0	4	0	0	0	0	0	0	0	0	**19**
13:15 - 13:29	0	28	6	1	4	0	0	0	0	0	0	0	0	**39**
13:30 - 13:44	0	17	5	1	4	0	0	0	0	0	0	0	0	**27**
13:45 - 13:59	1	47	3	1	7	0	0	0	1	0	0	0	0	**60**
14:00 - 14:14	0	46	2	1	6	2	0	1	0	0	0	0	0	**58**
14:15 - 14:29	1	61	7	1	8	1	0	0	0	0	0	0	0	**79**
14:30 - 14:44	4	44	6	0	9	0	0	0	0	0	0	0	0	**63**
14:45 - 14:59	6	33	4	1	4	0	0	0	0	0	0	0	0	**48**
15:00 - 15:14	11	46	6	1	5	0	0	0	0	0	0	0	0	**69**
15:15 - 15:29	10	35	2	0	3	0	0	0	0	0	0	0	0	**50**
15:30 - 15:44	4	35	4	0	5	1	1	0	0	0	0	0	0	**50**
15:45 - 15:59	6	32	4	0	11	1	0	0	0	0	0	0	0	**54**
16:00 - 16:14	2	44	3	1	4	0	0	0	0	0	0	0	0	**54**
16:15 - 16:29	4	44	3	0	4	0	0	1	0	0	0	0	0	**56**
16:30 - 16:44	5	56	8	0	5	0	0	0	0	0	0	0	0	**74**
16:45 - 16:59	0	56	3	0	13	0	0	0	0	0	0	0	0	**72**
17:00 - 17:14	0	67	6	1	7	0	0	0	0	0	0	0	0	**81**
17:15 - 17:29	0	70	5	0	5	0	0	0	0	0	0	0	0	**80**
17:30 - 17:44	0	66	7	1	4	0	0	0	0	0	0	0	0	**78**
17:45 - 17:59	0	64	7	0	8	0	0	0	0	0	0	0	0	**79**
18:00 - 18:14	1	51	4	0	8	0	0	0	0	0	0	1	0	**65**
18:15 - 18:29	0	56	9	1	6	0	0	0	0	0	0	0	0	**72**
18:30 - 18:44	0	52	4	1	5	0	0	0	0	0	0	0	0	**62**
18:45 - 18:59	0	50	7	0	7	0	0	0	0	0	0	0	0	**64**
19:00 - 19:14	0	48	2	1	5	0	0	0	0	0	0	0	0	**56**
19:15 - 19:29	0	53	6	0	9	0	1	0	0	0	0	0	0	**69**
19:30 - 19:44	0	48	5	0	6	0	0	0	0	0	0	0	0	**59**
19:45 - 19:59	0	42	4	1	5	0	0	0	0	0	0	0	0	**52**
20:00 - 20:14	0	43	5	0	2	1	0	0	0	0	0	0	0	**51**
20:15 - 20:29	0	39	8	1	3	0	0	0	0	0	0	0	0	**51**
20:30 - 20:44	0	45	6	0	4	0	0	0	0	0	0	0	0	**55**
20:45 - 20:59	0	28	4	0	2	0	0	0	0	0	0	0	0	**34**
21:00 - 21:14	0	28	1	0	3	0	0	0	0	0	0	0	0	**32**
21:15 - 21:29	0	29	1	0	2	0	0	0	0	0	0	0	0	**32**
21:30 - 21:44	0	29	3	0	5	0	0	0	0	0	0	0	0	**37**
21:45 - 21:59	0	26	3	0	2	0	0	0	0	0	0	0	0	**31**
22:00 - 22:14	0	30	2	0	4	0	0	0	0	0	0	0	0	**36**
22:15 - 22:29	0	17	2	0	3	0	0	0	0	0	0	0	0	**22**
22:30 - 22:44	0	24	4	0	1	0	0	0	0	0	0	0	0	**29**
22:45 - 22:59	0	18	0	0	1	0	0	0	0	0	0	0	0	**19**
23:00 - 23:14	0	8	2	0	0	0	0	0	0	0	0	0	0	**10**
23:15 - 23:29	0	16	1	0	0	0	0	0	0	0	0	0	0	**17**
23:30 - 23:44	0	7	1	0	2	0	0	0	0	0	0	0	0	**10**
23:45 - 23:59	0	12	1	0	1	0	0	0	0	0	0	0	0	**14**
Totals	**59**	**2528**	**277**	**34**	**315**	**9**	**3**	**3**	**3**	**0**	**0**	**1**	**0**	**3232**
Percent of Total	**1.8**	**78.2**	**8.6**	**1.1**	**9.7**	**0.3**	**0.1**	**0.1**	**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**100**
Percent of AM	**0.4**	**77.7**	**9.6**	**1.7**	**10.0**	**0.0**	**0.1**	**0.1**	**0.2**	**0.0**	**0.0**	**0.0**	**0.0**	**100**
Percent of PM	**2.4**	**78.4**	**8.2**	**0.8**	**9.6**	**0.4**	**0.1**	**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**100**

Daily Southbound Classes Report

Study Date: Thursday, 03/02/2023
Unit ID:
Location: Main Street Location SB

Truck Summary:

Total Trucks: 368 % Trucks: 11.4 AM % Trucks: 12.2 PM % Trucks: 11.1

Classification Scheme: FHWA (ID: 1)

#1	Motorcycles - 2 Axles	#6	Single Unit Truck - 3 Axles	#11	Multi-Unit - 5 Axles or Less
#2	Passenger Cars - 2 Axles	#7	Single Unit - 4 Axles	#12	Multi-Unit - 6 Axles
#3	Pickup Trucks, Vans - 2 Axles	#8	Single Unit - 4 Axles or Less	#13	Multi-Unit - 7 Axles or More
#4	Buses	#9	Double Unit - 5 Axles		
#5	Single Unit - 2 Axles, 6 Tires	#10	Double Unit - 6 Axles or More		

Daily Southbound Speeds (MPH)

Study Date: Thursday, 03/02/2023
Unit ID:
Location: Main Street Location SB

Posted Speed: 35

	5-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-99	Total
00:00 - 00:14	0	0	0	0	4	0	4	0	0	0	0	0	0	0	0	**8**
00:15 - 00:29	0	0	0	0	2	1	1	1	0	0	0	0	0	0	0	**5**
00:30 - 00:44	0	0	0	0	1	2	1	0	0	0	0	0	0	0	0	**4**
00:45 - 00:59	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	**1**
01:00 - 01:14	0	0	0	2	1	1	0	0	0	0	0	0	0	0	0	**4**
01:15 - 01:29	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	**2**
01:30 - 01:44	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	**1**
01:45 - 01:59	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
02:00 - 02:14	0	0	0	2	1	0	0	0	0	0	0	0	0	0	0	**3**
02:15 - 02:29	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
02:30 - 02:44	0	0	0	0	1	3	0	0	0	0	0	0	0	0	0	**4**
02:45 - 02:59	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	**1**
03:00 - 03:14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
03:15 - 03:29	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
03:30 - 03:44	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
03:45 - 03:59	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
04:00 - 04:14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
04:15 - 04:29	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
04:30 - 04:44	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
04:45 - 04:59	0	0	0	0	2	2	0	0	0	0	0	0	0	0	0	**4**
05:00 - 05:14	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	**1**
05:15 - 05:29	0	0	0	0	0	3	1	0	0	0	0	0	0	0	0	**4**
05:30 - 05:44	0	0	0	0	1	2	1	0	0	0	0	0	0	0	0	**4**
05:45 - 05:59	0	0	0	1	2	2	2	0	0	0	0	0	0	0	0	**7**
06:00 - 06:14	0	0	0	0	1	0	1	1	0	0	0	0	0	0	0	**3**
06:15 - 06:29	0	0	0	1	2	2	2	1	0	0	0	0	0	0	0	**8**
06:30 - 06:44	0	0	0	1	3	4	0	0	0	0	0	0	0	0	0	**8**
06:45 - 06:59	0	0	0	1	2	6	8	1	0	0	0	0	0	0	0	**18**
07:00 - 07:14	0	0	0	1	12	9	1	2	0	0	0	0	0	0	0	**25**
07:15 - 07:29	0	0	0	1	8	10	4	0	0	0	0	0	0	0	0	**23**
07:30 - 07:44	0	0	0	2	18	16	10	0	0	0	0	0	0	0	0	**46**
07:45 - 07:59	0	0	0	4	24	31	7	2	0	0	0	0	0	0	0	**68**
08:00 - 08:14	0	0	0	2	30	44	12	3	0	0	0	0	0	0	0	**91**
08:15 - 08:29	0	0	0	4	8	25	12	0	0	0	0	0	0	0	0	**49**
08:30 - 08:44	0	0	0	2	2	17	7	1	0	0	0	0	0	0	0	**29**
08:45 - 08:59	0	0	0	1	7	20	14	1	0	0	0	0	0	0	0	**43**
09:00 - 09:14	0	0	0	0	9	15	7	2	0	0	0	0	0	0	0	**33**
09:15 - 09:29	0	0	0	4	4	15	4	1	0	0	0	0	0	0	0	**28**
09:30 - 09:44	0	0	0	0	9	18	6	3	0	0	0	0	0	0	0	**36**
09:45 - 09:59	0	0	0	2	10	19	6	3	0	0	0	0	0	0	0	**40**
10:00 - 10:14	0	0	0	0	0	17	13	3	0	0	0	0	0	0	0	**33**
10:15 - 10:29	0	0	0	0	3	10	11	1	0	0	0	0	0	0	0	**25**
10:30 - 10:44	0	0	0	2	3	12	10	2	0	0	0	0	0	0	0	**29**
10:45 - 10:59	0	0	1	1	9	20	10	1	1	0	0	0	0	0	0	**43**
11:00 - 11:14	0	0	0	1	8	17	5	1	0	0	0	0	0	0	0	**32**
11:15 - 11:29	0	0	0	0	11	20	15	0	0	0	0	0	0	0	0	**46**
11:30 - 11:44	0	0	0	2	11	28	20	2	0	0	0	0	0	0	0	**63**
11:45 - 11:59	0	0	0	0	12	18	10	3	1	0	0	0	0	0	0	**44**
12:00 - 12:14	0	0	0	1	6	20	9	3	0	0	0	0	0	0	0	**39**
12:15 - 12:29	0	0	0	0	2	21	18	1	2	0	0	1	0	0	0	**45**
12:30 - 12:44	0	0	0	0	4	14	13	2	0	0	0	0	0	0	0	**33**

Daily Southbound Speeds (MPH)

Study Date: Thursday, 03/02/2023
Unit ID:
Location: Main Street Location SB

Posted Speed: 35

	5-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-99	Total
12:45 - 12:59	0	0	0	0	5	12	11	2	0	0	0	0	0	0	0	**30**
13:00 - 13:14	0	0	0	0	4	10	5	0	0	0	0	0	0	0	0	**19**
13:15 - 13:29	0	0	0	0	4	21	11	3	0	0	0	0	0	0	0	**39**
13:30 - 13:44	0	0	1	1	4	12	8	1	0	0	0	0	0	0	0	**27**
13:45 - 13:59	0	0	0	0	13	27	19	1	0	0	0	0	0	0	0	**60**
14:00 - 14:14	0	0	0	4	9	30	13	2	0	0	0	0	0	0	0	**58**
14:15 - 14:29	0	0	0	2	21	39	16	1	0	0	0	0	0	0	0	**79**
14:30 - 14:44	0	0	0	1	15	31	13	2	1	0	0	0	0	0	0	**63**
14:45 - 14:59	0	0	0	2	7	21	17	1	0	0	0	0	0	0	0	**48**
15:00 - 15:14	0	0	1	2	11	36	13	6	0	0	0	0	0	0	0	**69**
15:15 - 15:29	0	0	1	0	8	22	17	1	1	0	0	0	0	0	0	**50**
15:30 - 15:44	0	0	0	0	4	25	19	2	0	0	0	0	0	0	0	**50**
15:45 - 15:59	0	0	0	1	6	25	18	4	0	0	0	0	0	0	0	**54**
16:00 - 16:14	0	0	0	1	6	22	20	3	1	0	0	0	0	0	0	**53**
16:15 - 16:29	0	0	0	1	4	25	22	3	1	0	0	0	0	0	0	**56**
16:30 - 16:44	0	0	0	2	7	38	23	4	0	0	0	0	0	0	0	**74**
16:45 - 16:59	0	0	0	0	15	32	22	3	0	0	0	0	0	0	0	**72**
17:00 - 17:14	0	0	0	1	6	41	24	7	1	1	0	0	0	0	0	**81**
17:15 - 17:29	0	0	0	2	9	24	34	11	0	0	0	0	0	0	0	**80**
17:30 - 17:44	0	0	0	0	12	36	27	3	0	0	0	0	0	0	0	**78**
17:45 - 17:59	0	0	0	1	13	34	29	1	1	0	0	0	0	0	0	**79**
18:00 - 18:14	0	0	1	1	5	31	20	6	1	0	0	0	0	0	0	**65**
18:15 - 18:29	0	0	0	0	6	34	29	3	0	0	0	0	0	0	0	**72**
18:30 - 18:44	0	0	1	4	8	27	20	2	0	0	0	0	0	0	0	**62**
18:45 - 18:59	0	0	1	1	8	39	13	1	1	0	0	0	0	0	0	**64**
19:00 - 19:14	0	0	0	1	16	28	11	0	0	0	0	0	0	0	0	**56**
19:15 - 19:29	0	0	0	0	11	36	19	1	1	1	0	0	0	0	0	**69**
19:30 - 19:44	0	1	1	3	9	34	10	1	0	0	0	0	0	0	0	**59**
19:45 - 19:59	0	0	1	2	7	30	10	1	1	0	0	0	0	0	0	**52**
20:00 - 20:14	0	0	0	1	19	21	10	0	0	0	0	0	0	0	0	**51**
20:15 - 20:29	0	0	0	1	11	26	12	1	0	0	0	0	0	0	0	**51**
20:30 - 20:44	0	0	0	2	10	35	7	1	0	0	0	0	0	0	0	**55**
20:45 - 20:59	0	0	0	1	4	21	6	2	0	0	0	0	0	0	0	**34**
21:00 - 21:14	0	0	0	1	7	15	7	2	0	0	0	0	0	0	0	**32**
21:15 - 21:29	0	0	0	3	7	13	9	0	0	0	0	0	0	0	0	**32**
21:30 - 21:44	0	0	0	0	8	19	10	0	0	0	0	0	0	0	0	**37**
21:45 - 21:59	0	0	0	2	5	13	11	0	0	0	0	0	0	0	0	**31**
22:00 - 22:14	0	0	0	4	3	20	8	1	0	0	0	0	0	0	0	**36**
22:15 - 22:29	0	0	0	1	4	12	5	0	0	0	0	0	0	0	0	**22**
22:30 - 22:44	0	0	0	2	5	16	5	1	0	0	0	0	0	0	0	**29**
22:45 - 22:59	0	0	0	1	1	12	4	1	0	0	0	0	0	0	0	**19**
23:00 - 23:14	0	0	0	1	3	3	3	0	0	0	0	0	0	0	0	**10**
23:15 - 23:29	0	0	0	0	6	6	5	0	0	0	0	0	0	0	0	**17**
23:30 - 23:44	0	0	0	1	4	3	2	0	0	0	0	0	0	0	0	**10**
23:45 - 23:59	0	1	1	8	1	1	2	0	0	0	0	0	0	0	0	**14**
Totals	**0**	**2**	**10**	**101**	**585**	**1525**	**865**	**126**	**14**	**2**	**0**	**1**	**0**	**0**	**0**	**3231**
Percent of Total	**0.0**	**0.1**	**0.3**	**3.1**	**18.1**	**47.2**	**26.8**	**3.9**	**0.4**	**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**100**
Percent of AM	**0.0**	**0.0**	**0.1**	**4.1**	**24.2**	**45.0**	**22.5**	**3.8**	**0.2**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**100**
Percent of PM	**0.0**	**0.1**	**0.4**	**2.7**	**15.7**	**48.1**	**28.5**	**3.9**	**0.5**	**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**100**

Daily Southbound Speeds (MPH)

Study Date: Thursday, 03/02/2023
Unit ID:
Location: Main Street Location SB

Posted Speed: 35

Standard Deviation:	4.7 MPH	Ten Mile Pace:	35 to 44 MPH	85th Percentile:	43.0 MPH
Mean Speed:	38.0 MPH	Percent in Ten Mile Pace:	74.0%		
Median Speed:	38.0 MPH			15th Percentile:	33.2 MPH
Modal Speed:	37.5 MPH			90th Percentile:	44.0 MPH
				95th Percentile:	44.9 MPH

Daily Vehicle Volume Report

Study Date: Thursday, 03/02/2023
Unit ID:
Location: Mill Road Location NB

	Northbound Volume
00:00 - 00:14	6
00:15 - 00:29	8
00:30 - 00:44	5
00:45 - 00:59	4
01:00 - 01:14	3
01:15 - 01:29	6
01:30 - 01:44	11
01:45 - 01:59	1
02:00 - 02:14	3
02:15 - 02:29	0
02:30 - 02:44	2
02:45 - 02:59	4
03:00 - 03:14	0
03:15 - 03:29	1
03:30 - 03:44	3
03:45 - 03:59	4
04:00 - 04:14	1
04:15 - 04:29	2
04:30 - 04:44	5
04:45 - 04:59	4
05:00 - 05:14	4
05:15 - 05:29	9
05:30 - 05:44	10
05:45 - 05:59	19
06:00 - 06:14	13
06:15 - 06:29	12
06:30 - 06:44	13
06:45 - 06:59	32
07:00 - 07:14	28
07:15 - 07:29	26
07:30 - 07:44	47
07:45 - 07:59	66
08:00 - 08:14	63
08:15 - 08:29	55
08:30 - 08:44	44
08:45 - 08:59	58
09:00 - 09:14	54
09:15 - 09:29	49
09:30 - 09:44	42
09:45 - 09:59	45
10:00 - 10:14	57
10:15 - 10:29	46
10:30 - 10:44	41
10:45 - 10:59	58
11:00 - 11:14	66
11:15 - 11:29	62
11:30 - 11:44	57
11:45 - 11:59	69
12:00 - 12:14	58
12:15 - 12:29	75
12:30 - 12:44	64
12:45 - 12:59	72

Daily Vehicle Volume Report

Study Date: Thursday, 03/02/2023
Unit ID:
Location: Mill Road Location NB

	Northbound Volume
13:00 - 13:14	58
13:15 - 13:29	68
13:30 - 13:44	47
13:45 - 13:59	58
14:00 - 14:14	64
14:15 - 14:29	63
14:30 - 14:44	74
14:45 - 14:59	71
15:00 - 15:14	76
15:15 - 15:29	69
15:30 - 15:44	73
15:45 - 15:59	85
16:00 - 16:14	63
16:15 - 16:29	53
16:30 - 16:44	68
16:45 - 16:59	67
17:00 - 17:14	80
17:15 - 17:29	75
17:30 - 17:44	105
17:45 - 17:59	106
18:00 - 18:14	108
18:15 - 18:29	91
18:30 - 18:44	91
18:45 - 18:59	115
19:00 - 19:14	98
19:15 - 19:29	86
19:30 - 19:44	73
19:45 - 19:59	72
20:00 - 20:14	72
20:15 - 20:29	60
20:30 - 20:44	62
20:45 - 20:59	46
21:00 - 21:14	40
21:15 - 21:29	43
21:30 - 21:44	35
21:45 - 21:59	44
22:00 - 22:14	45
22:15 - 22:29	26
22:30 - 22:44	18
22:45 - 22:59	13
23:00 - 23:14	16
23:15 - 23:29	16
23:30 - 23:44	10
23:45 - 23:59	11
Totals	**4201**
AM Peak Time	**10:55 - 11:54**
AM Peak Volume	**260**
PM Peak Time	**18:04 - 19:03**
PM Peak Volume	**418**

Daily Vehicle Volume Report

Study Date: Thursday, 03/02/2023
Unit ID:
Location: Mill Road Location NB

Daily Northbound Classes Report

Study Date: Thursday, 03/02/2023
Unit ID:
Location: Mill Road Location NB

	#1	#2	#3	#4	#5	#6	#7	#8	#9	#10	#11	#12	#13	Total
00:00 - 00:14	0	5	1	0	0	0	0	0	0	0	0	0	0	**6**
00:15 - 00:29	0	7	1	0	0	0	0	0	0	0	0	0	0	**8**
00:30 - 00:44	0	5	0	0	0	0	0	0	0	0	0	0	0	**5**
00:45 - 00:59	0	4	0	0	0	0	0	0	0	0	0	0	0	**4**
01:00 - 01:14	0	3	0	0	0	0	0	0	0	0	0	0	0	**3**
01:15 - 01:29	0	6	0	0	0	0	0	0	0	0	0	0	0	**6**
01:30 - 01:44	0	10	0	0	1	0	0	0	0	0	0	0	0	**11**
01:45 - 01:59	0	1	0	0	0	0	0	0	0	0	0	0	0	**1**
02:00 - 02:14	0	2	0	0	1	0	0	0	0	0	0	0	0	**3**
02:15 - 02:29	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
02:30 - 02:44	0	2	0	0	0	0	0	0	0	0	0	0	0	**2**
02:45 - 02:59	0	4	0	0	0	0	0	0	0	0	0	0	0	**4**
03:00 - 03:14	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
03:15 - 03:29	0	1	0	0	0	0	0	0	0	0	0	0	0	**1**
03:30 - 03:44	0	3	0	0	0	0	0	0	0	0	0	0	0	**3**
03:45 - 03:59	0	4	0	0	0	0	0	0	0	0	0	0	0	**4**
04:00 - 04:14	0	1	0	0	0	0	0	0	0	0	0	0	0	**1**
04:15 - 04:29	0	2	0	0	0	0	0	0	0	0	0	0	0	**2**
04:30 - 04:44	0	5	0	0	0	0	0	0	0	0	0	0	0	**5**
04:45 - 04:59	0	4	0	0	0	0	0	0	0	0	0	0	0	**4**
05:00 - 05:14	0	4	0	0	0	0	0	0	0	0	0	0	0	**4**
05:15 - 05:29	0	8	0	0	1	0	0	0	0	0	0	0	0	**9**
05:30 - 05:44	0	9	1	0	0	0	0	0	0	0	0	0	0	**10**
05:45 - 05:59	0	16	2	0	1	0	0	0	0	0	0	0	0	**19**
06:00 - 06:14	0	12	1	0	0	0	0	0	0	0	0	0	0	**13**
06:15 - 06:29	0	11	1	0	0	0	0	0	0	0	0	0	0	**12**
06:30 - 06:44	0	12	1	0	0	0	0	0	0	0	0	0	0	**13**
06:45 - 06:59	1	28	0	0	3	0	0	0	0	0	0	0	0	**32**
07:00 - 07:14	0	26	0	0	2	0	0	0	0	0	0	0	0	**28**
07:15 - 07:29	0	20	3	1	2	0	0	0	0	0	0	0	0	**26**
07:30 - 07:44	0	41	3	0	3	0	0	0	0	0	0	0	0	**47**
07:45 - 07:59	0	58	5	0	3	0	0	0	0	0	0	0	0	**66**
08:00 - 08:14	0	56	3	0	4	0	0	0	0	0	0	0	0	**63**
08:15 - 08:29	0	48	1	0	5	0	0	0	0	1	0	0	0	**55**
08:30 - 08:44	0	33	6	1	4	0	0	0	0	0	0	0	0	**44**
08:45 - 08:59	0	53	1	0	4	0	0	0	0	0	0	0	0	**58**
09:00 - 09:14	0	45	2	0	7	0	0	0	0	0	0	0	0	**54**
09:15 - 09:29	0	42	3	0	2	0	0	0	0	0	0	0	2	**49**
09:30 - 09:44	0	37	2	0	3	0	0	0	0	0	0	0	0	**42**
09:45 - 09:59	0	37	4	1	3	0	0	0	0	0	0	0	0	**45**
10:00 - 10:14	1	49	2	0	4	0	0	0	1	0	0	0	0	**57**
10:15 - 10:29	0	41	2	0	2	0	0	0	0	0	0	0	1	**46**
10:30 - 10:44	0	35	3	1	2	0	0	0	0	0	0	0	0	**41**
10:45 - 10:59	1	43	9	0	5	0	0	0	0	0	0	0	0	**58**
11:00 - 11:14	0	52	6	0	5	1	0	0	0	0	0	0	2	**66**
11:15 - 11:29	0	57	3	0	2	0	0	0	0	0	0	0	0	**62**
11:30 - 11:44	0	44	7	0	5	0	0	1	0	0	0	0	0	**57**
11:45 - 11:59	0	51	6	0	10	0	0	0	0	0	0	0	2	**69**
12:00 - 12:14	0	46	5	0	6	1	0	0	0	0	0	0	0	**58**
12:15 - 12:29	1	64	5	0	4	0	1	0	0	0	0	0	0	**75**
12:30 - 12:44	1	49	8	0	6	0	0	0	0	0	0	0	0	**64**
12:45 - 12:59	0	63	4	0	2	1	0	0	0	0	0	0	2	**72**

Daily Northbound Classes Report

Study Date: Thursday, 03/02/2023
Unit ID:
Location: Mill Road Location NB

	#1	#2	#3	#4	#5	#6	#7	#8	#9	#10	#11	#12	#13	Total
13:00 - 13:14	1	49	5	0	3	0	0	0	0	0	0	0	0	**58**
13:15 - 13:29	0	59	3	0	4	0	0	2	0	0	0	0	0	**68**
13:30 - 13:44	0	42	2	0	2	1	0	0	0	0	0	0	0	**47**
13:45 - 13:59	0	47	5	0	5	0	0	0	0	0	0	0	1	**58**
14:00 - 14:14	0	53	3	0	6	1	0	0	0	0	0	0	1	**64**
14:15 - 14:29	0	54	3	0	5	1	0	0	0	0	0	0	0	**63**
14:30 - 14:44	0	63	3	0	8	0	0	0	0	0	0	0	0	**74**
14:45 - 14:59	0	51	6	1	11	0	0	0	0	0	0	0	2	**71**
15:00 - 15:14	0	65	4	2	4	1	0	0	0	0	0	0	0	**76**
15:15 - 15:29	0	62	4	0	2	1	0	0	0	0	0	0	0	**69**
15:30 - 15:44	0	64	5	0	3	0	0	0	0	0	0	0	1	**73**
15:45 - 15:59	0	75	3	1	5	1	0	0	0	0	0	0	0	**85**
16:00 - 16:14	0	59	3	0	1	0	0	0	0	0	0	0	0	**63**
16:15 - 16:29	0	46	2	1	4	0	0	0	0	0	0	0	0	**53**
16:30 - 16:44	0	65	2	0	1	0	0	0	0	0	0	0	0	**68**
16:45 - 16:59	0	58	7	0	2	0	0	0	0	0	0	0	0	**67**
17:00 - 17:14	0	71	6	0	3	0	0	0	0	0	0	0	0	**80**
17:15 - 17:29	0	62	5	1	7	0	0	0	0	0	0	0	0	**75**
17:30 - 17:44	0	94	6	0	4	1	0	0	0	0	0	0	0	**105**
17:45 - 17:59	0	102	4	0	0	0	0	0	0	0	0	0	0	**106**
18:00 - 18:14	0	98	3	0	7	0	0	0	0	0	0	0	0	**108**
18:15 - 18:29	0	78	1	0	11	1	0	0	0	0	0	0	0	**91**
18:30 - 18:44	0	78	8	0	5	0	0	0	0	0	0	0	0	**91**
18:45 - 18:59	0	103	8	0	4	0	0	0	0	0	0	0	0	**115**
19:00 - 19:14	0	82	6	0	9	1	0	0	0	0	0	0	0	**98**
19:15 - 19:29	0	77	5	0	4	0	0	0	0	0	0	0	0	**86**
19:30 - 19:44	0	63	7	0	3	0	0	0	0	0	0	0	0	**73**
19:45 - 19:59	2	65	2	0	3	0	0	0	0	0	0	0	0	**72**
20:00 - 20:14	0	64	4	0	4	0	0	0	0	0	0	0	0	**72**
20:15 - 20:29	0	53	4	0	3	0	0	0	0	0	0	0	0	**60**
20:30 - 20:44	0	56	6	0	0	0	0	0	0	0	0	0	0	**62**
20:45 - 20:59	0	41	4	0	1	0	0	0	0	0	0	0	0	**46**
21:00 - 21:14	0	35	2	0	2	0	0	1	0	0	0	0	0	**40**
21:15 - 21:29	0	34	3	0	4	0	0	2	0	0	0	0	0	**43**
21:30 - 21:44	0	32	1	0	1	1	0	0	0	0	0	0	0	**35**
21:45 - 21:59	0	42	1	0	1	0	0	0	0	0	0	0	0	**44**
22:00 - 22:14	0	36	3	0	6	0	0	0	0	0	0	0	0	**45**
22:15 - 22:29	0	24	2	0	0	0	0	0	0	0	0	0	0	**26**
22:30 - 22:44	0	11	5	0	2	0	0	0	0	0	0	0	0	**18**
22:45 - 22:59	0	12	1	0	0	0	0	0	0	0	0	0	0	**13**
23:00 - 23:14	0	15	0	0	1	0	0	0	0	0	0	0	0	**16**
23:15 - 23:29	0	16	0	0	0	0	0	0	0	0	0	0	0	**16**
23:30 - 23:44	0	8	2	0	0	0	0	0	0	0	0	0	0	**10**
23:45 - 23:59	0	10	1	0	0	0	0	0	0	0	0	0	0	**11**
Totals	**8**	**3633**	**261**	**10**	**253**	**13**	**1**	**6**	**1**	**1**	**0**	**0**	**14**	**4201**
Percent of Total	**0.2**	**86.5**	**6.2**	**0.2**	**6.0**	**0.3**	**0.0**	**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**0.3**	**100**
Percent of AM	**0.2**	**85.1**	**6.5**	**0.3**	**6.9**	**0.1**	**0.0**	**0.1**	**0.1**	**0.1**	**0.0**	**0.0**	**0.6**	**100**
Percent of PM	**0.2**	**87.0**	**6.1**	**0.2**	**5.7**	**0.4**	**0.0**	**0.2**	**0.0**	**0.0**	**0.0**	**0.0**	**0.2**	**100**

Daily Northbound Classes Report

Study Date: Thursday, 03/02/2023
Unit ID:
Location: Mill Road Location NB

Truck Summary:

Total Trucks: 299 % Trucks: 7.1 AM % Trucks: 8.1 PM % Trucks: 6.7

Classification Scheme: FHWA (ID: 1)

#1	Motorcycles - 2 Axles	#6	Single Unit Truck - 3 Axles	#11	Multi-Unit - 5 Axles or Less
#2	Passenger Cars - 2 Axles	#7	Single Unit - 4 Axles	#12	Multi-Unit - 6 Axles
#3	Pickup Trucks, Vans - 2 Axles	#8	Single Unit - 4 Axles or Less	#13	Multi-Unit - 7 Axles or More
#4	Buses	#9	Double Unit - 5 Axles		
#5	Single Unit - 2 Axles, 6 Tires	#10	Double Unit - 6 Axles or More		

Daily Northbound Speeds (MPH)

Study Date: Thursday, 03/02/2023
Unit ID:
Location: Mill Road Location NB

Posted Speed: 35

	5-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-99	Total
00:00 - 00:14	0	0	0	0	2	1	2	1	0	0	0	0	0	0	0	**6**
00:15 - 00:29	0	0	0	0	4	1	2	1	0	0	0	0	0	0	0	**8**
00:30 - 00:44	0	0	0	1	1	3	0	0	0	0	0	0	0	0	0	**5**
00:45 - 00:59	0	0	0	1	3	0	0	0	0	0	0	0	0	0	0	**4**
01:00 - 01:14	0	0	0	0	2	1	0	0	0	0	0	0	0	0	0	**3**
01:15 - 01:29	0	0	0	0	1	2	2	1	0	0	0	0	0	0	0	**6**
01:30 - 01:44	0	1	0	1	5	4	0	0	0	0	0	0	0	0	0	**11**
01:45 - 01:59	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	**1**
02:00 - 02:14	0	0	0	0	0	1	2	0	0	0	0	0	0	0	0	**3**
02:15 - 02:29	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
02:30 - 02:44	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	**2**
02:45 - 02:59	0	0	0	0	1	2	0	1	0	0	0	0	0	0	0	**4**
03:00 - 03:14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
03:15 - 03:29	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	**1**
03:30 - 03:44	0	0	0	0	2	0	1	0	0	0	0	0	0	0	0	**3**
03:45 - 03:59	0	0	0	1	0	2	1	0	0	0	0	0	0	0	0	**4**
04:00 - 04:14	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	**1**
04:15 - 04:29	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	**2**
04:30 - 04:44	0	0	1	1	1	1	0	1	0	0	0	0	0	0	0	**5**
04:45 - 04:59	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	**4**
05:00 - 05:14	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0	**4**
05:15 - 05:29	0	0	0	1	1	5	1	1	0	0	0	0	0	0	0	**9**
05:30 - 05:44	0	0	0	5	3	1	1	0	0	0	0	0	0	0	0	**10**
05:45 - 05:59	0	0	0	2	8	4	4	1	0	0	0	0	0	0	0	**19**
06:00 - 06:14	0	0	0	1	5	5	2	0	0	0	0	0	0	0	0	**13**
06:15 - 06:29	0	0	0	1	2	4	3	2	0	0	0	0	0	0	0	**12**
06:30 - 06:44	0	0	0	1	5	3	3	1	0	0	0	0	0	0	0	**13**
06:45 - 06:59	0	0	0	4	9	9	8	2	0	0	0	0	0	0	0	**32**
07:00 - 07:14	0	0	0	2	10	8	8	0	0	0	0	0	0	0	0	**28**
07:15 - 07:29	0	0	0	1	8	13	4	0	0	0	0	0	0	0	0	**26**
07:30 - 07:44	0	0	0	2	12	16	10	7	0	0	0	0	0	0	0	**47**
07:45 - 07:59	0	0	0	1	10	21	28	4	2	0	0	0	0	0	0	**66**
08:00 - 08:14	0	0	1	2	10	31	13	6	0	0	0	0	0	0	0	**63**
08:15 - 08:29	0	0	0	1	9	17	21	7	0	0	0	0	0	0	0	**55**
08:30 - 08:44	1	0	0	1	9	16	12	4	1	0	0	0	0	0	0	**44**
08:45 - 08:59	0	0	0	0	5	30	18	4	0	1	0	0	0	0	0	**58**
09:00 - 09:14	0	0	0	1	2	23	22	6	0	0	0	0	0	0	0	**54**
09:15 - 09:29	0	0	0	1	9	18	18	2	1	0	0	0	0	0	0	**49**
09:30 - 09:44	0	0	0	0	6	21	12	3	0	0	0	0	0	0	0	**42**
09:45 - 09:59	0	0	0	1	8	19	13	3	1	0	0	0	0	0	0	**45**
10:00 - 10:14	0	0	0	1	10	23	19	4	0	0	0	0	0	0	0	**57**
10:15 - 10:29	0	0	0	1	12	23	6	4	0	0	0	0	0	0	0	**46**
10:30 - 10:44	0	0	0	1	7	18	14	1	0	0	0	0	0	0	0	**41**
10:45 - 10:59	0	0	0	1	14	23	15	4	1	0	0	0	0	0	0	**58**
11:00 - 11:14	0	0	1	0	11	30	17	6	0	1	0	0	0	0	0	**66**
11:15 - 11:29	0	0	1	0	6	26	22	5	1	1	0	0	0	0	0	**62**
11:30 - 11:44	0	0	0	0	12	28	14	3	0	0	0	0	0	0	0	**57**
11:45 - 11:59	0	0	0	5	6	32	23	1	2	0	0	0	0	0	0	**69**
12:00 - 12:14	0	0	0	0	4	32	19	3	0	0	0	0	0	0	0	**58**
12:15 - 12:29	0	0	0	2	10	32	28	2	1	0	0	0	0	0	0	**75**
12:30 - 12:44	0	0	0	7	6	28	20	3	0	0	0	0	0	0	0	**64**

Daily Northbound Speeds (MPH)

Study Date: Thursday, 03/02/2023
Unit ID:
Location: Mill Road Location NB

Posted Speed: 35

	5-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-99	Total
12:45 - 12:59	0	0	0	1	10	36	20	5	0	0	0	0	0	0	0	**72**
13:00 - 13:14	0	0	0	0	10	29	18	1	0	0	0	0	0	0	0	**58**
13:15 - 13:29	0	0	0	4	10	34	19	1	0	0	0	0	0	0	0	**68**
13:30 - 13:44	0	0	0	2	10	23	12	0	0	0	0	0	0	0	0	**47**
13:45 - 13:59	0	0	0	0	5	27	23	2	1	0	0	0	0	0	0	**58**
14:00 - 14:14	0	0	0	2	11	27	17	7	0	0	0	0	0	0	0	**64**
14:15 - 14:29	0	0	0	4	5	25	23	6	0	0	0	0	0	0	0	**63**
14:30 - 14:44	0	0	0	4	12	32	25	1	0	0	0	0	0	0	0	**74**
14:45 - 14:59	0	0	0	2	16	36	16	1	0	0	0	0	0	0	0	**71**
15:00 - 15:14	0	0	0	3	14	33	20	5	1	0	0	0	0	0	0	**76**
15:15 - 15:29	0	0	0	2	6	35	22	4	0	0	0	0	0	0	0	**69**
15:30 - 15:44	0	0	0	2	13	32	24	2	0	0	0	0	0	0	0	**73**
15:45 - 15:59	0	0	1	0	10	42	27	5	0	0	0	0	0	0	0	**85**
16:00 - 16:14	0	0	0	2	9	26	21	4	0	0	1	0	0	0	0	**63**
16:15 - 16:29	0	1	0	0	7	22	18	4	1	0	0	0	0	0	0	**53**
16:30 - 16:44	0	0	0	2	17	21	26	2	0	0	0	0	0	0	0	**68**
16:45 - 16:59	0	0	0	0	10	33	18	6	0	0	0	0	0	0	0	**67**
17:00 - 17:14	0	0	0	2	8	50	18	2	0	0	0	0	0	0	0	**80**
17:15 - 17:29	0	0	0	2	20	34	13	6	0	0	0	0	0	0	0	**75**
17:30 - 17:44	0	0	1	1	19	54	24	5	1	0	0	0	0	0	0	**105**
17:45 - 17:59	0	0	0	2	15	45	39	5	0	0	0	0	0	0	0	**106**
18:00 - 18:14	0	0	0	5	19	58	19	5	0	2	0	0	0	0	0	**108**
18:15 - 18:29	0	0	0	1	27	48	13	2	0	0	0	0	0	0	0	**91**
18:30 - 18:44	0	0	0	1	19	51	20	0	0	0	0	0	0	0	0	**91**
18:45 - 18:59	0	0	0	1	19	59	31	4	1	0	0	0	0	0	0	**115**
19:00 - 19:14	0	0	0	5	20	44	26	3	0	0	0	0	0	0	0	**98**
19:15 - 19:29	0	0	0	2	18	43	19	2	2	0	0	0	0	0	0	**86**
19:30 - 19:44	0	0	0	3	15	42	12	1	0	0	0	0	0	0	0	**73**
19:45 - 19:59	0	0	0	0	19	30	21	2	0	0	0	0	0	0	0	**72**
20:00 - 20:14	0	0	1	3	18	30	18	2	0	0	0	0	0	0	0	**72**
20:15 - 20:29	0	0	0	1	19	28	11	1	0	0	0	0	0	0	0	**60**
20:30 - 20:44	0	0	0	1	17	33	9	2	0	0	0	0	0	0	0	**62**
20:45 - 20:59	0	0	0	2	14	14	12	4	0	0	0	0	0	0	0	**46**
21:00 - 21:14	0	0	0	2	16	18	3	1	0	0	0	0	0	0	0	**40**
21:15 - 21:29	0	0	0	3	14	16	10	0	0	0	0	0	0	0	0	**43**
21:30 - 21:44	0	0	0	1	9	15	9	1	0	0	0	0	0	0	0	**35**
21:45 - 21:59	0	0	0	0	5	32	6	1	0	0	0	0	0	0	0	**44**
22:00 - 22:14	0	0	1	3	13	14	11	3	0	0	0	0	0	0	0	**45**
22:15 - 22:29	0	0	0	0	7	14	3	2	0	0	0	0	0	0	0	**26**
22:30 - 22:44	0	0	0	3	4	7	4	0	0	0	0	0	0	0	0	**18**
22:45 - 22:59	0	0	0	1	2	6	3	1	0	0	0	0	0	0	0	**13**
23:00 - 23:14	0	0	0	2	1	8	5	0	0	0	0	0	0	0	0	**16**
23:15 - 23:29	0	0	1	1	5	6	3	0	0	0	0	0	0	0	0	**16**
23:30 - 23:44	0	0	0	1	4	1	3	1	0	0	0	0	0	0	0	**10**
23:45 - 23:59	0	0	0	1	2	7	1	0	0	0	0	0	0	0	0	**11**
Totals	**1**	**2**	**9**	**135**	**799**	**1900**	**1125**	**206**	**18**	**5**	**1**	**0**	**0**	**0**	**0**	**4201**
Percent of Total	**0.0**	**0.0**	**0.2**	**3.2**	**19.0**	**45.2**	**26.8**	**4.9**	**0.4**	**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**100**
Percent of AM	**0.1**	**0.1**	**0.3**	**3.8**	**19.4**	**40.1**	**28.2**	**7.1**	**0.8**	**0.2**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**100**
Percent of PM	**0.0**	**0.0**	**0.2**	**3.0**	**18.9**	**47.3**	**26.2**	**4.0**	**0.3**	**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**100**

Daily Northbound Speeds (MPH)

Study Date: Thursday, 03/02/2023
Unit ID:
Location: Mill Road Location NB
Posted Speed: 35

Standard Deviation:	4.9 MPH	Ten Mile Pace:	35 to 44 MPH	85th Percentile:	43.2 MPH
Mean Speed:	38.1 MPH	Percent in Ten Mile Pace:	72.0%		
Median Speed:	38.0 MPH			15th Percentile:	33.0 MPH
Modal Speed:	37.5 MPH			90th Percentile:	44.2 MPH
				95th Percentile:	45.5 MPH

Daily Vehicle Volume Report

Study Date: Thursday, 03/02/2023
Unit ID:
Location: Mill Road Location SB

	Southbound Volume
00:00 - 00:14	13
00:15 - 00:29	13
00:30 - 00:44	11
00:45 - 00:59	6
01:00 - 01:14	4
01:15 - 01:29	8
01:30 - 01:44	4
01:45 - 01:59	0
02:00 - 02:14	2
02:15 - 02:29	2
02:30 - 02:44	4
02:45 - 02:59	1
03:00 - 03:14	3
03:15 - 03:29	6
03:30 - 03:44	2
03:45 - 03:59	2
04:00 - 04:14	3
04:15 - 04:29	3
04:30 - 04:44	5
04:45 - 04:59	4
05:00 - 05:14	6
05:15 - 05:29	4
05:30 - 05:44	11
05:45 - 05:59	11
06:00 - 06:14	10
06:15 - 06:29	13
06:30 - 06:44	20
06:45 - 06:59	20
07:00 - 07:14	22
07:15 - 07:29	20
07:30 - 07:44	34
07:45 - 07:59	38
08:00 - 08:14	39
08:15 - 08:29	36
08:30 - 08:44	33
08:45 - 08:59	37
09:00 - 09:14	41
09:15 - 09:29	30
09:30 - 09:44	34
09:45 - 09:59	38
10:00 - 10:14	48
10:15 - 10:29	35
10:30 - 10:44	37
10:45 - 10:59	54
11:00 - 11:14	47
11:15 - 11:29	55
11:30 - 11:44	48
11:45 - 11:59	55
12:00 - 12:14	66
12:15 - 12:29	77
12:30 - 12:44	60
12:45 - 12:59	72

Daily Vehicle Volume Report

Study Date: Thursday, 03/02/2023
Unit ID:
Location: Mill Road Location SB

	Southbound Volume
13:00 - 13:14	57
13:15 - 13:29	50
13:30 - 13:44	61
13:45 - 13:59	55
14:00 - 14:14	57
14:15 - 14:29	65
14:30 - 14:44	84
14:45 - 14:59	61
15:00 - 15:14	66
15:15 - 15:29	75
15:30 - 15:44	85
15:45 - 15:59	74
16:00 - 16:14	70
16:15 - 16:29	98
16:30 - 16:44	72
16:45 - 16:59	77
17:00 - 17:14	82
17:15 - 17:29	77
17:30 - 17:44	99
17:45 - 17:59	79
18:00 - 18:14	83
18:15 - 18:29	65
18:30 - 18:44	70
18:45 - 18:59	83
19:00 - 19:14	82
19:15 - 19:29	81
19:30 - 19:44	87
19:45 - 19:59	74
20:00 - 20:14	66
20:15 - 20:29	69
20:30 - 20:44	70
20:45 - 20:59	92
21:00 - 21:14	72
21:15 - 21:29	85
21:30 - 21:44	64
21:45 - 21:59	47
22:00 - 22:14	42
22:15 - 22:29	47
22:30 - 22:44	25
22:45 - 22:59	37
23:00 - 23:14	24
23:15 - 23:29	23
23:30 - 23:44	27
23:45 - 23:59	18
Totals	**4124**
AM Peak Time	**10:41 - 11:40**
AM Peak Volume	**212**
PM Peak Time	**17:10 - 18:09**
PM Peak Volume	**351**

Daily Vehicle Volume Report

Study Date: Thursday, 03/02/2023
Unit ID:
Location: Mill Road Location SB

Daily Southbound Classes Report

Study Date: Thursday, 03/02/2023
Unit ID:
Location: Mill Road Location SB

	#1	#2	#3	#4	#5	#6	#7	#8	#9	#10	#11	#12	#13	Total
00:00 - 00:14	0	10	1	0	2	0	0	0	0	0	0	0	0	**13**
00:15 - 00:29	0	12	0	0	1	0	0	0	0	0	0	0	0	**13**
00:30 - 00:44	0	10	0	0	1	0	0	0	0	0	0	0	0	**11**
00:45 - 00:59	0	6	0	0	0	0	0	0	0	0	0	0	0	**6**
01:00 - 01:14	0	4	0	0	0	0	0	0	0	0	0	0	0	**4**
01:15 - 01:29	0	8	0	0	0	0	0	0	0	0	0	0	0	**8**
01:30 - 01:44	0	4	0	0	0	0	0	0	0	0	0	0	0	**4**
01:45 - 01:59	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
02:00 - 02:14	0	1	1	0	0	0	0	0	0	0	0	0	0	**2**
02:15 - 02:29	0	1	0	0	1	0	0	0	0	0	0	0	0	**2**
02:30 - 02:44	0	3	1	0	0	0	0	0	0	0	0	0	0	**4**
02:45 - 02:59	0	1	0	0	0	0	0	0	0	0	0	0	0	**1**
03:00 - 03:14	0	2	1	0	0	0	0	0	0	0	0	0	0	**3**
03:15 - 03:29	0	6	0	0	0	0	0	0	0	0	0	0	0	**6**
03:30 - 03:44	0	2	0	0	0	0	0	0	0	0	0	0	0	**2**
03:45 - 03:59	0	0	1	0	0	1	0	0	0	0	0	0	0	**2**
04:00 - 04:14	0	2	0	0	0	1	0	0	0	0	0	0	0	**3**
04:15 - 04:29	0	2	1	0	0	0	0	0	0	0	0	0	0	**3**
04:30 - 04:44	0	5	0	0	0	0	0	0	0	0	0	0	0	**5**
04:45 - 04:59	0	4	0	0	0	0	0	0	0	0	0	0	0	**4**
05:00 - 05:14	0	6	0	0	0	0	0	0	0	0	0	0	0	**6**
05:15 - 05:29	0	2	1	0	1	0	0	0	0	0	0	0	0	**4**
05:30 - 05:44	0	11	0	0	0	0	0	0	0	0	0	0	0	**11**
05:45 - 05:59	0	8	2	0	1	0	0	0	0	0	0	0	0	**11**
06:00 - 06:14	0	6	0	0	4	0	0	0	0	0	0	0	0	**10**
06:15 - 06:29	0	12	1	0	0	0	0	0	0	0	0	0	0	**13**
06:30 - 06:44	0	17	1	0	1	1	0	0	0	0	0	0	0	**20**
06:45 - 06:59	0	16	4	0	0	0	0	0	0	0	0	0	0	**20**
07:00 - 07:14	0	17	2	2	1	0	0	0	0	0	0	0	0	**22**
07:15 - 07:29	0	18	2	0	0	0	0	0	0	0	0	0	0	**20**
07:30 - 07:44	0	28	1	3	2	0	0	0	0	0	0	0	0	**34**
07:45 - 07:59	0	33	2	0	2	0	0	0	1	0	0	0	0	**38**
08:00 - 08:14	0	36	1	1	1	0	0	0	0	0	0	0	0	**39**
08:15 - 08:29	0	31	3	0	2	0	0	0	0	0	0	0	0	**36**
08:30 - 08:44	0	28	3	0	1	0	0	1	0	0	0	0	0	**33**
08:45 - 08:59	0	32	2	0	2	0	0	0	0	1	0	0	0	**37**
09:00 - 09:14	0	34	2	1	4	0	0	0	0	0	0	0	0	**41**
09:15 - 09:29	0	27	1	0	2	0	0	0	0	0	0	0	0	**30**
09:30 - 09:44	0	30	2	0	2	0	0	0	0	0	0	0	0	**34**
09:45 - 09:59	0	33	1	0	2	0	0	0	0	2	0	0	0	**38**
10:00 - 10:14	0	42	1	1	3	1	0	0	0	0	0	0	0	**48**
10:15 - 10:29	0	31	1	0	3	0	0	0	0	0	0	0	0	**35**
10:30 - 10:44	0	34	1	0	1	0	0	0	0	0	0	0	1	**37**
10:45 - 10:59	0	43	2	0	7	0	0	1	0	1	0	0	0	**54**
11:00 - 11:14	0	38	3	0	6	0	0	0	0	0	0	0	0	**47**
11:15 - 11:29	0	49	2	0	3	1	0	0	0	0	0	0	0	**55**
11:30 - 11:44	0	37	6	0	2	0	0	1	0	2	0	0	0	**48**
11:45 - 11:59	0	38	7	1	9	0	0	0	0	0	0	0	0	**55**
12:00 - 12:14	0	51	9	2	4	0	0	0	0	0	0	0	0	**66**
12:15 - 12:29	0	62	7	0	5	0	0	1	0	2	0	0	0	**77**
12:30 - 12:44	0	50	6	0	4	0	0	0	0	0	0	0	0	**60**
12:45 - 12:59	1	62	6	0	3	0	0	0	0	0	0	0	0	**72**

Daily Southbound Classes Report

Study Date: Thursday, 03/02/2023
Unit ID:
Location: Mill Road Location SB

	#1	#2	#3	#4	#5	#6	#7	#8	#9	#10	#11	#12	#13	Total
13:00 - 13:14	0	49	5	0	3	0	0	0	0	0	0	0	0	**57**
13:15 - 13:29	0	42	1	0	5	0	0	0	0	1	0	0	1	**50**
13:30 - 13:44	0	54	1	0	6	0	0	0	0	0	0	0	0	**61**
13:45 - 13:59	0	47	3	0	4	0	1	0	0	0	0	0	0	**55**
14:00 - 14:14	0	46	5	0	4	1	0	1	0	0	0	0	0	**57**
14:15 - 14:29	0	56	1	0	6	0	0	0	0	2	0	0	0	**65**
14:30 - 14:44	0	71	4	1	7	1	0	0	0	0	0	0	0	**84**
14:45 - 14:59	1	49	3	0	8	0	0	0	0	0	0	0	0	**61**
15:00 - 15:14	0	55	5	2	4	0	0	0	0	0	0	0	0	**66**
15:15 - 15:29	0	61	7	0	4	1	0	0	1	1	0	0	0	**75**
15:30 - 15:44	0	75	5	0	4	1	0	0	0	0	0	0	0	**85**
15:45 - 15:59	0	65	3	0	5	0	0	1	0	0	0	0	0	**74**
16:00 - 16:14	0	56	5	1	6	0	0	0	0	2	0	0	0	**70**
16:15 - 16:29	0	90	4	0	4	0	0	0	0	0	0	0	0	**98**
16:30 - 16:44	0	63	2	0	6	1	0	0	0	0	0	0	0	**72**
16:45 - 16:59	0	70	5	0	2	0	0	0	0	0	0	0	0	**77**
17:00 - 17:14	0	73	4	0	5	0	0	0	0	0	0	0	0	**82**
17:15 - 17:29	0	69	7	0	1	0	0	0	0	0	0	0	0	**77**
17:30 - 17:44	0	87	5	0	6	1	0	0	0	0	0	0	0	**99**
17:45 - 17:59	0	69	3	0	7	0	0	0	0	0	0	0	0	**79**
18:00 - 18:14	0	73	6	0	3	0	0	1	0	0	0	0	0	**83**
18:15 - 18:29	0	54	4	0	7	0	0	0	0	0	0	0	0	**65**
18:30 - 18:44	0	61	4	0	4	1	0	0	0	0	0	0	0	**70**
18:45 - 18:59	0	70	6	0	7	0	0	0	0	0	0	0	0	**83**
19:00 - 19:14	0	72	4	0	5	1	0	0	0	0	0	0	0	**82**
19:15 - 19:29	0	74	3	0	4	0	0	0	0	0	0	0	0	**81**
19:30 - 19:44	0	80	4	0	3	0	0	0	0	0	0	0	0	**87**
19:45 - 19:59	0	70	2	0	2	0	0	0	0	0	0	0	0	**74**
20:00 - 20:14	0	57	1	1	6	1	0	0	0	0	0	0	0	**66**
20:15 - 20:29	0	59	5	0	4	1	0	0	0	0	0	0	0	**69**
20:30 - 20:44	0	63	3	1	3	0	0	0	0	0	0	0	0	**70**
20:45 - 20:59	0	78	10	0	3	1	0	0	0	0	0	0	0	**92**
21:00 - 21:14	0	61	8	0	3	0	0	0	0	0	0	0	0	**72**
21:15 - 21:29	0	75	4	0	6	0	0	0	0	0	0	0	0	**85**
21:30 - 21:44	0	56	3	0	5	0	0	0	0	0	0	0	0	**64**
21:45 - 21:59	0	41	6	0	0	0	0	0	0	0	0	0	0	**47**
22:00 - 22:14	0	34	5	0	3	0	0	0	0	0	0	0	0	**42**
22:15 - 22:29	0	39	3	0	4	1	0	0	0	0	0	0	0	**47**
22:30 - 22:44	0	21	2	0	2	0	0	0	0	0	0	0	0	**25**
22:45 - 22:59	0	32	4	0	1	0	0	0	0	0	0	0	0	**37**
23:00 - 23:14	0	21	3	0	0	0	0	0	0	0	0	0	0	**24**
23:15 - 23:29	0	21	2	0	0	0	0	0	0	0	0	0	0	**23**
23:30 - 23:44	0	23	2	0	2	0	0	0	0	0	0	0	0	**27**
23:45 - 23:59	0	17	0	0	1	0	0	0	0	0	0	0	0	**18**
Totals	**2**	**3544**	**260**	**17**	**258**	**17**	**1**	**7**	**2**	**14**	**0**	**0**	**2**	**4124**
Percent of Total	**0.0**	**85.9**	**6.3**	**0.4**	**6.3**	**0.4**	**0.0**	**0.2**	**0.0**	**0.3**	**0.0**	**0.0**	**0.0**	**100**
Percent of AM	**0.0**	**84.4**	**6.2**	**0.9**	**6.9**	**0.5**	**0.0**	**0.3**	**0.1**	**0.6**	**0.0**	**0.0**	**0.1**	**100**
Percent of PM	**0.1**	**86.4**	**6.3**	**0.3**	**6.1**	**0.4**	**0.0**	**0.1**	**0.0**	**0.3**	**0.0**	**0.0**	**0.0**	**100**

Daily Southbound Classes Report

Study Date: Thursday, 03/02/2023
Unit ID:
Location: Mill Road Location SB

Truck Summary:

Total Trucks: 318 % Trucks: 7.7 AM % Trucks: 9.5 PM % Trucks: 7.2

Classification Scheme: FHWA (ID: 1)

#1	Motorcycles - 2 Axles	#6	Single Unit Truck - 3 Axles	#11	Multi-Unit - 5 Axles or Less
#2	Passenger Cars - 2 Axles	#7	Single Unit - 4 Axles	#12	Multi-Unit - 6 Axles
#3	Pickup Trucks, Vans - 2 Axles	#8	Single Unit - 4 Axles or Less	#13	Multi-Unit - 7 Axles or More
#4	Buses	#9	Double Unit - 5 Axles		
#5	Single Unit - 2 Axles, 6 Tires	#10	Double Unit - 6 Axles or More		

Daily Southbound Speeds (MPH)

Study Date: Thursday, 03/02/2023
Unit ID:
Location: Mill Road Location SB

Posted Speed: 35

	5-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-99	Total
00:00 - 00:14	0	0	0	1	3	7	2	0	0	0	0	0	0	0	0	**13**
00:15 - 00:29	0	0	0	1	4	6	0	2	0	0	0	0	0	0	0	**13**
00:30 - 00:44	0	0	0	3	1	7	0	0	0	0	0	0	0	0	0	**11**
00:45 - 00:59	0	0	1	0	0	4	1	0	0	0	0	0	0	0	0	**6**
01:00 - 01:14	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	**4**
01:15 - 01:29	0	0	1	0	3	2	2	0	0	0	0	0	0	0	0	**8**
01:30 - 01:44	0	1	0	1	1	1	0	0	0	0	0	0	0	0	0	**4**
01:45 - 01:59	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
02:00 - 02:14	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	**2**
02:15 - 02:29	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	**2**
02:30 - 02:44	0	0	0	0	1	1	2	0	0	0	0	0	0	0	0	**4**
02:45 - 02:59	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	**1**
03:00 - 03:14	0	0	0	1	2	0	0	0	0	0	0	0	0	0	0	**3**
03:15 - 03:29	0	1	0	0	1	3	1	0	0	0	0	0	0	0	0	**6**
03:30 - 03:44	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	**2**
03:45 - 03:59	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	**2**
04:00 - 04:14	0	0	0	0	1	1	1	0	0	0	0	0	0	0	0	**3**
04:15 - 04:29	0	0	0	1	1	1	0	0	0	0	0	0	0	0	0	**3**
04:30 - 04:44	0	0	0	1	3	0	1	0	0	0	0	0	0	0	0	**5**
04:45 - 04:59	0	0	0	0	3	0	1	0	0	0	0	0	0	0	0	**4**
05:00 - 05:14	0	0	1	2	2	0	0	0	1	0	0	0	0	0	0	**6**
05:15 - 05:29	0	0	0	0	2	1	0	0	1	0	0	0	0	0	0	**4**
05:30 - 05:44	0	0	1	1	3	3	3	0	0	0	0	0	0	0	0	**11**
05:45 - 05:59	0	0	1	3	5	1	0	1	0	0	0	0	0	0	0	**11**
06:00 - 06:14	0	0	0	2	3	4	1	0	0	0	0	0	0	0	0	**10**
06:15 - 06:29	0	0	1	4	4	2	1	1	0	0	0	0	0	0	0	**13**
06:30 - 06:44	0	0	0	8	7	4	1	0	0	0	0	0	0	0	0	**20**
06:45 - 06:59	0	0	1	2	6	9	2	0	0	0	0	0	0	0	0	**20**
07:00 - 07:14	0	1	0	5	9	6	1	0	0	0	0	0	0	0	0	**22**
07:15 - 07:29	0	0	1	8	3	6	1	1	0	0	0	0	0	0	0	**20**
07:30 - 07:44	0	0	1	3	15	10	4	1	0	0	0	0	0	0	0	**34**
07:45 - 07:59	0	0	0	3	14	10	9	1	1	0	0	0	0	0	0	**38**
08:00 - 08:14	0	0	0	1	9	17	9	3	0	0	0	0	0	0	0	**39**
08:15 - 08:29	0	0	1	3	11	16	5	0	0	0	0	0	0	0	0	**36**
08:30 - 08:44	1	0	2	8	6	7	6	2	1	0	0	0	0	0	0	**33**
08:45 - 08:59	0	0	0	2	11	16	8	0	0	0	0	0	0	0	0	**37**
09:00 - 09:14	0	0	0	0	7	19	13	2	0	0	0	0	0	0	0	**41**
09:15 - 09:29	0	0	0	1	10	7	11	1	0	0	0	0	0	0	0	**30**
09:30 - 09:44	0	0	0	2	9	16	6	1	0	0	0	0	0	0	0	**34**
09:45 - 09:59	0	0	0	7	8	12	9	2	0	0	0	0	0	0	0	**38**
10:00 - 10:14	0	0	0	2	15	17	12	2	0	0	0	0	0	0	0	**48**
10:15 - 10:29	0	0	0	3	8	9	11	2	1	1	0	0	0	0	0	**35**
10:30 - 10:44	0	0	0	0	11	15	10	1	0	0	0	0	0	0	0	**37**
10:45 - 10:59	0	0	0	1	11	24	15	3	0	0	0	0	0	0	0	**54**
11:00 - 11:14	0	0	1	4	10	14	12	6	0	0	0	0	0	0	0	**47**
11:15 - 11:29	0	0	0	2	8	21	21	3	0	0	0	0	0	0	0	**55**
11:30 - 11:44	0	1	0	2	16	24	5	0	0	0	0	0	0	0	0	**48**
11:45 - 11:59	0	1	0	1	8	28	13	4	0	0	0	0	0	0	0	**55**
12:00 - 12:14	0	0	1	3	13	33	13	3	0	0	0	0	0	0	0	**66**
12:15 - 12:29	0	0	0	5	14	38	13	6	1	0	0	0	0	0	0	**77**
12:30 - 12:44	0	0	0	4	15	25	14	2	0	0	0	0	0	0	0	**60**

Daily Southbound Speeds (MPH)

Study Date: Thursday, 03/02/2023
Unit ID:
Location: Mill Road Location SB

Posted Speed: 35

	5-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-99	Total
12:45 - 12:59	0	0	0	0	10	33	23	6	0	0	0	0	0	0	0	**72**
13:00 - 13:14	0	0	0	0	13	26	16	2	0	0	0	0	0	0	0	**57**
13:15 - 13:29	0	1	0	2	13	24	9	1	0	0	0	0	0	0	0	**50**
13:30 - 13:44	0	0	0	5	11	18	25	1	1	0	0	0	0	0	0	**61**
13:45 - 13:59	0	0	0	2	9	26	15	3	0	0	0	0	0	0	0	**55**
14:00 - 14:14	0	0	1	1	12	17	24	2	0	0	0	0	0	0	0	**57**
14:15 - 14:29	0	0	1	0	17	29	14	4	0	0	0	0	0	0	0	**65**
14:30 - 14:44	1	0	1	2	12	41	24	3	0	0	0	0	0	0	0	**84**
14:45 - 14:59	0	0	2	4	14	22	14	4	1	0	0	0	0	0	0	**61**
15:00 - 15:14	0	0	0	3	13	28	20	1	0	1	0	0	0	0	0	**66**
15:15 - 15:29	0	0	1	4	14	31	16	7	2	0	0	0	0	0	0	**75**
15:30 - 15:44	0	1	0	3	17	33	27	3	1	0	0	0	0	0	0	**85**
15:45 - 15:59	0	0	2	5	17	29	18	2	1	0	0	0	0	0	0	**74**
16:00 - 16:14	0	0	0	2	14	24	26	4	0	0	0	0	0	0	0	**70**
16:15 - 16:29	0	0	0	3	14	45	29	7	0	0	0	0	0	0	0	**98**
16:30 - 16:44	0	0	1	1	11	37	17	3	1	1	0	0	0	0	0	**72**
16:45 - 16:59	0	0	0	1	14	34	24	3	1	0	0	0	0	0	0	**77**
17:00 - 17:14	0	0	0	3	14	30	29	5	1	0	0	0	0	0	0	**82**
17:15 - 17:29	0	0	1	5	18	33	18	2	0	0	0	0	0	0	0	**77**
17:30 - 17:44	0	0	3	6	18	39	26	7	0	0	0	0	0	0	0	**99**
17:45 - 17:59	0	0	0	2	11	37	25	3	1	0	0	0	0	0	0	**79**
18:00 - 18:14	0	0	0	3	21	30	23	6	0	0	0	0	0	0	0	**83**
18:15 - 18:29	0	0	0	4	11	24	20	5	1	0	0	0	0	0	0	**65**
18:30 - 18:44	0	0	0	6	18	24	18	3	1	0	0	0	0	0	0	**70**
18:45 - 18:59	0	0	0	5	28	32	15	3	0	0	0	0	0	0	0	**83**
19:00 - 19:14	0	0	1	5	21	37	17	1	0	0	0	0	0	0	0	**82**
19:15 - 19:29	0	0	0	1	20	37	20	3	0	0	0	0	0	0	0	**81**
19:30 - 19:44	0	0	0	2	21	43	15	5	1	0	0	0	0	0	0	**87**
19:45 - 19:59	0	0	0	3	18	36	14	3	0	0	0	0	0	0	0	**74**
20:00 - 20:14	0	0	0	8	21	27	9	1	0	0	0	0	0	0	0	**66**
20:15 - 20:29	0	1	0	10	13	31	13	0	1	0	0	0	0	0	0	**69**
20:30 - 20:44	0	1	1	2	16	32	14	3	0	0	1	0	0	0	0	**70**
20:45 - 20:59	1	0	0	5	32	37	17	0	0	0	0	0	0	0	0	**92**
21:00 - 21:14	0	0	0	2	18	35	15	0	1	0	0	0	0	1	0	**72**
21:15 - 21:29	0	0	0	1	16	51	13	4	0	0	0	0	0	0	0	**85**
21:30 - 21:44	0	0	0	2	23	27	9	2	0	0	0	1	0	0	0	**64**
21:45 - 21:59	0	0	0	3	13	21	6	4	0	0	0	0	0	0	0	**47**
22:00 - 22:14	0	0	0	3	12	12	14	1	0	0	0	0	0	0	0	**42**
22:15 - 22:29	0	0	0	1	11	23	11	0	1	0	0	0	0	0	0	**47**
22:30 - 22:44	0	0	0	3	7	9	5	1	0	0	0	0	0	0	0	**25**
22:45 - 22:59	0	1	1	3	9	15	8	0	0	0	0	0	0	0	0	**37**
23:00 - 23:14	0	0	2	2	9	6	4	1	0	0	0	0	0	0	0	**24**
23:15 - 23:29	0	1	1	3	5	10	2	1	0	0	0	0	0	0	0	**23**
23:30 - 23:44	0	0	0	2	4	10	11	0	0	0	0	0	0	0	0	**27**
23:45 - 23:59	0	0	1	2	6	6	3	0	0	0	0	0	0	0	0	**18**
Totals	**3**	**11**	**34**	**237**	**958**	**1707**	**976**	**170**	**22**	**3**	**1**	**1**	**0**	**1**	**0**	**4124**
Percent of Total	**0.1**	**0.3**	**0.8**	**5.7**	**23.2**	**41.4**	**23.7**	**4.1**	**0.5**	**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**100**
Percent of AM	**0.1**	**0.5**	**1.3**	**9.3**	**26.4**	**37.0**	**20.7**	**4.0**	**0.5**	**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**100**
Percent of PM	**0.1**	**0.2**	**0.7**	**4.7**	**22.2**	**42.7**	**24.6**	**4.2**	**0.5**	**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**100**

Daily Southbound Speeds (MPH)

Study Date: Thursday, 03/02/2023
Unit ID:
Location: Mill Road Location SB

Posted Speed: 35

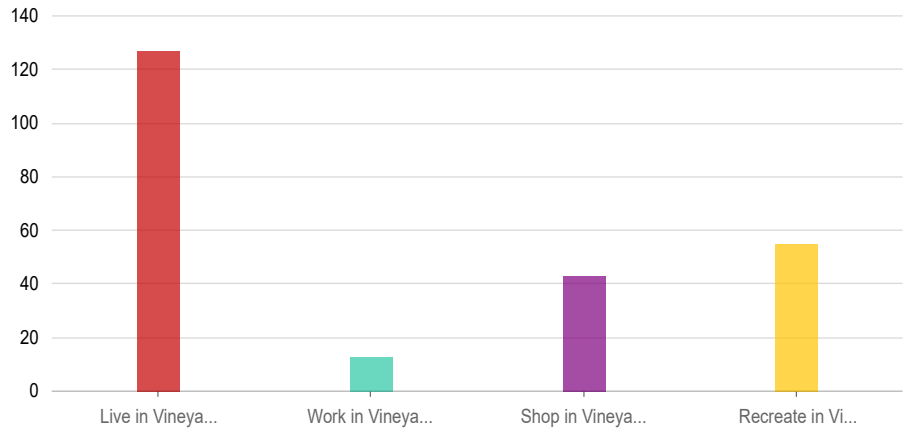
Standard Deviation:	5.4 MPH	Ten Mile Pace:	35 to 44 MPH	85th Percentile:	42.8 MPH
Mean Speed:	37.3 MPH	Percent in Ten Mile Pace:	65.1%		
Median Speed:	37.4 MPH			15th Percentile:	31.7 MPH
Modal Speed:	37.5 MPH			90th Percentile:	43.9 MPH
				95th Percentile:	45.0 MPH

APPENDIX C

Public Survey Results

Vineyard Transportation Master Plan - Public Input Survey

1) Which of the following describes you?

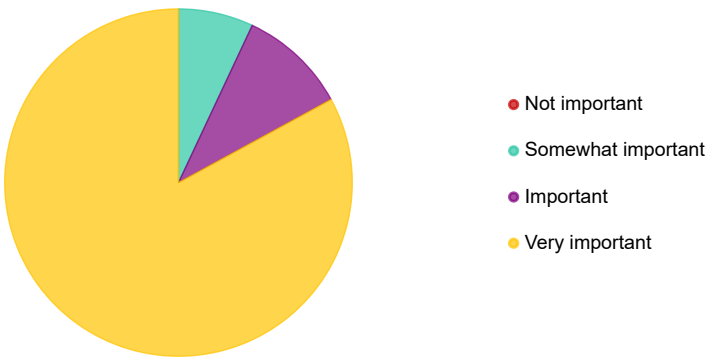


Answers	Count	Percentage
Live in Vineyard	127	97.69%
Work in Vineyard	13	10%
Shop in Vineyard	43	33.08%
Recreate in Vineyard	55	42.31%

Answered: 129 Skipped: 1

2) How important are the following transportation modes to your current personal travel in Vineyard?

Roadway (personal vehicle)

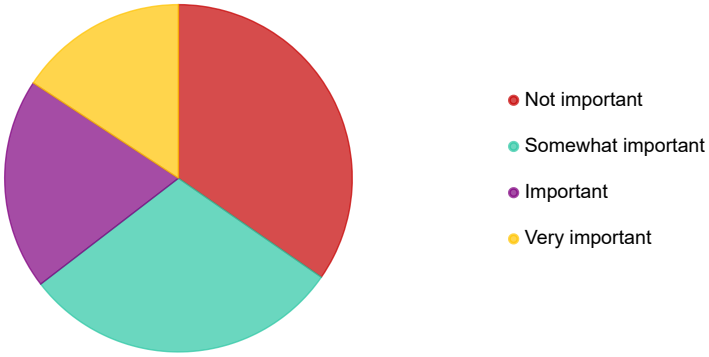


Answers	Count	Percentage
Not important	0	0%
Somewhat important	9	6.92%
Important	13	10%

Very important	107	82.31%

Answered: 129 Skipped: 1

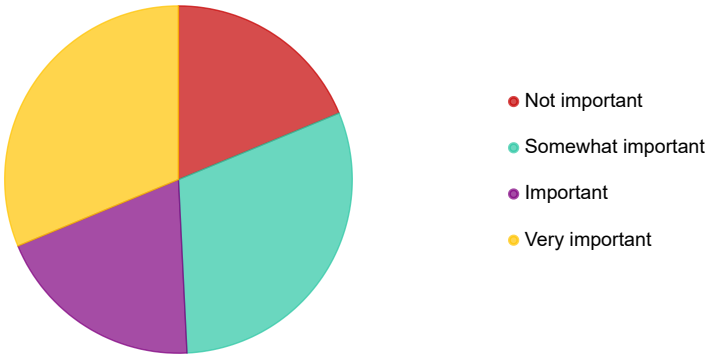
Transit



Answers	Count	Percentage
Not important	44	33.85%
Somewhat important	38	29.23%
Important	25	19.23%
Very important	20	15.38%

Answered: 127 Skipped: 3

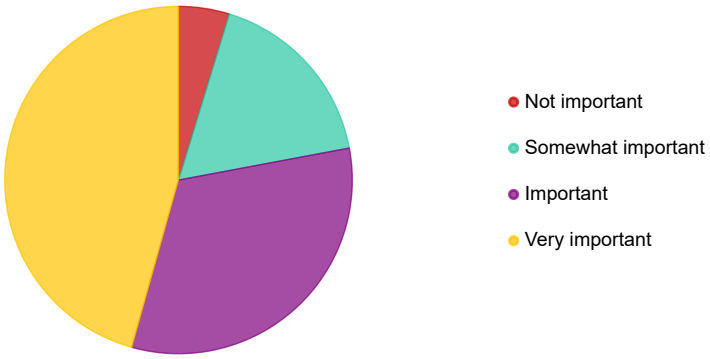
Bicycle



Answers	Count	Percentage
Not important	24	18.46%
Somewhat important	39	30%
Important	25	19.23%
Very important	40	30.77%

Answered: 128 Skipped: 2

Walking

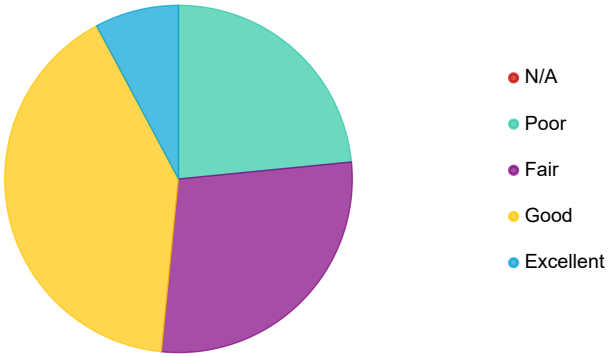


Answers	Count	Percentage
Not important	6	4.62%
Somewhat important	22	16.92%
Important	41	31.54%
Very important	58	44.62%

Answered: 127 Skipped: 3

3) How would you describe your recent experience with the following modes of transportation within Vineyard City?

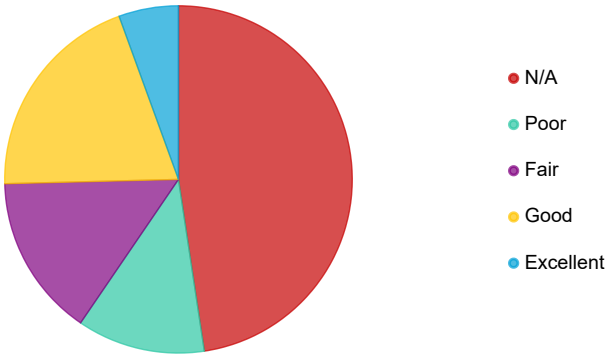
Roadway (personal vehicle)



Answers	Count	Percentage
N/A	0	0%
Poor	30	23.08%
Fair	36	27.69%
Good	52	40%
Excellent	10	7.69%

Answered: 128 Skipped: 2

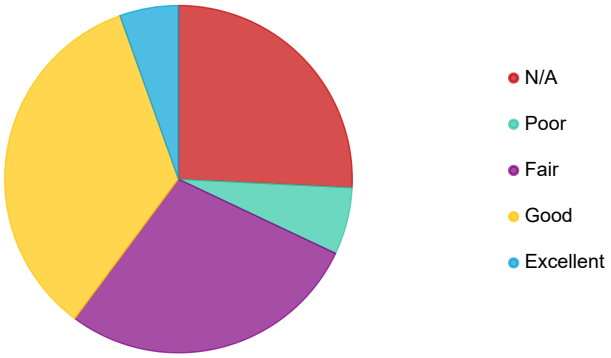
Transit



Answers	Count	Percentage
N/A	60	46.15%
Poor	15	11.54%
Fair	19	14.62%
Good	25	19.23%
Excellent	7	5.38%

Answered: 126 Skipped: 4

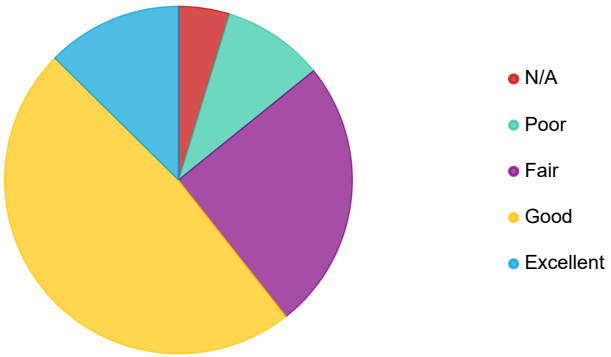
Bicycle



Answers	Count	Percentage
N/A	33	25.38%
Poor	8	6.15%
Fair	36	27.69%
Good	44	33.85%
Excellent	7	5.38%

Answered: 128 Skipped: 2

Walking

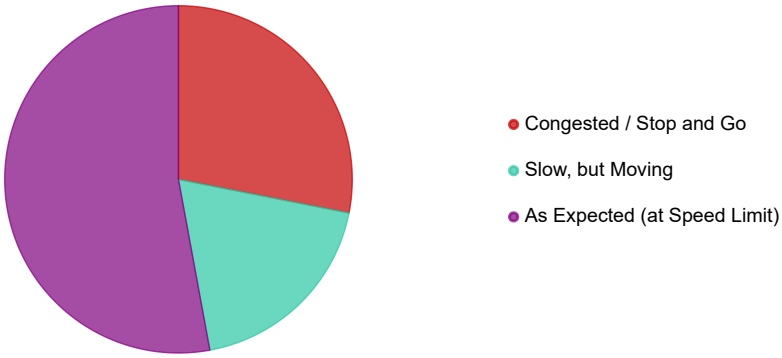


Answers	Count	Percentage
N/A	6	4.62%
Poor	12	9.23%
Fair	32	24.62%
Good	61	46.92%
Excellent	16	12.31%

Answered: 127 Skipped: 3

4) How would you describe your recent travel during the MORNING peak hours (7-9 AM) on the following City roads?

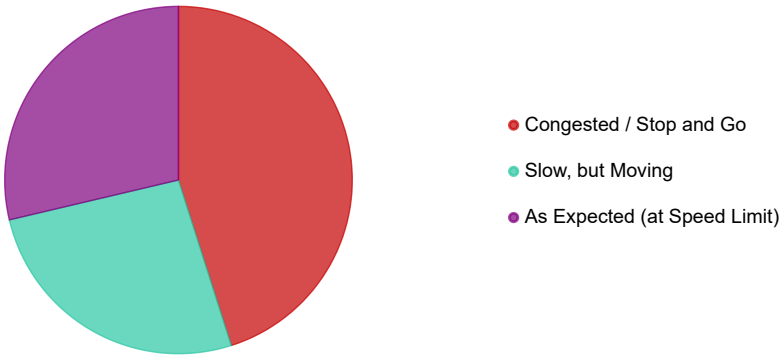
4a) Main Street:



Answers	Count	Percentage
Congested / Stop and Go	34	26.15%
Slow, but Moving	23	17.69%
As Expected (at Speed Limit)	64	49.23%

Answered: 121 Skipped: 9

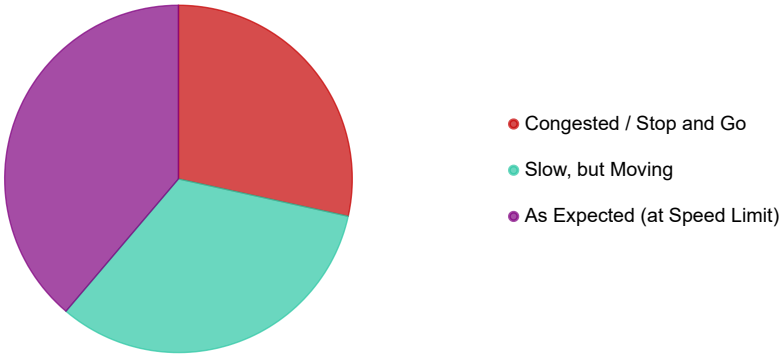
4b) Center Street:



Answers	Count	Percentage
Congested / Stop and Go	55	42.31%
Slow, but Moving	32	24.62%
As Expected (at Speed Limit)	35	26.92%

Answered: 122 Skipped: 8

4c) Mill Road:

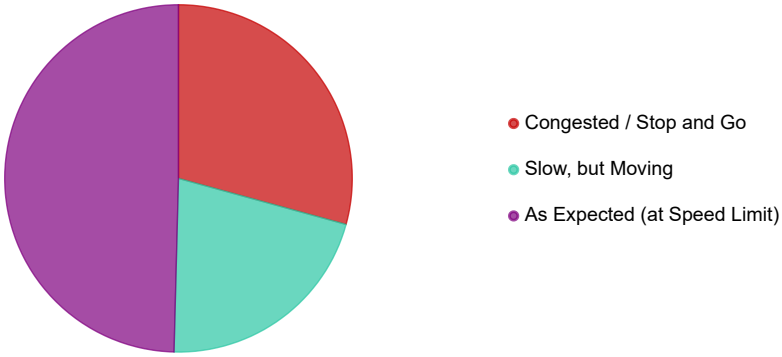


Answers	Count	Percentage
Congested / Stop and Go	33	25.38%
Slow, but Moving	38	29.23%
As Expected (at Speed Limit)	45	34.62%

Answered: 116 Skipped: 14

5) How would you describe your recent travel during the EVENING peak hours (4-6 PM) on the following City roads?

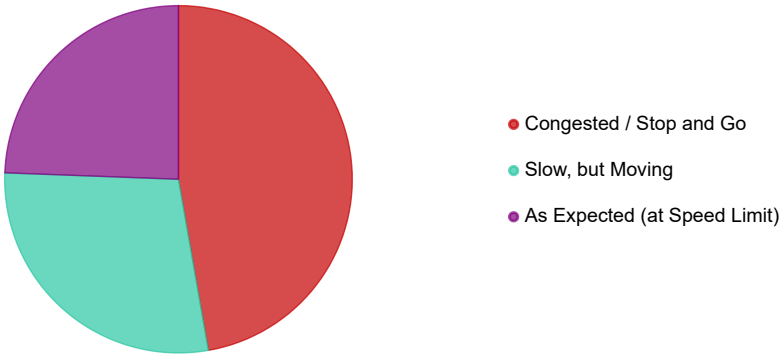
5a) Main Street:



Answers	Count	Percentage
Congested / Stop and Go	36	27.69%
Slow, but Moving	26	20%
As Expected (at Speed Limit)	61	46.92%

Answered: 123 Skipped: 7

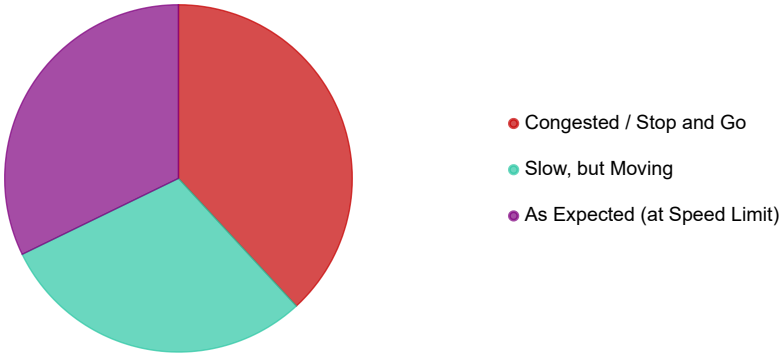
5b) Center Street:



Answers	Count	Percentage
Congested / Stop and Go	60	46.15%
Slow, but Moving	36	27.69%
As Expected (at Speed Limit)	31	23.85%

Answered: 127 Skipped: 3

5c) Mill Road:

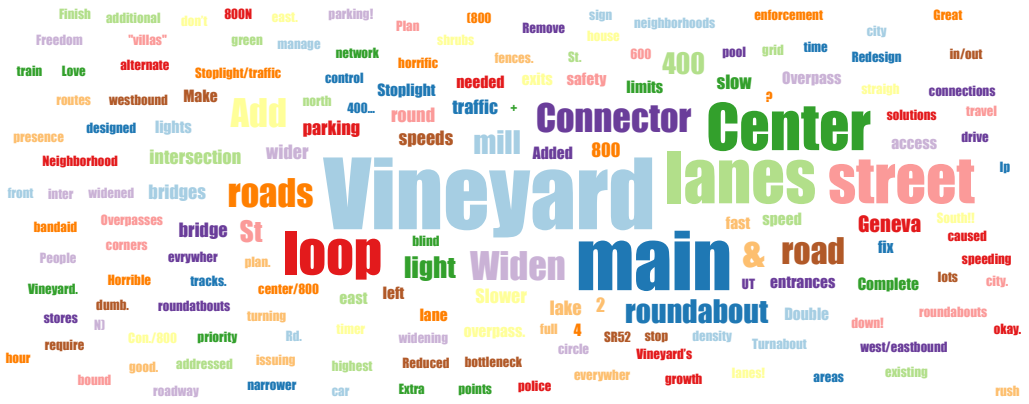


Answers	Count	Percentage
Congested / Stop and Go	45	34.62%
Slow, but Moving	35	26.92%
As Expected (at Speed Limit)	38	29.23%

Answered: 118 Skipped: 12

6) How would you improve the following transportation modes/systems in Vineyard?

6a) Roadway / Personal Vehicle Use



Response	Count
With solutions already in the plan.	1
Wider roads center/800 by widening the overpass	1
Wider Center Street bridge, slower speeds evrywher	1
Widen vineyard connector, take away light timer	1
Widen Vineyard connector road	1
Widen SR52 and Widen the Center Street Overpass	1
Widen roads, less density added	1
Widen Center Street overpass.	1
Widen both the bridges across the tracks.	1

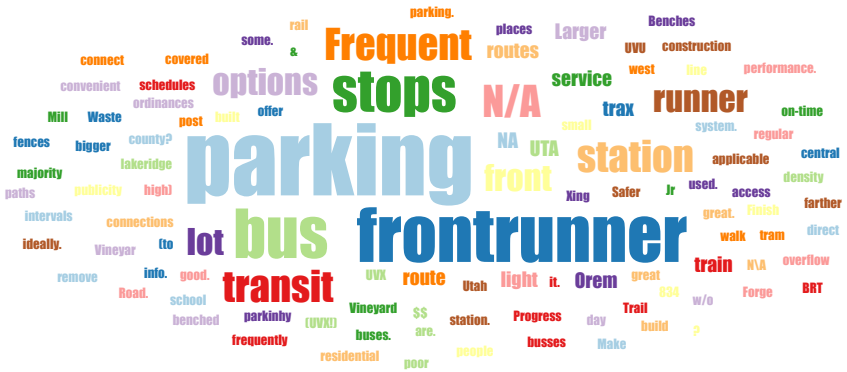
Widen 800 north, center St	1
Widen 800 N + Center Overpasses	1
We need more lanes across all the bridges	1
Vineyard's connector turning left is horrific	1
Vineyard connector has to be widened	1
Use of roundatbouts rather than lights	1
Two straigh westbound on Center street bridge	1
Turnabout on main St and vineyard loop	1
Traffic control at Vineyard Loop Rd and Main St.	1
There are some blind corners caused by fences.	1
Stoplight/traffic circle by pool house	1
Stoplight at Main Street and vineyard loop road	1
Stoplight at Main and Mill Road intersection	1
Speed limits should be slower overall	1
Sometimes a bottleneck at Center from Mill Rd.	1
Slower speeds and better designed roads for safety	1
Slow traffic, more grid network	1
Slow the roads down! Neighborhood speeds everywher	1
Roundabout at vineyard connector and main street	1
Roundabout at Main Street and Vineyard Loop	1
roundabout at Main st & vineyard loop rd needed	1
roundabout at main & vineyard loop rd, more lanes	1
Round about Mill and Vineyard loop Horrible inter	1
Remove all shrubs	1
Reduced speed limits in neighborhoods	1
Redesign so safety is highest priority	1
Plan for growth instead of issuing a bandaid	1
People drive too fast	1
One lane on Center & Vineyard Con./800 N is dumb.	1
Need to help manage traffic at Main and 600 N	1
Need light at Main Street and Vineyard Loop Road	1
More time for a green light for center st at mill	1
More than 2 roads in and out of Vineyard.	1
More roundabouts	1

More roads going in and out of Vineyard	1
More police presence and parking enforcement	1
More parking! 2 west/eastbound lanes!	1
more parking lots	1
More parking at lake front areas	1
More lanes on existing roads and access points	1
More lanes of travel, alternate routes	1
More lanes needed on Vineyard Connector (800 N)	1
More Lanes & bridges to get in and out of vineyard	1
More lanes	1
More entrances, exits lanes in and out of vineyard	1
More entrances from Geneva that are 2 lanes	1
more and wider connections to the east.	1
More access in/out of the city, 400 N to Geneva	1
Make lanes narrower on Center, Mill & Main	1
Make a double left at Vineyard Connector and Main	1
Main and Vineyard loop rd needs addressed	1
Love a roundabout at Main St and Vineyard Loop	1
light getting out of "villas" to main street	1
Light at Vineyard loop and Main	1
It's okay.	1
It's good.	1
Great right now with with the new light at Freedom	1
get some stores that don’t require a car to get to	1
fix the intersection at Main Street & vineyard lp	1
Finish the roads that are under constructions	1
Extra lane going east bound on Center Street.	1
Enforcing speeding more	1
Double lanes on Vineyard Connector Rd	1
Create a road on 400 n into Vineyard	1
Connector/Geneva Rd & Center St Overpass/Mill Rd	1
Connector slow during rush hour, fast otherwise	1
Connect 400 N street from east to west	1
complete roadway 400 N from Geneva Rd to UT Lake	1

Complete Main Street to 400 South!!	1
Center street, mill road intersection	1
Center street bridge to mill road is congested	1
Center street	1
Address stop sign on 400… roundabout?	1
additional roads across train tracks & more lanes	1
Added lanes , lights around school intersections	1
Add round about in instead of 4 way stops	1
Add more lanes to the Center Street overpass.	1
Add more lanes in and out of the city. Loop rd fix	1
Add more lanes	1
Add lanes and add more streets in and out	1
Add a roundabout on vineyard loop and main	1
Add a roundabout on main and vineyard loop	1
Add a round about on main street & Vineyard loop	1
800N & Center more lanes. Less condos	1
400 n road through from Geneva to the lake	1
4 full lanes on 800 plus turn lanes to main	1
?	1
More exits roads. Last weekend was a nightmare.	1

Answered: 97 Skipped: 33

6b) Transit



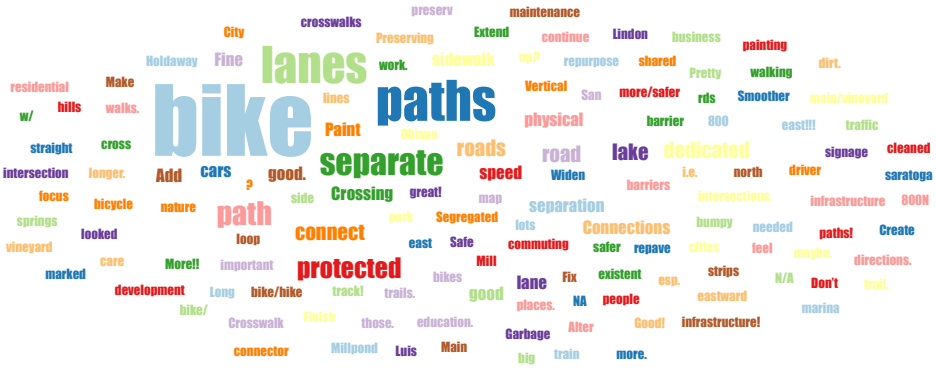
Response	Count
N/A	5
Nothing	2

NA	2
Will there be Trax in Utah county?	1
UTA to offer UVX service within Vineyard	1
Transit options are very good.	1
Trail connections, walk to transit w/o light Xing	1
The parking lot at Frontrunner is too small	1
Safer school bus stops (to lakeridge Jr high)	1
Progress is great.	1
post parking ordinances	1
parking at frontrunner station	1
Not used.	1
Not sure	1
Not built well enough yet	1
Not applicable	1
None	1
Nobody I know uses the transit system. Waste of $$	1
Needs more frequent stops & more regular schedules	1
N\A	1
More transit options, especially from west Vineyar	1
More train parkinhy	1
More publicity of where the routes go and when	1
more parking for Frontrunner	1
MORE PARKING at train station	1
More parking at the Frontrunner station.	1
More parking at Frontrunner station	1
More parking at frontrunner	1
More parking	1
More options at more frequent intervals	1
More options	1
More info. Not sure where the bus stops are.	1
More frequent stops	1
More frequent buses. Route to Forge	1
more busses, would be great to have tram some day	1
More access to transit for people farther away	1

Make the parking lot bigger for front runner	1
Less density	1
Larger parking since majority is used as overflow	1
Larger parking lot for Front Runner	1
I don't use it.	1
Have UTA build covered and benched stops	1
Have some. Get a trax line ideally.	1
Have a direct bus route to Orem central Station	1
Get more bus routes (UVX!) on Mill Road.	1
Frontrunner more frequently	1
front runner lot is used for residential parking.	1
Frequent stops at convenient places	1
Finish construction, remove fences	1
Bus 834 has a poor on-time performance.	1
BRT or light rail should connect to front runner	1
Better paths to frontrunner	1
Better bus service	1
Benches at bus stops	1
?	1
bus to UVU or the Orem frontrunner station	1

Answered: 62 Skipped: 68

6c) Bicycle Lanes and Paths



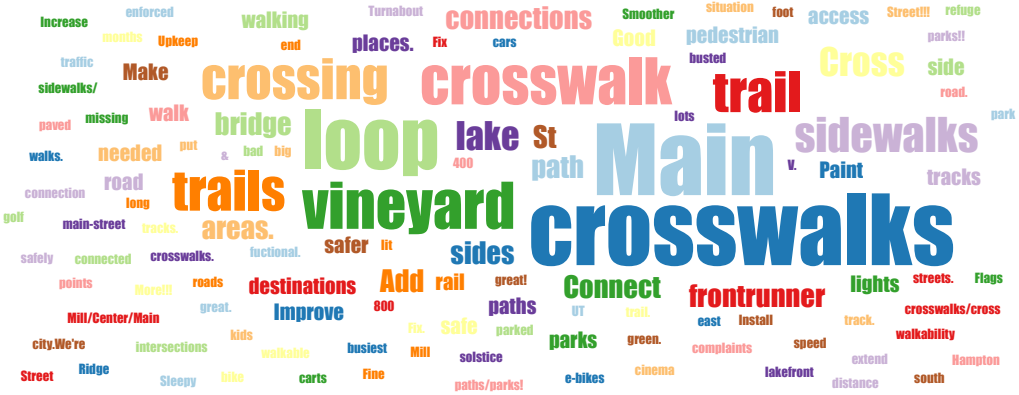
Response	Count
Widen roads	1
We're on track!	1

We could use a few more cross walks.	1
Very good. Could use more/safer paths eastward	1
Vertical separation between cars and bikes	1
they need to connect	1
These are great!	1
These are good.	1
the bike paths are good, except when crossing	1
Take out park strips to repurpose as bike lanes	1
Smoother, less bumpy paths	1
Separate paths and a barrier to separate the road	1
Separate from roads by physical barriers	1
Separate from road but allow speed for commuting	1
Separate bike lines	1
Segregated bike trails.	1
Seems okay for now	1
Safe connections to other cities north and east!!!	1
repave path by lake	1
Protected bike lanes with physical separation	1
Pretty much non existent and feel people speed	1
Preserving all the nature paths is important	1
Paint more crosswalks at intersections.	1
Paint is not infrastructure! Bike PATHs needed	1
Nothing	1
Not enough paths on east side	1
Needs to be safer and go places. Mill road esp.	1
Need some driver education. More signage maybe.	1
Need protected bike/hike path on Holdaway	1
Need more bike lanes	1
NA	1
N/A	1
Mostly fine	1
More!!	1
More dedicated, protected bike infrastructure	1
More bike paths!	1

More bike lanes	1
More and longer. More bicycle lanes	1
More	1
Maybe a map that could be looked up?	1
Make more dedicated bike paths	1
Long, mostly straight bike paths away from traffic	1
Keep up the good work. Alter paths around hills	1
I don't own a bike	1
Good! But maybe too much focus on those.	1
Garbage	1
Finish loop at the marina to saratoga springs	1
Fine as is	1
Extend lake path in both directions.	1
Don't use	1
Don’t care for these	1
dedicated bike lanes, not shared with cars	1
Crosswalk at intersection main/vineyard	1
Crossing at Main and Millpond	1
Create a bike/ walking path on 800 N	1
continue with any new development	1
Connections to vineyard connector from the preserv	1
Connect to Lindon trail. Fix train path	1
bike lanes on the roads that are marked	1
Bike lanes need to connect business w/ residential	1
Bike lane separate from sidewalk	1
Better painting, i.e. like City of San Luis Obispo	1
Better maintenance on sidewalk by lake	1
Add lots more. Add protected bike lanes on big rds	1
800N should have a bike lane, cleaned from dirt.	1
?	1

Answered: 66 Skipped: 64

6d) Sidewalks, Trails, and Crosswalks



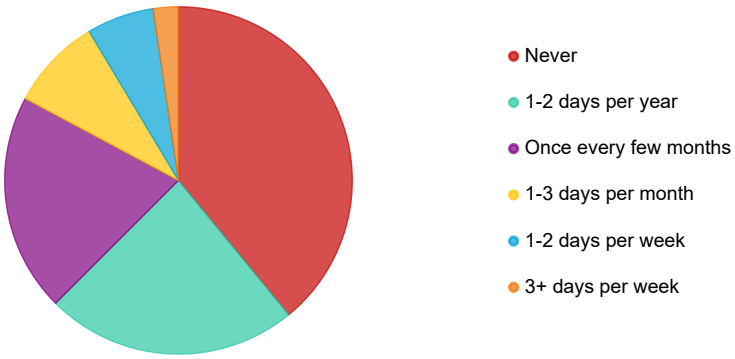
Response	Count
See above	2
We're on track.	1
Upkeep around lake	1
Turnabout on main St and vineyard loop	1
Trail along tracks is busted in places. Fix.	1
These are great!	1
The sidewalks, etc seem to be very fuctional.	1
Some cars parked across sidewalks	1
Smoother path on the lake trail	1
Sidewalks should be next to the road.	1
Sidewalks on both sides of streets.	1
sidewalks are good except when crossing big roads	1
Safer pedestrian crossing by main parks!!	1
Paint crosswalks. Bridge at 400 N over tracks.	1
Paint crosswalks green. Trails are great.	1
Ok	1
Nothing	1
Not enough trails on east side	1
Not bad but missing crosswalks	1
No complaints	1
Needs to be safer and go places.	1
need to connect	1
Need crosswalks/cross lights on Main Street!!!	1
Need a lit crosswalk at main and vineyard loop n	1

Need a cross walk at vineyard loop & main-street	1
More!!!	1
More trails	1
More of them, speed on all needs to be enforced	1
More crosswalks and connections to destinations	1
More crosswalks	1
More cross walks.	1
More connections needed across rail road	1
More connections and more destinations	1
More connected sidewalks/ paved paths	1
Mill/Center/Main crossing safe enough for kids	1
Make where trails come to an end have crosswalks	1
Make a connection in solstice to rail side trail.	1
Install traffic lights at busiest intersections	1
Increase crosswalks and trail access points	1
Improve walkability from FrontRunner to the cinema	1
Improve access to Frontrunner from Mill Rd	1
I wish we could cross safely at Main and V. Loop	1
Good,but no need to be a walkable city.We're in UT	1
Get e-bikes and golf carts off paths/parks!	1
Fix the walking situation to frontrunner	1
Fine as is	1
extend lakefront bike path south to Sleepy Ridge	1
Crosswalks with refuge areas. Flags at crosswalks	1
Crosswalks on both sides of intersections.	1
Crosswalk or bridge between Parkside and Hampton	1
Crosswalk needed at Main Street/vineyard loop rd	1
Crosswalk at main and vineyard loop	1
Crosswalk at 540/560 N crossing Vineyard loop road	1
Crosswalk across Main Street at vineyard loop	1
Crossing at Main and Millpond	1
Cross walk at Main st/Vineyard loop rd	1
Create a walking path on 800 N	1
Continue to put them in the developing areas.	1

Connect lake trail to other long distance trails	1
Connect lake shore trail through clegg farms	1
better use empty lots for trails and parks	1
Better trail maint. Last coating is horrible.	1
Better shoveling in winter months	1
Almost Excellent. Need more/safer paths eastward	1
add more crosswalks to Main St and Center St	1
Add foot bridge over tracks behind windsor	1
Add a crosswalk on all sides of vineyard loop/main	1
A few more crosswalks to parks would help	1
Need safe pedestrian crossing at the park areas.	1

Answered: 70 Skipped: 60

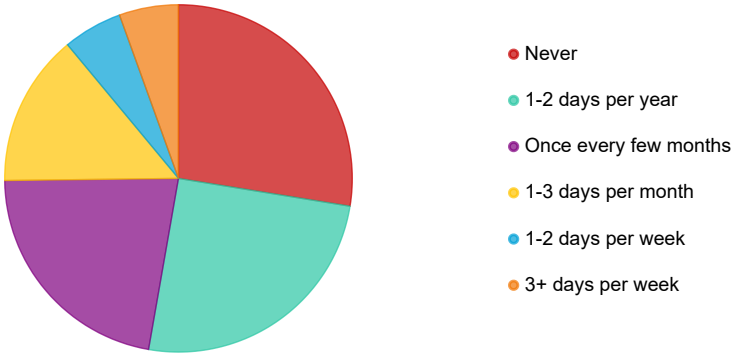
7) How often do you currently ride transit?



Answers	Count	Percentage
Never	50	38.46%
1-2 days per year	30	23.08%
Once every few months	26	20%
1-3 days per month	11	8.46%
1-2 days per week	8	6.15%
3+ days per week	3	2.31%

Answered: 128 Skipped: 2

8) How often would you ride transit if you lived within a 10-minute walk of the…

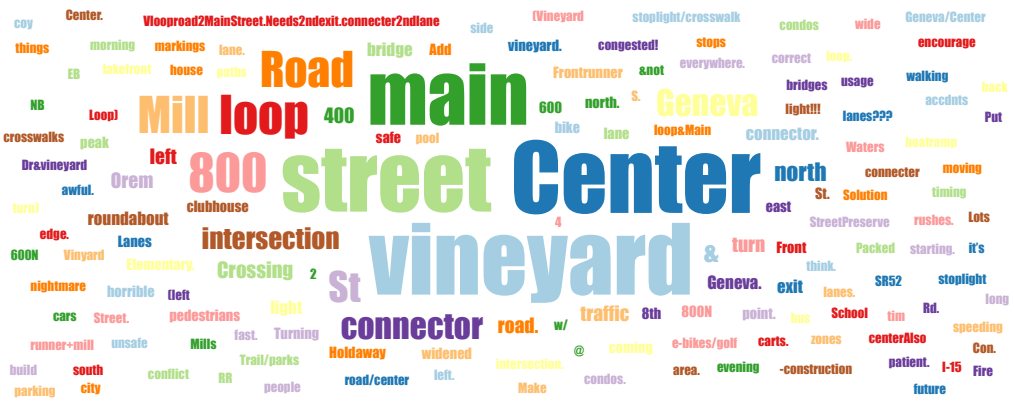


Answers	Count	Percentage
Never	35	26.92%
1-2 days per year	32	24.62%
Once every few months	28	21.54%
1-3 days per month	18	13.85%
1-2 days per week	7	5.38%
3+ days per week	7	5.38%

Answered: 127 Skipped: 3

9) What location in the City are you concerned with that has heavy traffic congestion or a safety issue?

- **Describe:**



Response	Count
Main Street and Vineyard loop road	2
Vlooproad2MainStreet.Needs2ndexit.connecter2ndlane	1
Vinyard connector and Center Street at Geneva Rd	1
Vineyard loop&Main StreetPreserve Dr&vineyard loop	1
Vineyard loop road and main street intersection.	1
vineyard loop at main st needs a light!!!	1

Vineyard loop and Mill I think. Just S of 800N	1
Vineyard loop & main is so awful. Packed &not safe	1
Vineyard connector road turn into Waters edge.	1
Vineyard Connector Rd	1
Vineyard connector needs to be widened more lanes.	1
Vineyard Connector at Geneva. Solution starting.	1
Vineyard connector and Main Street (left turn)	1
Vineyard connector and Holdaway road	1
Vineyard connecter turning left. Two turn lanes???	1
Turning left onto center street from mill	1
Trail/parks w/ e-bikes/golf carts. 400 S. Center	1
Traffic is a nightmare everywhere.	1
This is so congested!	1
There's no paths or crosswalks on the East side	1
The mill road/center street intersection	1
The light timing near vineyard elementary.	1
The intersection of Main St and Vineyard Loop Rd	1
The intersection of Main and 600N (Vineyard Loop)	1
The intersection by the pool house	1
The intersection by the clubhouse and condos.	1
The bridges	1
That one street into lakefront area. Mill road too	1
stoplight/crosswalk at main and vineyard loop road	1
SR52 during morning and evening rushes.	1
School zones	1
roundabout needs better markings for correct usage	1
Rd near boatramp -construction causes bike accdnts	1
Need a stoplight by the condos & clubhouse & main	1
Mills road needs more lanes	1
Mill Road from Geneva Road to Center Street.	1
Mill road	1
Mill and centerAlso vineyard connector and Geneva	1
Make a 2 lane left at Main and Vineyard Connector.	1
Main Street at 600 North. Traffic moving too fast.	1

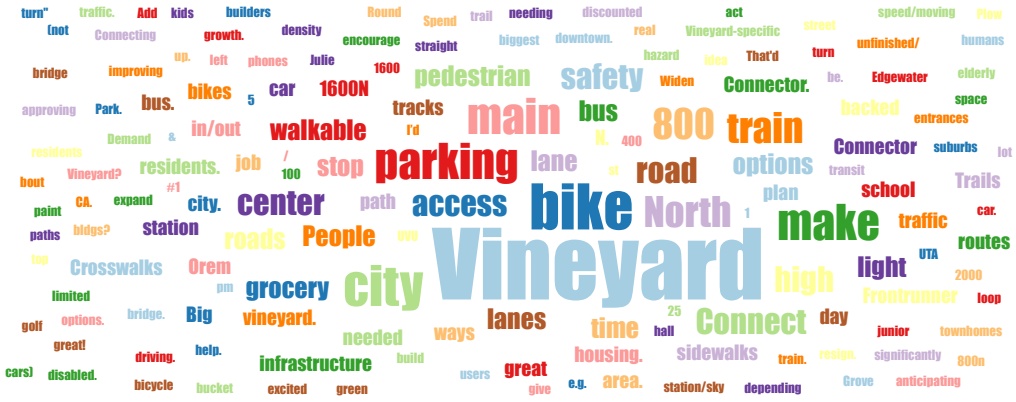
Main Street and vineyard loop road.	1
Main street and Vineyard Loop Rd	1
Main Street & Vineyard Loop road.	1
Main St and Vineyard Loop Rd needs a roundabout	1
Main St and vineyard loop	1
Main and Vineyard Rd., Center St and Mill Rd	1
Main and vineyard loop.	1
Main and 800, main and Center	1
Lots are unsafe, mill in particular for walking	1
Left turn EB from Vineyard Loop Rd to NB Main	1
Lanes are too wide and encourage too much speeding	1
Intersection of Vineyard Loop Rd and Main	1
I think things are okay if people are patient.	1
Getting back into Vineyard on 800 N or Center.	1
Geneva/Center Street	1
Geneva Rd and Vineyard Connector	1
future conflict between cars and pedestrians	1
front runner+mill road, south of that needs light	1
Front runner parking stops traffic for too long	1
From the Frontrunner station to the cinema	1
Fire whoever decided to add a bus route.	1
Feels like traffic starts outside of Vnyrd in Orem	1
Families crossing main street from Hampton to park	1
exit to main street from "villas"	1
Every exit point. 400 S, Center and Vineyard Con.	1
Eastbound on Vineyard Connector.	1
Don’t be coy, it’s the center street RR crossing	1
Difficult to walk from Megaplex to Frontrunner	1
crosswalk at this location	1
Crossing Main St @ Millpond or making left turn	1
Crossing center street to gammon park.	1
Change light main/400 to yield during non-peak tim	1
Cernter street and 8th north into Orem.	1
Center street to the bridge	1

Center Street overpass and Vineyard Connector Road	1
Center street needs to be widened where it merges	1
Center street intersection with Geneva	1
Center Street and the 800 North coming vineyard	1
Center Street and Mill Road and 800 North	1
Center street and mill road	1
Center street and Geneva	1
Center street and around Franklin Elementary.	1
center street and 8th	1
Center street 800 N	1
Center St. Main St. off Vineyard connector.	1
Center St and Mill, Mill and Geneva.	1
Center St and Geneva	1
Center St & Mill Rd, dangerous turns to businesses	1
Center in Orem from I-15 to Geneva	1
Center bridge, mill and Geneva. Holdaway road.	1
Center bridge always has speeders, in bike lane.	1
Center and Mill, 800 N downhill from Orem	1
By the Center Street overpass. Major choke point.	1
Both of the overpassesW2	1
Anything coming into the city is horrible	1
ALL connections from east of Geneva to Vineyard.	1
Add a roundabout at Vineyard Loop & Main	1
800North	1
800N	1
800 north. Crossing at main and 800 n is not safe	1
800 North, Center St	1
800 north into vineyard. Center street and geneva	1
800 north and Center Street	1
800 N/vineyard connector Orem center street	1
800 N, Center Street, 400 S	1
800 N, Center St, Mill Rd, 600 N and Main St	1
800 N needs to be build to a 4 lane road.	1
800 N exit to vineyard & main st/vineyard loop rd	1

800 n and Main. Put in a round about.	1
800 N and Center St are horrible at peak times.	1
400 North/Mill Road intersection for pedestrians	1
Center street from Geneva to freeway during peak	1

Answered: 113 Skipped: 17

10) What other input related to the City's multimodal transportation system would you like to…



Response	Count
Widen Center and Vineyard connector. bus transit straight to UVU or to the Orem station/sky bridge.	1
When will UTA On Demand expand to Vineyard?	1
What about junior high and high school bldgs?	1
We're not CA. Please stop trying to make us be. Julie should resign. That'd be the biggest help.	1
We need more ways in and out of Vineyard. It's a hazard to have limited options.	1
Walkable path from Edgewater townhomes to the train.	1
Vineyard connector can get significantly backed up both ways depending on the time of day	1
Vineyard City has no idea how to plan a city.	1
Very excited for the walkable downtown. We should also make the suburbs as walkable as we can	1
This isn't Vineyard-specific, but encourage people to get off their phones while driving.	1
There are only two real entrances to vineyard with a lot of people needing to come and one lane road	1
The new light on Main st is great! More parking is needed at Grove Park.	1
Take a bucket of paint and make this a two lane left turn at Vineyard Connector and Main	1
Spend more time improving roads and infrastructure and less time approving high density housing.	1
Some residents will NEVER be bicycle users e.g. the elderly, disabled.	1
So far I think Vineyard is doing a great job anticipating traffic growth. Keep it up.	1
Sidewalks are unfinished/ Connecting all sidewalks and paths to the train station	1
Should of had more lanes on center street bridge and 800 North	1

Safety of humans (not speed/moving cars) needs to be #1 priority.	1
Roundabout on vineyard loop rd and main	1
Round a bout, crosswalk	1
promote safety by providing discounted or free helmets, also a bike exchange program as kids outgrow	1
Plow bike path by frontrunner tracks earlier in the day in winter. Physical barriers for bike lanes	1
Please have clear crosswalks for pedestrians, especially children.	1
Perhaps a longer green arrow turning off mill rd to main street. Gets really backed up around 5 pm	1
Parking is always a mess-make builders provide enough parking spaces when they build housing.	1
Parking in Waters Edge is a big problem.	1
Overall just sucks and we have so much space to make it better	1
Need to have more parking for residents. People are not going to give up their vehicles.	1
Need more bus stops, routes, frequency. To be a walking city we need jobs in vineyard.	1
Need another option in/out of Vineyard like 400n. 1600n too much out of the way	1
Need a bus from the homes area to the Forge/shopping area. Frequently, if possible	1
N/A	1
More roads and lanes into and out of city	1
more options needed to leave or enter the city by car. 800n closing last weekend was a good example	1
More options for roads into Vineyard	1
More access to electric bikes, bikes, and scooter rentals throughout vineyard	1
More access in/out of the city. Low capacity to exit the city, worse if one of the routes is down.	1
Maybe grocery or necessities that would help us not have to travel to Orem for it	1
Make 800 North bike and pedestrian friendly to go to restaurants and Megaplex.	1
Invest more in bike infrastructure	1
Interior trails are not enough. Trails that connect north, south, and east make commuting possible.	1
Improve walkability from the Frontrunner station to the cinema especially during early/late hours.	1
I'd like a segregated bike trail to connect from city hall to the grocery store and to top golf	1
I, & other cyclers, have had falls on the rd near boat tramp just passed train x due to destroyed rd	1
I would walk/bike if there was anything within 100 miles but we live in a god-forsaken car depentent	1
I want more options than taking a car everywhere. This survey seems biased and car-centered.	1
I think the city has done a great job with bike/walking paths. 800 N and Center need to be watched.	1
I know the plan is to extend 800 N to 1600 N. It would be nice to go all the way to 2000 N.	1
Holdaway road is so slow at 20. Move back to 25 pleas. 800 N by the train, center and Geneva arebad	1
Have cops monitoring speeds and those who skip the red light at "no turn" locations.	1
Fix north vineyard road It's awfully bumpy	1

Enforce speed limits and better timing on traffic lights, both installed and future	1
Eliminate the bus. What a waste of money and what a safety issue for residents.	1
Easier access to front runner from bike and bus.	1
Crosswalks on main streets are needed!	1
Crossing2Groveparkisdangerous.This main parkisusedforeverything.Acrosswalklight/paintwouldhelpalot!	1
Cramming too many in this area. Stop building high density. Bring in grocery to alleviate traffic.	1
Covered bike parking by the train station. It's too far to walk.	1
Consider raised pedestrian crossings that act as a speedbump to cars for pedestrian comfort / safety	1
Connect 1600N to Vineyard Road. Connect 400N with a road crossing. Add lane on Vineyard Connector.	1
Can we please get another way to drive across the train tracks?	1
Big thank you for removing the old stop light system by franklin school and putting in an new 1	1
An additional access point across railroad tracks by way of 400 North	1

Answered: 64 Skipped: 66

APPENDIX D

LOS and Queueing Results

SimTraffic LOS Report

Project: Vineyard Transportation Master Plan
Analysis Period: *Future (2033) No Build*
Time Period: *Evening Peak Hour* **Project #:** *UT23-2453*

Intersection: Main Street & 400 North
Type: Signalized

Approach	Movement	Demand Volume	Volume Served		Delay/Veh (sec)	
			Avg	%	Avg	LOS
NB	L	29	28	97	16.8	*B*
	T	398	393	99	18.0	*B*
	R	52	50	97	6.6	*A*
	Subtotal	479	471	98	16.7	*B*
SB	L	467	407	87	17.9	*B*
	T	658	588	89	8.3	*A*
	R	92	82	89	3.4	*A*
	Subtotal	1,217	1,077	88	11.6	*B*
EB	L	133	128	96	30.0	*C*
	T	34	33	96	19.5	*B*
	R	52	53	102	6.6	*A*
	Subtotal	219	214	98	22.6	*C*
WB	L	34	34	99	31.6	*C*
	T	12	11	96	24.9	*C*
	R	150	155	103	6.5	*A*
	Subtotal	196	200	102	11.8	*B*
Total		2,111	1,962	93	14.1	*B*

Intersection: Vineyard Road & Center Street
Type: Signalized

Approach	Movement	Demand Volume	Volume Served		Delay/Veh (sec)	
			Avg	%	Avg	LOS
NB	L	107	110	103	20.9	*C*
	T	96	99	103	22.6	*C*
	R	224	218	98	13.7	*B*
	Subtotal	427	427	100	17.6	*B*
SB	L	203	200	99	76.0	*E*
	T	53	53	100	32.3	*C*
	R	11	11	102	21.1	*C*
	Subtotal	267	264	99	64.9	*E*
EB	L	26	26	98	37.0	*D*
	T	442	440	100	14.9	*B*
	R	80	89	111	2.7	*A*
	Subtotal	548	555	101	14.0	*B*
WB	L	224	229	102	86.8	*F*
	T	458	475	104	37.5	*D*
	R	272	275	101	25.1	*C*
	Subtotal	954	979	103	45.5	*D*
Total		2,194	2,225	101	34.9	*C*

SimTraffic LOS Report

Project: Vineyard Transportation Master Plan
Analysis Period: *Future (2033) No Build*
Time Period: *Evening Peak Hour* **Project #:** *UT23-2453*

Intersection: Geneva Road & 400 South
Type: Signalized

Approach	Movement	Demand Volume	Volume Served		Delay/Veh (sec)	
			Avg	%	Avg	LOS
NB	L	169	171	101	65.6	*E*
	T	1,009	1,028	102	27.4	*C*
	R	216	208	96	7.2	*A*
	Subtotal	1,394	1,407	101	29.1	*C*
SB	L	216	218	101	60.5	*E*
	T	1,521	1,496	98	42.8	*D*
	R	132	135	102	14.2	*B*
	Subtotal	1,869	1,849	99	42.8	*D*
EB	L	95	97	102	51.0	*D*
	T	122	113	93	53.0	*D*
	R	153	161	105	35.0	*C*
	Subtotal	370	371	100	44.7	*D*
WB	L	322	303	94	184.6	*F*
	T	196	182	93	81.2	*F*
	R	233	224	96	41.2	*D*
	Subtotal	751	709	94	112.8	*F*
Total		4,384	4,336	99	50.5	*D*

Intersection: Vineyard Road & 400 South
Type: Unsignalized

Approach	Movement	Demand Volume	Volume Served		Delay/Veh (sec)	
			Avg	%	Avg	LOS
NB	L	5	4	80	7.4	*A*
	R	5	6	120	4.4	*A*
	Subtotal	10	10	100	5.6	*A*
SB	***L***	***200***	***202***	***101***	***14.4***	***B***
	R	16	16	102	3.7	*A*
	Subtotal	216	218	101	13.6	*B*
EB	L	22	23	107	8.6	*A*
	T	164	163	99	1.3	*A*
	R	5	7	140	1.7	*A*
	Subtotal	191	193	101	2.2	*A*
WB	L	5	4	80	4.5	*A*
	T	180	180	100	4.9	*A*
	R	312	303	97	3.0	*A*
	Subtotal	497	487	98	3.7	*A*
Total		913	908	99	5.8	*A*

SimTraffic LOS Report

Project: Vineyard Transportation Master Plan
Analysis Period: *Future (2033) No Build*
Time Period: *Evening Peak Hour* **Project #:** *UT23-2453*

Intersection: Main Street & 600 North
Type: Unsignalized

Approach	Movement	Demand Volume	Volume Served		Delay/Veh (sec)	
			Avg	%	Avg	LOS
NB	L	80	76	95	24.1	*C*
	T	575	569	99	3.2	*A*
	R	26	29	109	2.8	*A*
	Subtotal	681	674	99	5.5	*A*
SB	L	208	188	90	12.2	*B*
	T	1,012	921	91	2.5	*A*
	R	325	280	86	2.9	*A*
	Subtotal	1,545	1,389	90	3.9	*A*
EB	***L***	***245***	***128***	***52***	***1072.5***	***F***
	T	22	12	56	816.4	*F*
	R	107	54	51	800.7	*F*
	Subtotal	374	194	52	981.0	*F*
WB	L	5	5	100	43.9	*E*
	T	5	5	100	90.3	*F*
	R	181	182	100	18.0	*C*
	Subtotal	191	192	101	20.6	*C*
Total		2,792	2,449	88	113.8	*F*

SimTraffic LOS Report

Project: Vineyard 300 West & Vineyard Collector TS
Analysis Period: *Future (2033) Build*
Time Period: *Evening Peak Hour* **Project #:** *UT23-2453*

Intersection: 300 West & Vineyard Connector
Type: Unsignalized

Approach	Movement	Demand Volume	Volume Served		Delay/Veh (sec)	
			Avg	%	Avg	LOS
NB	***L***	***141***	***145***	***103***	***5.5***	***A***
	R	115	115	100	3.8	*A*
	Subtotal	256	260	102	4.7	*A*
EB	T	210	205	98	0.5	*A*
	R	364	366	101	0.8	*A*
	Subtotal	574	571	99	0.7	*A*
Total		830	831	100	2.0	*A*

Intersection: Main Street & Vineyard Connector
Type: Signalized

Approach	Movement	Demand Volume	Volume Served		Delay/Veh (sec)	
			Avg	%	Avg	LOS
NB	L	55	53	97	35.0	*C*
	T	106	109	103	44.9	*D*
	R	625	636	102	22.5	*C*
	Subtotal	786	798	102	26.4	*C*
SB	L	700	419	60	454.7	*F*
	T	145	81	56	336.4	*F*
	R	10	5	50	323.4	*F*
	Subtotal	855	505	59	434.4	*F*
EB	L	10	9	90	89.2	*F*
	T	486	468	96	47.4	*D*
	R	80	80	100	10.3	*B*
	Subtotal	576	557	97	42.7	*D*
WB	L	1,225	866	71	318.7	*F*
	T	290	205	71	53.7	*D*
	R	515	367	71	38.4	*D*
	Subtotal	2,030	1,438	71	209.4	*F*
Total		4,248	3,298	78	179.6	*F*

SimTraffic LOS Report

Project: Vineyard Transportation Master Plan
Analysis Period: *Future (2033) 600 N Signal*
Time Period: *Evening Peak Hour* **Project #:** *UT23-2453*

Intersection: Main Street & 600 North
Type: Signalized

Approach	Movement	Demand Volume	Volume Served		Delay/Veh (sec)	
			Avg	%	Avg	LOS
NB	L	96	101	105	31.7	*C*
	T	544	561	103	9.8	*A*
	R	42	41	97	4.4	*A*
	Subtotal	682	703	103	12.6	*B*
SB	L	208	206	99	14.1	*B*
	T	799	793	99	4.4	*A*
	R	282	264	94	3.0	*A*
	Subtotal	1,289	1,263	98	5.7	*A*
EB	L	213	211	99	61.0	*E*
	T	11	9	84	43.8	*D*
	R	128	130	102	10.9	*B*
	Subtotal	352	350	99	41.9	*D*
WB	L	11	10	93	53.1	*D*
	T	5	4	80	51.0	*D*
	R	176	180	103	8.2	*A*
	Subtotal	192	194	101	11.4	*B*
Total		2,513	2,510	100	13.3	*B*

SimTraffic LOS Report

Project: Vineyard Transportation Master Plan
Analysis Period: *Future (2050) No Build*
Time Period: *Evening Peak Hour* **Project #:** *UT23-2453*

Intersection: Main Street & 400 North
Type: Signalized

Approach	Movement	Demand Volume	Volume Served		Delay/Veh (sec)	
			Avg	%	Avg	LOS
NB	L	34	38	110	47.5	*D*
	T	802	812	101	39.4	*D*
	R	69	70	101	15.0	*B*
	Subtotal	905	920	102	37.9	*D*
SB	L	646	579	90	60.5	*E*
	T	1,307	1,176	90	18.8	*B*
	R	98	85	87	9.8	*A*
	Subtotal	2,051	1,840	90	31.5	*C*
EB	L	139	138	99	39.9	*D*
	T	34	33	96	29.4	*C*
	R	52	52	100	15.3	*B*
	Subtotal	225	223	99	32.6	*C*
WB	L	40	35	87	37.8	*D*
	T	17	18	104	38.2	*D*
	R	219	224	102	11.8	*B*
	Subtotal	276	277	100	16.8	*B*
Total		3,458	3,260	94	32.1	*C*

Intersection: Vineyard Road & Center Street
Type: Signalized

Approach	Movement	Demand Volume	Volume Served		Delay/Veh (sec)	
			Avg	%	Avg	LOS
NB	L	128	128	100	22.1	*C*
	T	133	134	101	23.1	*C*
	R	224	224	100	15.6	*B*
	Subtotal	485	486	100	19.4	*B*
SB	L	203	205	101	182.5	*F*
	T	53	54	102	90.6	*F*
	R	11	11	102	70.1	*E*
	Subtotal	267	270	101	159.5	*F*
EB	L	32	31	96	38.7	*D*
	T	448	443	99	16.7	*B*
	R	85	90	106	2.6	*A*
	Subtotal	565	564	100	15.7	*B*
WB	L	229	228	99	88.4	*F*
	T	468	467	100	37.0	*D*
	R	277	287	104	24.1	*C*
	Subtotal	974	982	101	45.2	*D*
Total		2,291	2,302	100	46.4	*D*

SimTraffic LOS Report

Project: Vineyard Transportation Master Plan
Analysis Period: *Future (2050) No Build*
Time Period: *Evening Peak Hour* **Project #:** *UT23-2453*

Intersection: Geneva Road & 400 South
Type: Signalized

Approach	Movement	Demand Volume	Volume Served		Delay/Veh (sec)	
			Avg	%	Avg	LOS
NB	L	200	202	101	101.4	*F*
	T	1,114	1,097	98	41.7	*D*
	R	258	260	101	12.2	*B*
	Subtotal	1,572	1,559	99	44.5	*D*
SB	L	254	226	89	134.7	*F*
	T	1,674	1,534	92	118.4	*F*
	R	158	146	92	68.5	*E*
	Subtotal	2,086	1,906	91	116.5	*F*
EB	L	127	130	103	62.9	*E*
	T	196	198	101	45.7	*D*
	R	196	198	101	41.2	*D*
	Subtotal	519	526	101	48.3	*D*
WB	L	364	288	79	317.7	*F*
	T	254	205	81	143.1	*F*
	R	269	224	83	99.1	*F*
	Subtotal	887	717	81	199.5	*F*
Total		5,064	4,708	93	99.0	*F*

Intersection: Vineyard Road & 400 South
Type: Unsignalized

Approach	Movement	Demand Volume	Volume Served		Delay/Veh (sec)	
			Avg	%	Avg	LOS
NB	L	11	10	93	17.3	*C*
	R	11	10	93	9.2	*A*
	Subtotal	22	20	91	13.3	*B*
SB	***L***	***206***	***203***	***98***	***41.6***	***E***
	R	22	22	102	6.5	*A*
	Subtotal	228	225	99	38.2	*E*
EB	L	26	27	102	14.8	*B*
	T	301	315	105	4.1	*A*
	R	11	13	121	2.5	*A*
	Subtotal	338	355	105	4.9	*A*
WB	L	11	10	93	6.0	*A*
	T	349	322	92	4.7	*A*
	R	269	238	88	3.0	*A*
	Subtotal	629	570	91	4.0	*A*
Total		1,216	1,170	96	11.1	*B*

SimTraffic LOS Report

Project: Vineyard Transportation Master Plan
Analysis Period: *Future (2050) No Build*
Time Period: *Evening Peak Hour* **Project #:** *UT23-2453*

Intersection: Main Street & 600 North
Type: Unsignalized

Approach	Movement	Demand Volume	Volume Served		Delay/Veh (sec)	
			Avg	%	Avg	LOS
NB	L	96	102	106	101.5	*F*
	T	1,021	1,031	101	5.8	*A*
	R	42	40	95	4.9	*A*
	Subtotal	1,159	1,173	101	14.1	*B*
SB	L	314	302	96	23.5	*C*
	T	1,768	1,678	95	4.1	*A*
	R	378	368	97	3.3	*A*
	Subtotal	2,460	2,348	95	6.5	*A*
EB	***L***	***272***	***4***	***1***	***3425.3***	***F***
	T	22	1	5	3349.0	*F*
	R	128	2	2	3404.2	*F*
	Subtotal	422	7	2	3408.4	*F*
WB	L	11	7	65	1459.1	*F*
	T	5	2	40	1671.4	*F*
	R	277	253	91	66.3	*F*
	Subtotal	293	262	89	115.8	*F*
Total		4,334	3,790	87	99.9	*F*

SimTraffic LOS Report

Project: Vineyard Transportation Master Plan
Analysis Period: *Future (2050) Build*
Time Period: *Evening Peak Hour* **Project #:** *UT23-2453*

Intersection: Main Street & 400 North
Type: Signalized

Approach	Movement	Demand Volume	Volume Served		Delay/Veh (sec)	
			Avg	%	Avg	LOS
NB	L	34	34	99	35.6	*D*
	T	802	790	99	65.6	*E*
	R	69	68	99	34.1	*C*
	Subtotal	905	892	99	62.1	*E*
SB	L	646	603	93	59.7	*E*
	T	1,310	1,203	92	16.1	*B*
	R	98	89	91	7.7	*A*
	Subtotal	2,054	1,895	92	29.6	*C*
EB	L	139	138	99	55.6	*E*
	T	34	35	101	53.8	*D*
	R	52	55	106	27.3	*C*
	Subtotal	225	228	101	48.5	*D*
WB	L	40	41	102	53.1	*D*
	T	17	18	104	61.6	*E*
	R	219	219	100	14.6	*B*
	Subtotal	276	278	101	23.3	*C*
Total		3,460	3,293	95	39.2	*D*

Intersection: Vineyard Road & Center Street
Type: Signalized

Approach	Movement	Demand Volume	Volume Served		Delay/Veh (sec)	
			Avg	%	Avg	LOS
NB	L	128	125	98	22.6	*C*
	T	133	133	100	22.6	*C*
	R	224	223	100	15.5	*B*
	Subtotal	485	481	99	19.3	*B*
SB	L	203	194	96	144.2	*F*
	T	53	53	100	66.0	*E*
	R	11	11	102	58.1	*E*
	Subtotal	267	258	97	124.5	*F*
EB	L	32	30	93	43.0	*D*
	T	448	458	102	16.8	*B*
	R	85	86	101	2.5	*A*
	Subtotal	565	574	102	16.0	*B*
WB	L	229	220	96	96.5	*F*
	T	468	462	99	39.9	*D*
	R	277	270	97	28.1	*C*
	Subtotal	974	952	98	49.6	*D*
Total		2,291	2,265	99	43.6	*D*

SimTraffic LOS Report

Project: Vineyard Transportation Master Plan
Analysis Period: *Future (2050) Build*
Time Period: *Evening Peak Hour* **Project #:** *UT23-2453*

Intersection: Geneva Road & 400 South
Type: Signalized

Approach	Movement	Demand Volume	Volume Served		Delay/Veh (sec)	
			Avg	%	Avg	LOS
NB	L	200	192	96	52.9	*D*
	T	1,114	1,123	101	35.1	*D*
	R	258	263	102	10.8	*B*
	Subtotal	1,572	1,578	100	33.2	*C*
SB	L	254	251	99	50.8	*D*
	T	1,674	1,683	101	37.2	*D*
	R	158	147	93	6.9	*A*
	Subtotal	2,086	2,081	100	36.7	*D*
EB	L	127	123	97	41.9	*D*
	T	196	186	95	41.4	*D*
	R	196	198	101	15.5	*B*
	Subtotal	519	507	98	31.4	*C*
WB	L	364	362	99	81.3	*F*
	T	254	252	99	49.4	*D*
	R	269	272	101	12.4	*B*
	Subtotal	887	886	100	51.1	*D*
Total		5,064	5,052	100	37.7	*D*

Intersection: Vineyard Road & 400 South
Type: Unsignalized

Approach	Movement	Demand Volume	Volume Served		Delay/Veh (sec)	
			Avg	%	Avg	LOS
NB	L	11	11	102	10.6	*B*
	R	11	11	102	5.0	*A*
	Subtotal	22	22	100	7.8	*A*
SB	***L***	***206***	***203***	***98***	***16.5***	***C***
	R	22	23	107	4.5	*A*
	Subtotal	228	226	99	15.3	*C*
EB	L	26	25	94	7.2	*A*
	T	301	294	98	1.2	*A*
	R	11	10	93	0.8	*A*
	Subtotal	338	329	97	1.6	*A*
WB	L	11	11	102	3.9	*A*
	T	349	336	96	1.4	*A*
	R	269	262	97	2.0	*A*
	Subtotal	629	609	97	1.7	*A*
Total		1,216	1,186	98	4.4	*A*

SimTraffic LOS Report

Project: Vineyard Transportation Master Plan
Analysis Period: *Future (2050) Build*
Time Period: *Evening Peak Hour* **Project #:** *UT23-2453*

Intersection: Main Street & 600 North
Type: Unsignalized

Approach	Movement	Demand Volume	Volume Served		Delay/Veh (sec)	
			Avg	%	Avg	LOS
NB	***L***	***96***	***97***	***101***	***40.6***	***E***
	T	1,021	1,008	99	5.8	*A*
	R	42	44	104	5.5	*A*
	Subtotal	1,159	1,149	99	8.7	*A*
SB	L	314	282	90	16.2	*C*
	T	1,768	1,603	91	2.9	*A*
	R	378	341	90	3.1	*A*
	Subtotal	2,460	2,226	90	4.6	*A*
EB	R	149	151	101	30.6	*D*
	Subtotal	149	151	101	30.6	*D*
WB	R	277	282	102	20.8	*C*
	Subtotal	277	282	102	20.8	*C*
Total		4,046	3,808	94	8.1	*A*

SimTraffic LOS Report

Project: Vineyard - TMP Signal Timing Analysis
Analysis Period: *Future (2050) 600 N Signal*
Time Period: *Evening Peak Hour* **Project #:** *UT23-2453*

Intersection: Main Street & 600 North
Type: Signalized

Approach	Movement	Demand Volume	Volume Served		Delay/Veh (sec)	
			Avg	%	Avg	LOS
NB	L	90	89	99	27.2	*C*
	T	836	838	100	6.6	*A*
	R	40	40	100	4.9	*A*
	Subtotal	966	967	100	8.4	*A*
SB	L	195	170	87	14.1	*B*
	T	808	739	91	5.4	*A*
	R	265	234	88	3.3	*A*
	Subtotal	1,268	1,143	90	6.3	*A*
EB	L	200	192	96	63.0	*E*
	T	10	10	98	53.2	*D*
	R	120	116	96	12.1	*B*
	Subtotal	330	318	96	44.1	*D*
WB	L	10	11	107	50.6	*D*
	T	5	6	120	45.7	*D*
	R	165	163	99	8.5	*A*
	Subtotal	180	180	100	12.3	*B*
Total		2,744	2,608	95	12.2	*B*

SimTraffic Queueing Report

Project: Vineyard Transportation Master Plan

Analysis: Future (2033) No Build

Time Period: Evening Peak Hour

95th Percentile Queue Length (feet) - Rounded Up to Nearest Multiple of 25 ft

HALES ENGINEERING
innovative transportation solutions

Project #: UT23-2453

Intersection	NB					SB				EB				WB			
	L	LTR	R	T	TR	L	R	T	TR	L	LTR	R	T	L	R	T	TR
01: Main Street & 400 North	50		50	150		225	50	250		125		50	75	75	100	50	
02: Vineyard Road & Center Street	125				200	225			325	75		50	200	250	250	825	
03: Geneva Road & 400 South	275		100	400		425	325	800		150		175	200	375	225	875	
04: Vineyard Road & 400 South		50				125			50		75						
05: Main Street & 600 North	100					125		75		675		200	2,050		125	50	

SimTraffic Queueing Report

Project: Vineyard 300 West & Vineyard Collector TS

Analysis: Future (2033) Build

Time Period: Evening Peak Hour

95th Percentile Queue Length (feet) - Rounded Up to Nearest Multiple of 25 ft

HALES ENGINEERING
innovative transportation solutions

Project #: UT23-2453

Intersection	NB			SB		EB			WB		
	L	R	T	L	TR	L	R	T	L	R	T
01: 300 West & Vineyard Connector	75	50									
02: Main Street & Vineyard Connector	100	400	200	800	800	75	75	250	825	200	2,100

SimTraffic Queueing Report

Project: Vineyard Transportation Master Plan

Analysis: Future (2033) 600 N Signal

Time Period: Evening Peak Hour

95th Percentile Queue Length (feet) - Rounded Up to Nearest Multiple of 25 ft

HALES ENGINEERING
innovative transportation solutions

Project #: UT23-2453

Intersection	NB			SB			EB			WB		
	L	R	T	L	R	T	L	R	T	L	R	T
01: Main Street & 600 North	125	50	175	150	50	125	300	100		50	100	

SimTraffic Queueing Report

Project: Vineyard Transportation Master Plan

Analysis: Future (2050) No Build

Time Period: Evening Peak Hour

95th Percentile Queue Length (feet) - Rounded Up to Nearest Multiple of 25 ft

HALES ENGINEERING
innovative transportation solutions

Project #: UT23-2453

Intersection	NB					SB				EB				WB			
	L	LTR	R	T	TR	L	R	T	TR	L	LTR	R	T	L	R	T	TR
01: Main Street & 400 North	150		175	375		250	125	850		125		75	75	75	125	50	
02: Vineyard Road & Center Street	150				225	250			600	75		50	225	250	250	800	
03: Geneva Road & 400 South	400		250	600		550	700	1,200		225		225	325	375	250	1,075	
04: Vineyard Road & 400 South		50				200			125		150						50
05: Main Street & 600 North	200			225		200		200		625		50	1,700	225	225	450	

SimTraffic Queueing Report

Project: Vineyard Transportation Master Plan

Analysis: Future (2050) Build

Time Period: Evening Peak Hour

95th Percentile Queue Length (feet) - Rounded Up to Nearest Multiple of 25 ft

HALES ENGINEERING
innovative transportation solutions

Project #: UT23-2453

Intersection	NB					SB				EB					WB		
	L	LTR	R	T	TR	L	R	T	TR	L	LTR	R	T	TR	L	R	T
01: Main Street & 400 North	225		225	550		550	150	875		200				125	75	150	75
02: Vineyard Road & Center Street	150				250	250			525	100		50	250		250	250	825
03: Geneva Road & 400 South	275		125	375		375	75	500		150		125	200		325	225	475
04: Vineyard Road & 400 South		50				125			50		75						
05: Main Street & 600 North	125		50	75		175		100				150				200	

SimTraffic Queueing Report

Project: Vineyard - TMP Signal Timing Analysis

Analysis: Future (2050) 600 N Signal

Time Period: Evening Peak Hour

95th Percentile Queue Length (feet) - Rounded Up to Nearest Multiple of 25 ft

HALES ENGINEERING
innovative transportation solutions

Project #: UT23-2453

Intersection	NB			SB			EB			WB		
	L	R	T	L	R	T	L	R	T	L	R	T
01: Main Street & 600 North	100	50	200	125	50	125	200	100	200	50	100	

Traffic Impact Study Guidelines

Updated: June 2025

Introduction

This document outlines the trip generation study (TGS) and traffic impact study (TIS) requirements for Vineyard City. The purpose of this document is to guide City staff and traffic consultants in knowing how to scope traffic studies for new development within the City. The guidelines in this document were based on Utah Department of Transportation (UDOT) and Institute of Transportation Engineers (ITE) guidelines.

Application Submittal and Review

Prior to submitting a site plan or subdivision application to Vineyard City, the applicant should meet with the City's Development Review Committee where they will provide information about the nature and location of the development. Required information will include but may not be limited to:

- Location of development
- Land use type (e.g. single-family or multi-family housing, office, retail, mixed-use, etc.)
- Land use intensity (e.g. unit count, square footage)
- Proposed access points

Based on the information submitted by the applicant, City staff will decide which level of traffic study is required and the boundaries of the study area. Prior to the traffic study beginning, the applicant should contact City Staff to identify the scope of the traffic study. Additional items required for this study will be identified by Vineyard City staff which could include a request for ADT counts, speed data collection / evaluation, intersection sight distance review, traffic control review, etc.

Trip Generation

A trip represents a vehicle entering or exiting a project site. Trip generation is determined using the ITE *Trip Generation* manual, which contains trip rates for land uses based on actual counts of trips at various study sites around the United States. The latest *Trip Generation* manual should be used to calculate new trips for a development (currently 11th Edition, 2021). After calculating the trip generation, all trip counts should be rounded up to a whole number.

The ITE *Trip Generation* data provides an average trip rate per an independent variable (e.g. units, square feet) that can be used. If there are several data points for a land use, ITE also provides a fitted curve equation, which is either a linear or logarithmic equation that may provide a more accurate estimate of new trips for a development. The fitted curve equation is reported with a coefficient of determination (R^2) value, which is a value between 0 and 1 that indicates how well the equation fits the data points, with "1" representing a great fit. If the data provided by ITE is not good, the traffic engineer may need to collect local trip data.

The following are various considerations that should be made when determining whether to use the fitted curve equation, the average rate, or local trip data for traffic studies (see ITE *Trip Generation* Handbook, Chapter 4 for more details):

Use the fitted curve equation when:

- A matching ITE land use has at least 20 data points
- OR the R^2 value is at least 0.75

Use the average rate when:

- A matching ITE land use has at least three (and preferably six) data points and the fitted curve equation is not appropriate
- AND the standard deviation is less than 55 percent of the average rate value

Use local trip data when:

- The development land use is unique and does not match any ITE land uses
- OR a matching ITE land use has less than three (and preferably six) data points
- OR if neither the average rate line nor fitted curve fall within the data cluster
- OR the size of development is outside the range of land use sizes in the ITE data

In addition to the above considerations, the engineer should also visually observe where a development fits along the trip generation average rate line or fitted curve to see that the line/curve falls within the cluster of data points of that particular development size. For example, if the fitted curve is deemed appropriate based on data points or the R^2 value but the average rate line fits the data cluster better for that development size, the average rate may be a better option, or vice versa.

Certain developments may experience a reduced new trip generation number due to the nature of the project. The following are the trip reductions that should be considered in trip generation and traffic impact studies based on standard ITE methodologies:

- Pass-by trips: Trips made to a development on the way to an existing destination
- Multi-modal: Trips made via non-vehicle modes such as transit, walking, and biking
- Mixed-use internal capture: Trips made within the development itself due to a mix of uses

For commercial and office space, the City requires that square footage be used as the independent variable to calculate trips, as opposed to using number of employees or other variables. This will help ensure a conservative calculation of trips for a development that will be valid even if the tenant changes in the future.

If an applicant believes they will generate less trips than the average similar land use, a professional traffic operations engineer (PTOE) can complete a local trip generation study based on trip counts and square footages of at least two similar sites along the Wasatch Front.

Traffic Study Levels

Small developments may not need a full TIS but may still be required to submit a TGS prior to City approval. A TGS includes a description of the project and a calculation of the anticipated trip generation. In addition to the elements of a TGS, a TIS includes level of service (LOS) analyses for study intersections for the current year and potentially future years and recommendations to mitigate poor levels of service. For Vineyard City, the acceptable LOS threshold varies by road functional classification in location in the City, as outlined in Table 1.

Table 1: Vineyard City Acceptable LOS Thresholds

Location	Local Road	Collector	Arterial
Downtown	C	E	E
Other City Area	B	C	D

A development that is anticipated to generate at least 25 new peak hour trips requires a TIS. A development that generates less than 25 new peak hour trips only requires a TGS. General thresholds of 25 peak hour trips for various common land uses are provided in Table 2.

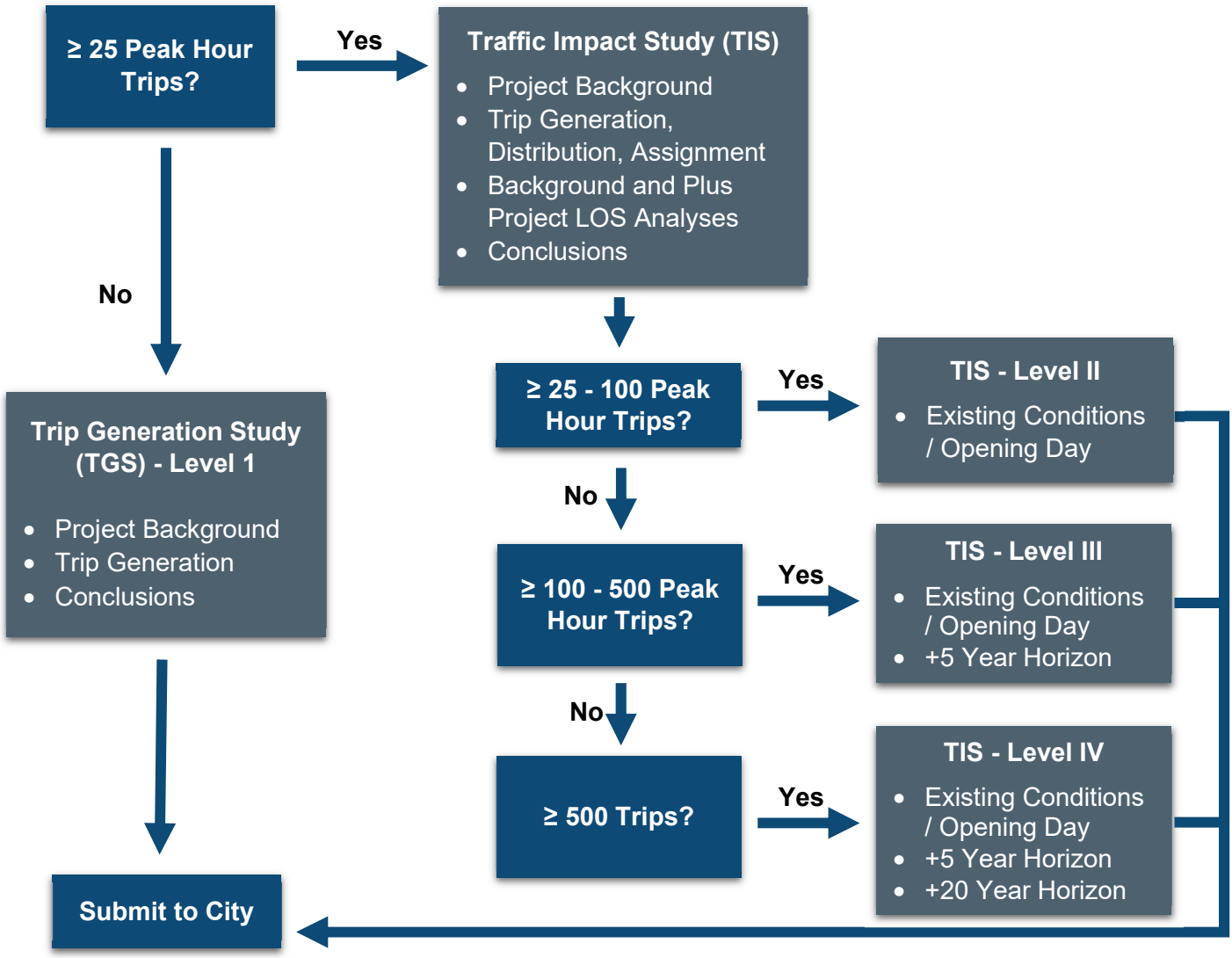
Table 2: General 25 Peak Hour Trip Thresholds

Land Use	ITE Code(s)	≥ 25 Peak Hour Trips
Light Industrial / Manufacturing	110, 140	50,000 sq. ft. GFA
Warehousing	150	150,000 sq. ft. GFA
Mini-Warehouse (Self-Storage)	151	150 storage units
Single-Family Detached Housing	210	25 dwelling units
Single-Family Attached Housing (Townhomes)	215	40 dwelling units
Multifamily: Condo/Apartment	220	50 dwelling units
Mobile Home Park	240	50 dwelling units
Assisted Living	254	100 beds
Hotel	310	*Any Size*
General Office	710	15,000 sq. ft. GFA
Medical / Dentist Office	720	7,000 sq. ft. GFA
Shopping Center	820	5,000 sq. ft. GLA
Bank	911 - 912	*Any Size*
Restaurant	930 - 935	*Any Size*
Gas Station / Convenience Store	944 - 945	*Any Size*

If a TIS is required, City staff will select the level of TIS to be completed based on the anticipated trip generation. At the smallest TIS level (level II), only an analysis of the current or opening year with and without the project is required. At the highest TIS level (level IV), future analyses up to 20 years out with and without the project are also required. A summary of each traffic study level, with its associated peak hour trip thresholds and horizon years, is shown in Table 3. A flowchart to help determine the traffic study level is also shown in Figure 1.

Table 3: Study Horizon Years by Level

Study Level		New Peak Hour Trips	TIS Horizon Year(s)
TGS	I	< 25	N/A
TIS	II	≥ 25 - 100	Current / Opening Year
	III	≥ 100 - 500	Current / Opening Year, + 5 years
	IV	≥ 500	Current / Opening Year, + 5 years, + 20 years



Study Area

The study area to be analyzed in a TIS also depends on the size of the development. Large developments may impact intersections miles away while small developments may have minimal impacts on adjacent roadways. The **minimum** required study areas for each TIS level are provided in Table 4. City staff may request additional intersections as needed.

In general, each TIS will include an analysis of the project accesses and nearby major intersections. Major intersections are defined as signalized or unsignalized intersections of two public roadways that are anticipated to be used by project traffic. This does not include minor intersections or other accesses or private roadways near the project, unless requested by the Vineyard City. However, if a minor intersection is an existing access to the site or located across from an existing or proposed project access, it should be included in the analysis.

Table 4: TIS Study Areas by Level

Study Level	Study Area
II	Project Accesses & Closest Major Intersections
III	Project Accesses & Major Intersections within ¼ Mile
IV	Project Accesses & Major Intersections within ½ Mile

Report Elements

The following sections outline the elements that should be included in the TGS and TIS reports:

TGS Elements

Each TGS report will be required to contain at minimum the following elements:

- Project Background:
  - Identify the project site location, development type, and site access drives
- Trip Generation:
  - Calculate trip generation for the development according to ITE standards
- Conclusions:
  - State the key findings and recommendations of the TGS in a concise manner

TIS Elements

Each TIS report will be required to contain at minimum the following elements:

- Traffic studies should be completed by a licensed professional engineer (PE) with a Professional Traffic Operation Engineer (PTOE) certificate
- The study should be stamp and signed by the PE / PTOE engineer
- Executive Summary:
  - Include a concise summary at the beginning of the report with the key assumptions, findings, and recommendations of the TIS

- Study Area:
  - Identify the existing nearby roadways and intersections including roadway classifications, intersection control, and speed limits
- Data Collection:
  - Collect at minimum peak hour turning movement counts at the study intersections and potentially daily volumes if requested by staff
  - Normally collect morning (7-9 AM) and evening (4-6 PM) peak hour counts unless the study area and/or development will have different peak hours (e.g. schools)
- Analysis Period:
  - Identify the study peak hour based on existing counts and the proposed trip generation; at minimum, the highest peak hour should be analyzed
  - City staff may request that multiple peak hours be analyzed
- Project Background:
  - Identify project site location, development type, project phasing, site access drives and nearby intersections to be affected by the development
- Access and Auxiliary Lanes:
  - Identify the location and configuration of each access drive to the site and the need to add auxiliary lanes (deceleration and acceleration turn lanes)
- Trip Generation:
  - Calculate trip generation according to ITE standards and apply reductions when applicable
- Trip Distribution and Assignment:
  - Document the distribution and assignment of project trips for each horizon year
- Capacity Analysis:
  - Calculate delay, LOS, and queuing results for all study intersections in the study area for existing background (without project) conditions, existing plus project conditions, future background conditions, and future plus project conditions (if required by the study level)
  - Complete this analysis using Synchro/SimTraffic, Vistro, or VISSIM software
  - Report LOS and 95th percentile queueing at study intersections per HCM criteria
- Proposed Mitigations:
  - Identify proposed mitigations to roadway and intersection characteristics in the study area based on the LOS and queueing results
  - Clearly show whether these mitigations are caused by background or site-generated traffic
- Exhibits:
  - Include figures showing peak hour turning movement volumes used in the analysis for each scenario, including trip assignment volumes
  - Include figures or reports that show the assumed lane configurations
  - Include tables or figures that show the LOS at each intersection for each scenario
- Appendices:
  - Include raw traffic count data
  - Include capacity analysis and queueing reports for each scenario
  - Include a site or concept plan of the development if available

VINEYARD
Traffic Calming Guidelines

June 2025

VINEYARD
STAY CONNECTED

HALES ENGINEERING
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TABLE OF CONTENTS

Introduction **1**
Background 1
Process 1
Identification **2**
Purpose 2
Traffic Calming Measure Options 2
Road Eligibility 2
Request **3**
Purpose 3
Request For Traffic Calming 3
Analysis 3
Review **4**
Purpose 4
Review Traffic Calming Request 4
Traffic Calming Engineering Study 4
Minimum Threshold Requirements 4
Approval **5**
Purpose 5
Project Approval 5
Project Prioritization 5
Traffic Calming Measures **6**
Purpose 6
Non-Physical / Roadside Measures 6
Physical Measures 7

Appendix A: Request for Traffic Study Form

Appendix B: Project Evaluation & Prioritization Worksheet

INTRODUCTION

BACKGROUND

In Traffic Calming, State of the Practice (August 1999), prepared by ITE for the FHWA, traffic calming is defined as:

> *"…the combination of mainly physical measures that reduce the negative effects of motor vehicle use, alter driver behavior and improve conditions for non-motorized street users."*

The author continues,

> *"The immediate purpose of traffic calming is to reduce the speed and volume of traffic to acceptable levels ("acceptable" for the functional class of a street and the nature of bordering activity)."*

Traffic calming measures can improve safety and enhance the functionality of adjacent land uses.

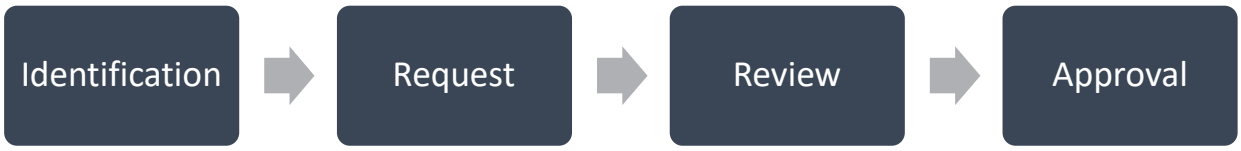
The two main reasons that traffic calming measures are implemented in communities are to **reduce vehicle speeds on the roadway** and to **minimize cut-through traffic**. Reduced speeds and volumes on roadways can improve the safety and quality of life of adjacent land users. However, traffic calming measures should only be implemented where the potential negative effects can be avoided.

One possible negative effect of traffic calming is that the issue may simply be pushed to another location. For example, if a significant number of vehicles are discouraged from using a neighborhood street as a cut-through route, it is possible that another nearby street will experience an increase in volume.

Care should also be taken to ensure that any traffic calming measures that are implemented do not create additional safety hazards, do not impede emergency response vehicles, and do not create maintenance issues. For this reason, traffic calming measures are not implemented on designated emergency response routes and are not constructed in such a way that would impede the functionality of an emergency response vehicle.

PROCESS

The process for implementing traffic calming measures in Vineyard City is as follows:



This document will outline each step in the process from the identification of a need for traffic calming to the implementation of traffic calming measures.

IDENTIFICATION

PURPOSE

The purpose of this section is to outline the minimum criteria for a street or intersection to be considered when identifying traffic calming treatments.

TRAFFIC CALMING MEASURE OPTIONS

Traffic calming measures can be categorized by non-physical / roadside measures and physical measures. Non-physical / roadside measures include changes that are minor changes that do not impact the horizontal or vertical space in the traveled way. Physical measures are infrastructure changes that modify the traveled way either horizontally or vertically. The traffic calming measure options available in Vineyard City are listed in Table 1.

Table 1: Traffic Calming Measures

Non-Physical / Roadside Measures	Physical Measures
Speed Enforcement	Traffic Circle
Driver Feedback Signs	Roundabout
Lane Striping	Lateral Shift
Signage	Landscaped Median Island
Speed Legends	Road Diet
Side Treatments	Road Narrowing
Landscaping	Raised Crosswalk
	Bulb-outs / Neckdowns
	Chokers

ROAD ELIGIBILITY

Certain roadways in Vineyard are maintained by other entities such as UDOT, Utah County, or private entities. Vineyard City can only implement traffic calming measures on roadways that are owned and maintained by the City.

Traffic calming measures can be considered for any City roadway that is classified as a local, collector, or arterial road in the Vineyard City Transportation Master Plan (2024). However, in some cases, only the non-physical / roadside measures should be considered for arterial roads.

REQUEST

PURPOSE

The purpose of this section is to outline the process by which residents and stakeholders can request that a street be studied for the implementation of traffic calming measures.

REQUEST FOR TRAFFIC CALMING

Any resident of Vineyard City may request that traffic calming be studied for the street where they live. This should be done by filling out a "Request for Traffic Study" form, which can be found in Appendix B. On this form, the requestor will list their name and contact information, the perceived traffic issue, and the specific location. This form can also be used to report other observed traffic issues including sight distance, pedestrian/bike safety, and excessive volume.

As part of this application, the requestor will also submit the names and signatures of at least five additional residents directly affected by the perceived traffic issue who are in support of studying the subject location for traffic calming. This application, along with the required signatures, shall be submitted to the Vineyard City Public Works department via email or through the City's "Report a Concern" option on the City website (www.vineyardutah.org).

ANALYSIS

Once a traffic calming request has been submitted, City staff will review the application and determine the next steps. The review of this application may include:

- Contacting the requestor and/or neighbors to learn more about their concerns
- Conducting a field visit at the location
- Collecting speed, average daily traffic, and/or turning movement count data
- Reviewing historical crash data

Using the information provided and the collected data, the City engineer will determine the actual nature of the perceived traffic problem (i.e., speeding, cut through traffic, etc.), determine if the site is an acceptable candidate for traffic calming, and outline the next steps, if any.

REVIEW

PURPOSE

The purpose of this section is to outline the evaluation and approval process for traffic calming requests.

REVIEW TRAFFIC CALMING REQUEST

Upon receipt of a completed Request for Traffic Calming application, City staff will review the application to ensure the following:

- The requestor has provided their name and contact information
- The application includes signatures from at least five additional residents (one per household) in support of traffic calming at this location
- The perceived traffic problem has been clearly stated
- The location of the perceived traffic problem has been clearly defined

Based on the review of the application, City staff may request more information from the requestor, reject the application, or approve the application. The Sheriff's office will be involved in the review of applications in addition to City staff.

TRAFFIC CALMING ENGINEERING STUDY

Traffic calming measures should only be implemented after the perceived traffic problem is verified by an engineering study. The methods and results of the engineering study should be summarized in a memo or report and submitted to the City traffic engineer. The memo or report should include recommended traffic calming measures to mitigate the observed traffic issues.

MINIMUM THRESHOLD REQUIREMENTS

As part of the engineering study, the project should be scored using the Vineyard City Traffic Calming Evaluation & Project Prioritization worksheet found in Appendix C of this document. To be considered for traffic calming treatments, a minimum score of 50 points is required.

APPROVAL

PURPOSE

The Purpose of this section is to outline the process for implementing traffic calming measures in Vineyard City.

PROJECT APPROVAL

Once the traffic calming request has been evaluated, the perceived traffic problem confirmed by an engineering study, and reviewed by the City engineer, a proposal for the installation of traffic calming measures will be presented to the City council for approval. This proposal should include a clear explanation of the prevailing traffic issue, the specific traffic calming measure(s) proposed, as well as an estimate for design and construction costs.

PROJECT PRIORITIZATION

Once the traffic calming proposal has been approved by the City council, the project should be prioritized along with other traffic calming projects using the point system outlined in the Vineyard City Traffic Calming Evaluation & Project Prioritization worksheet (see Appendix C). This point system will account for traffic volumes, crash history, speeds, and proximity to pedestrian generators (i.e., schools, parks, etc.) Projects requiring funding will be prioritized in the next fiscal year budget and only those projects with sufficiently high rankings (a minimum of 50 points) will be implemented.

TRAFFIC CALMING MEASURES

PURPOSE

The purpose of this section is to outline the specific traffic calming measures that could be considered in Vineyard City. These are the most common measures used around the country. Other measures not listed here could be considered within a traffic study and in consultation with City staff.

NON-PHYSICAL / ROADSIDE MEASURES

Non-physical / roadside traffic calming measures are those where no physical construction or modification to the roadway and traveled way. These measures are often less costly and are often considered before other traffic calming measures because they are easy to implement and remove if deemed ineffective.

SPEED ENFORCEMENT

Targeted speed enforcement by local law enforcement agencies can have a significant impact on the prevailing speed in certain locations. Enforcement efforts can be targeted at specific locations at certain times of the day to encourage drivers to comply with the posted speed limit.

DRIVER FEEDBACK SIGNS

Driver feedback signs can help drivers be more aware of their speed in relation to the posted speed limit. Driver feedback signs can be permanently mounted, installed temporarily, or mounted on a trailer. In each case the current speed of the approaching vehicles is detected and shown on a digital display, along with the posted speed limit on a static display.

LANE STRIPING

Lane striping not only delineates the lane of travel, but can create a narrow feel on the roadway without narrowing the paved surface. The perceived narrowing can encourage some drivers to reduce speeds. Lane striping can also be used to create bicycle lanes, parking spaces, or delineate other uses.

SIGNAGE

The placement of signage such as speed limit signs or signs dictating various restrictions can be used for traffic calming purposes. Restriction-type signs can include signs prohibiting trucks, turning movements, through movements, or others. Signage may also include wayfinding signage or City roadway gateway features specific to Vineyard City.

Speed Legends

Speed legends consist of letters and numbers painted on the roadway surface, usually in conjunction with roadside mounted signs, indicating the posted speed limit. These legends help call better attention to speed limits and speed limit changes than a standalone speed limit sign.

Side Treatments

Side treatments include improvements such as curb/gutter, sidewalk, and trails that provide safe pedestrian walking areas and tend to reduce vehicle speeds.

Landscaping

Landscaping includes park strips and other landscaped areas to the side of the roadway. These areas may include trees and other plants that constrain the driver's view horizontally, resulting in slower travel speeds.

Physical Measures

Physical measures consist of both horizontal and narrowing measures within the traveled way. These include objects or design elements that force vehicles to deviate from their straight line of travel causing them to reduce speeds as they within a more constrained space.

Traffic Circle

Traffic circles are raised islands, usually circular in shape, that are constructed in the center of an intersection. The presence of these features requires that vehicles slow down to navigate around the traffic circle.

Roundabout

A roundabout is like a traffic circle in that it features a circular center island. However, roundabouts are generally much larger and have raised islands on the approaches to divert traffic in the direction of the travel in the roundabout. Vehicles approaching a roundabout yield to traffic already in the roundabout. Due to the large footprint required to construct a roundabout, this traffic calming measure is generally unfeasible in neighborhoods which are already built out.

Lateral Shift

A lateral shift requires traffic to shift to one side. This can be done with striping, curb/gutter, or a combination of both. The lanes only shift once and usually occur near an intersection approach. Appropriate tapers should be designed with these shifts per standards from the American Association of State Highway and Transportation Officials (AASHTO)

Landscaped Median Island

A landscaped median island includes a raised median area in the middle of the roadway. The median island can include vegetation as desired, though consideration to the maintenance of plants should be given as well. These median islands are effective in slowing vehicles, especially if side treatments are provided to the roadside.

Road Diet

A road diet consists of converting an existing roadway to a smaller cross-section and narrowing the overall paved vehicle traveled way. This typically includes removing one travel lane on either side for roadways with two or more lanes per direction. A traffic study should consider vehicle traffic volumes to ensure that vehicle level of service will be at an acceptable level after the road diet is implemented. By doing a road diet, there are more opportunities for pedestrian and bike facilities such as bike lanes, cycle tracks, and trails.

Road Narrowing

Road narrowing involves narrowing the overall roadway traveled width and/or narrowing individual travel lanes. This can be accomplished with striping at a minor level and physical constraints at a major level. Travel lanes could be striped to a width as narrow as 10 feet when traffic calming is justified. A traffic study reviewing this option should consider overall traffic and heavy vehicle volumes that use the roadway, as heavier trucks require wider areas to maneuver.

Bulb-outs / Neckdowns

Bulb-outs / neckdowns are curb extensions at intersection approaches. These curb extensions narrow the lane at the approach, shorten the curb radius, and result in lower speeds. Bulb-outs / Neckdowns also shorten crossing time and distance for pedestrians.

CHOKERS

Chokers are curb extensions that occur midblock, as opposed to neckdowns which occur at intersections. Chokers create a narrowed traveled way, resulting in lower speeds. These typically occur at crosswalks and give pedestrians better visibility to vehicles and vice versa.

RAISED CROSSWALK

A raised crosswalk provides a safe pedestrian crossing location with better visibility. With the pedestrians walking path not changing vertically, it prioritizes the pedestrian and causes vehicles to slow down to navigate the raised median. The implementation of raised crosswalks should consider emergency vehicle access and snowplows to ensure that these large vehicles can navigate the designed raised crosswalk. Typically, these raised crosswalks should be considered only for local and collector roads.

Appendix A

Request for Traffic Study Form

VINEYARD CITY REQUEST FOR TRAFFIC STUDY

REQUESTOR INFORMATION

Requestor Name: _____

Street Address: _____

Phone Number: _____

Email Address: _____

TRAFFIC ISSUE

- ☐ Excessive Speed
- ☐ Sight Distance
- ☐ Other (explain): _____
- ☐ Excessive Volume
- ☐ Pedestrian/Bicycle Safety

Description of traffic issue (provide specifics with regards to time of day, day of the week, and location):

_____

_____

_____

_____

_____

_____

_____

_____

SUPPORTING SIGNATURES

At least five (5) supporting signatures must be from residents living on or directly adjacent to the reported traffic issue, and in support of Vineyard City studying the location for traffic calming. One signature per household, must be 18 years of age or older.

#	Name	Address	Signature
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

APPENDIX B

Project Evaluation & Prioritization Worksheet

VINEYARD CITY PROJECT EVALUATION & PRIORITIZATION

85TH PERCENTILE SPEED

PTS

Points will be assigned based on the difference between the 85th percentile speed and the posted speed limit.

Differential is less than 5 mph	0 points
Differential is greater than 5 mph, but less than or equal to 10 mph	5 points
Differential is greater than 10 mph, but less than or equal to 15 mph	10 points
Differential is greater than 15 mph	15 points

CRASH HISTORY

PTS

Points will be assigned based on the number of crashes reported in the last 3 years.

Less than 5 reported crashes	0 points
5-10 reported crashes	10 points
11 or more reported crashes	20 points

PEDESTRIAN FACILITIES

PTS

Points will be assigned based on presence of pedestrian facilities (sidewalks or trails) adjacent to the roadway.

Pedestrian facilities are present, in good repair*, and continuous on both sides of the roadway	0 points
Pedestrian facilities are present and in good repair* on only one side of the roadway	10 points
Pedestrian facilities are not present, in poor repair*, or not continuous on either side of the roadway	20 points

*A pedestrian facility will be considered in "good repair" if the walking surface is relatively flat and free of any obstacles or features that may discourage pedestrian use.

TRAFFIC VOLUME

PTS

Points will be assigned for the average daily traffic (ADT) in vehicles per day (vpd) as follows:

ADT is less than 1,000 vpd	0 points
ADT is greater than or equal to 1,000 vpd but less than 5,000 vpd	5 points
ADT is greater than or equal to 5,000 vpd but less than 10,000 vpd	10 points
ADT is greater than or equal to 10,000 vpd but less than 15,000 vpd	15 points
ADT is greater than or equal to 15,000 vpd	20 Points

Points will be assigned for the ADT of the roadway as follows.

Peak hour volume is less than or equal to 10% of ADT	0 points
Peak hour volume is greater than 10% of ADT	5 points

PEDESTRIAN GENERATOR

PTS

Points will be assigned based on presence of the following pedestrian generators:

No pedestrian generators	0 points
High School	5 points
Middle School, Jr. High, library, or Rec Center/Community Center	10 points
Elementary School or Public Park	20 points

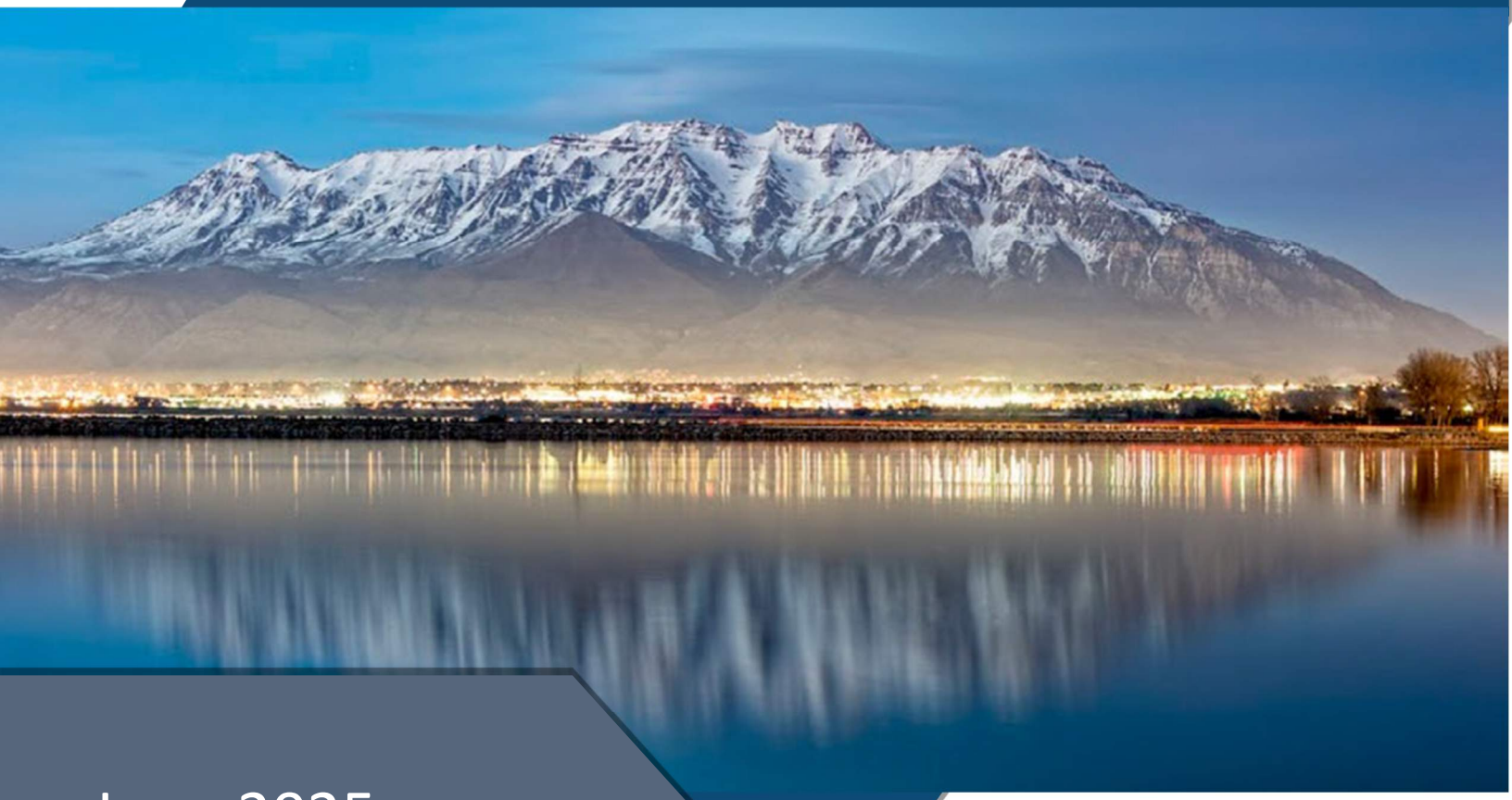
TOTAL POINTS

PTS

*A project must score a minimum of 50 points to be considered for traffic calming treatments.

VINEYARD

Access Management Manual



June 2025

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EXECUTIVE SUMMARY

As traffic volumes and congestion continue to grow on city roads, it is important for Vineyard City engineers, planners, and decision makers to implement and enforce sound transportation policies to maximize the capital investments in transportation infrastructure. Well-managed (access-controlled) corridors can last years beyond a less restrictive access-controlled corridor as well as provide safety and economic benefits. Access management can help preserve the capital improvement dollars spent on infrastructure by preserving the capacity and prolonging the need for roadway widening projects with a well-crafted and managed plan for the various roadway cross-sections.

The purpose of this Vineyard City Access Management Manual is to provide access management recommendations to City staff and City decision makers so that appropriate and beneficial access control can be implemented throughout the city thus providing operational, safety, and economic benefits to Vineyard City. This manual has been prepared to serve as a supplementary volume to the Vineyard City Transportation Master Plan so that each document can be updated independently, as needed to keep up with the changing environment.

CONTENTS

Chapter II of this manual provides a literature review of access management principles and techniques by drawing on past research at the international, national, and state levels. Operational, safety, and economic benefits of access management are included within this review.

Chapter III provides a state-of-the-practice review of access management requirements including the Utah Department of Transportation (UDOT) access management program.

Chapter IV presents the recommended access management requirements for several access related design criteria including their location, spacing, and design characteristics. On-street parking and intersection lighting are also discussed.

Chapter V outlines the appeals process for variances to the access management standards.

TABLE OF CONTENTS

EXECUTIVE SUMMARY ..... **i**
Contents i
Table of Contents ..... **ii**
List of Figures ..... **iii**
List of Tables ..... **iv**
Introduction **1**
Background 1
Components of an Effective Access Management Plan 1
Access Management Principles **3**
Introduction 3
Access Versus Mobility 3
Functional Classification 4
Access Management Concepts 5
Benefits of Access Management 16
Access Management State-of-the-Practice **18**
Introduction 18
Utah Department of Transportation (UDOT) 18
Access Management Standards **21**
Introduction 21
Access Provisions 21
Intersection and Access Spacing 22
Corner Clearance Requirements 23
Cross Access (Shared Access) Requirements 23
Intersection Alignment / Offsets 23
On-Street Parking 24
Access Characteristics 24
Intersection Sight Distance 27
Variance Process **35**

Appendix A: Vineyard City: TMP Future Roadway Network

LIST OF FIGURES

Figure 1: Access and mobility relative to functional classification 3
Figure 2: Arterial Typical Cross-Sections 6
Figure 3: Collector Typical Cross-Sections 7
Figure 4: Local Street Typical Cross-Section 8
Figure 5: Offset intersection scenarios 11
Figure 6: Vehicle making an illegal left turn into a RIRO 12
Figure 7: Vehicle making a left turn out of a RIRO 12
Figure 8: Raised island enforces RIRO 13
Figure 9: Channelized island and delineators enforce RIRO 13
Figure 10: Smooth vertical curve transition 14
Figure 11: Example of good access throat length 15
Figure 12: Typical intersection lighting 16
Figure 14: Sight distance obscured by landscaping features 28
Figure 15: Sight distance obscured by curvature and structure 28
Figure 16: Intersection sight triangles for stop control 31
Figure 17: Intersection sight triangles for yield control 32
Figure 18: Intersection sight triangle for a major street left turn 34

LIST OF TABLES

Table 1: Intersection and Street Lighting Requirements 16
Table 2: UDOT State Highway Access Management Standards 19
Table 3: UDOT Access Width Guidance 19
Table 4: UDOT Access Radii (Urban Areas) 20
Table 5: UDOT Access Driveway Angles 20
Table 6: Access Provisions 21
Table 7: Vineyard Access Management Standards 22
Table 8: Vineyard Access Width Standards 22
Table 9: Vineyard Access Driveway Angles 23
Table 10: Minimum Access Offset Requirements 24
Table 12: Curb Return Radii 25
Table 13: City Street Curb Radii 25
Table 14: Change in Driveway Vertical Profile 26
Table 15: Recommended Driveway Throat Length (feet) 26
Table 16: Minimum Setback of a Gate on a Private Access from an Adjacent Street 27
Table 17: Intersection Sight Distance – Left-turn from Minor Road 30
Table 18: Intersection Sight Distance – Right-turn and Crossing Maneuvers from Minor Road 30
Table 19: Intersection Sight Distance – Crossing Maneuvers from Yield Control 32
Table 20: Intersection Sight Distance – Left- and Right-Turn Maneuver from Yield Control 32
Table 21: Intersection Sight Distance – Uncontrolled Intersection (feet) 33
Table 22: Intersection Sight Distance – Left Turns from Major Street 33

INTRODUCTION

BACKGROUND

As traffic volumes and congestion continue to grow on Vineyard City roads, it is important for city engineers, planners, and decision makers to implement and enforce sound transportation policies to maximize the capital investments in transportation infrastructure. A well-managed and access-controlled corridor can last years beyond a less restrictive corridor as well as provide safety and economic benefits. Access management can help preserve the capital improvement dollars spent on infrastructure by preserving the capacity and prolonging the need for roadway widening projects with a well-crafted and managed plan for the various roadway cross-sections.

> Access Management:
>
> "The coordinated planning, regulation, and design of access between roadways and land development."
>
> TRB Access Management Manual, 2014

The purpose of this Vineyard City Access Management Manual is to provide access management standards and recommendations to staff and decision makers so that appropriate access control can be implemented throughout the roadway network to provide operational, safety, and economic benefits to Vineyard City. This manual has been prepared to serve as a supplementary volume to the Vineyard City Transportation Master Plan (TMP).

COMPONENTS OF AN EFFECTIVE ACCESS MANAGEMENT PLAN

According to the National Cooperative Research Program (NCHRP) Report 548, A Guidebook for Including Access Management in Transportation Planning (2005), seven key components of an effective access management plan are as follows:

1. Developing and applying an access classification system that assigns access management standards to roadways in accordance with their level of importance to mobility. This classification parallels the roadway functional classification.
2. Planning, designing, and maintaining road systems based on their access classification.
3. Defining the level of access permitted to each classification (e.g., full, limited turns, traffic control type, etc.).
4. Establishing criteria for the spacing of signalized and non-signalized intersections as well as corner clearance and intersection distances from interchanges.

5. Applying agreed upon engineering standards that include appropriate geometric design criteria and traffic engineering measures for each type of access.
6. Establishing policies, regulations, and permitting procedures to implement the listed components.
7. Ensuring coordination with and supportive actions by local jurisdictions exercising their land use planning authority as well as their development permitting and reviewing authority.

This manual addresses the first five items listed above. Beyond reviewing the current UDOT access management requirements, this document does not seek to coordinate with adjacent jurisdictions regarding access management. It is recommended that this type of coordination be done as part of the master planning process that is updated from time to time by Vineyard City and other adjacent cities.

Included in Appendix A is the most recent DRAFT of the Vineyard City Transportation Master Plan Map.

ACCESS MANAGEMENT PRINCIPLES

INTRODUCTION

This chapter discusses several access management principles including access versus mobility, functional classification, access management techniques, and benefits of access management. The purpose of this chapter is to provide sufficient background regarding access management so that the reader can understand the importance of access management principles and techniques.

ACCESS VERSUS MOBILITY

The need for access management stems from the conflicting functions of any given roadway. All roads must provide some level of mobility, which means the ability to travel through a corridor, and some level of access, which means the ability to access some land use at either end of the trip. Generally speaking, the more mobility a road has, the less direct access can be provided to adjacent land uses. Alternatively, the more direct access that is provided to adjacent land use, the less mobility a given road will have.

Extreme examples of this principle are freeways and residential streets. A freeway typically has excellent mobility (high speeds and longer trips are possible) provided that demand does not exceed capacity. However, access is limited to grade separated interchanges and slip ramps only. Direct access to adjacent land use via driveways is prohibited. Conversely, a residential street has very little mobility (speeds are low and it is difficult to make longer trips). However, full access is provided to every adjacent property.

As is shown in Figure 1, arterial streets should have higher levels of mobility with lower levels of access, while local streets should have high levels of access. Collector streets have more of a balance between access and mobility providing more access than an arterial, but at the cost of having lower traveling speeds.

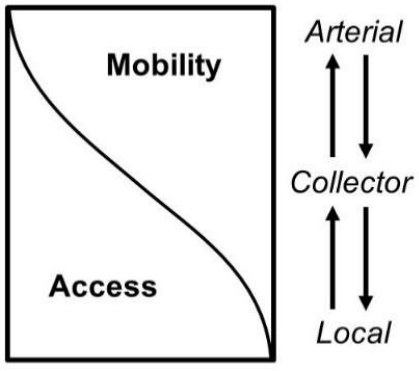


Figure 1: Access and mobility relative to functional classification

FUNCTIONAL CLASSIFICATION

Roads are broken down into a hierarchal system and given a functional classification. This is done in order to determine the purpose of a given street as well as the appropriate access classification. The higher a street classification the more mobility it provides with limited access, whereas a lower street classification has less mobility, but more access. Currently, Vineyard City has classified its roads into four classifications of public roads. Public roads include Major Arterial, Minor Arterial, Major Collector, Minor Collector, and Local Roads. These classifications are discussed in greater detail in the following sections:

ARTERIAL STREETS

Arterials are designed to have greater mobility and connect traffic between population centers and regional attractions. Because of their increased mobility, arterials typically have higher speeds and a high degree of access control. Most access to major arterials should be provided at signalized intersections and some unsignalized public streets. Private access driveways should be discouraged wherever possible. Typical cross-sections for arterial streets are shown in Figure 2.

The City's major arterials have a minimum right-of-way of 108 feet. Speed limits typically range from 30 mph to 45 mph. A major arterial street typically has two travel lanes per direction and a center two-way left-turn lane (TWLTL). The TWLTL can be replaced with a center landscaped median where left-turn movements do not need to be accommodated for access management.

The City's minor arterials have a minimum right-of-way width of 73 feet with speeds ranging from 25 mph to 35 mph. A minor arterial street typically has one travel lane in each direction separated by a center TWLTL. Little direct access is provided on minor arterials, and higher speeds allow for good mobility on these arterial streets, with slightly more access and slower speeds on minor arterials.

COLLECTOR STREETS

A collector street provides a more balanced approach towards mobility and access and provides connections between local streets and arterial streets. Collectors are often used for moderate length trips within a community. Collectors typically have two- or three-lane cross sections with parking, bike lanes, or shoulders on either side. Commercial access and local street access to collector streets is common, however, residential driveway access should be limited where possible on collectors that have higher volumes of traffic and higher speeds. Speed limits on collectors typically range from 25 to 30 mph. Typical cross-sections for collector streets are shown in Figure 3.

A major collector typically has a minimum right-of-way width of 88 feet with one travel lane in each direction, a TWLTL, sidewalks, and park strips. Some direct access is provided to adjacent properties, but reasonable speeds can also be obtained. A minor collector typically has a minimum right-of-way of 63 feet with one travel lane in each direction, no center TWLTL, sidewalks, and park strips.

LOCAL STREETS

A local street can provide full access to all adjacent land use, and usually provides little mobility. Because of this, trips on local streets are typically short and usually are between one land use and the nearest collector street. Local streets are typically wide enough for two-way travel, and many have space for on-street parking on either both, or one side of the street. The majority of local streets are residential roads which have speed limits of 25 mph. Figure 4 shows a typical cross-section of a local street with a minimum right-of-way of 58 feet.

ACCESS MANAGEMENT CONCEPTS

The following subsections briefly discuss several access management concepts and techniques currently being utilized in Utah and around the country.

TRAFFIC SIGNAL SPACING

Traffic signals should be spaced evenly and generally no closer than 1/2 mile apart. Closely or irregularly spaced signalized intersections have shown to increase delay and crash rates as good coordination is not possible. Queuing from one signalized intersection can also interfere with another closely spaced intersection. While 1/2 mile spacing has been shown to be optimal, shorter spacing (as close as 1/4 mile) may be acceptable where the demand warrants signals that close.

UNSIGNALIZED STREET AND ACCESS SPACING

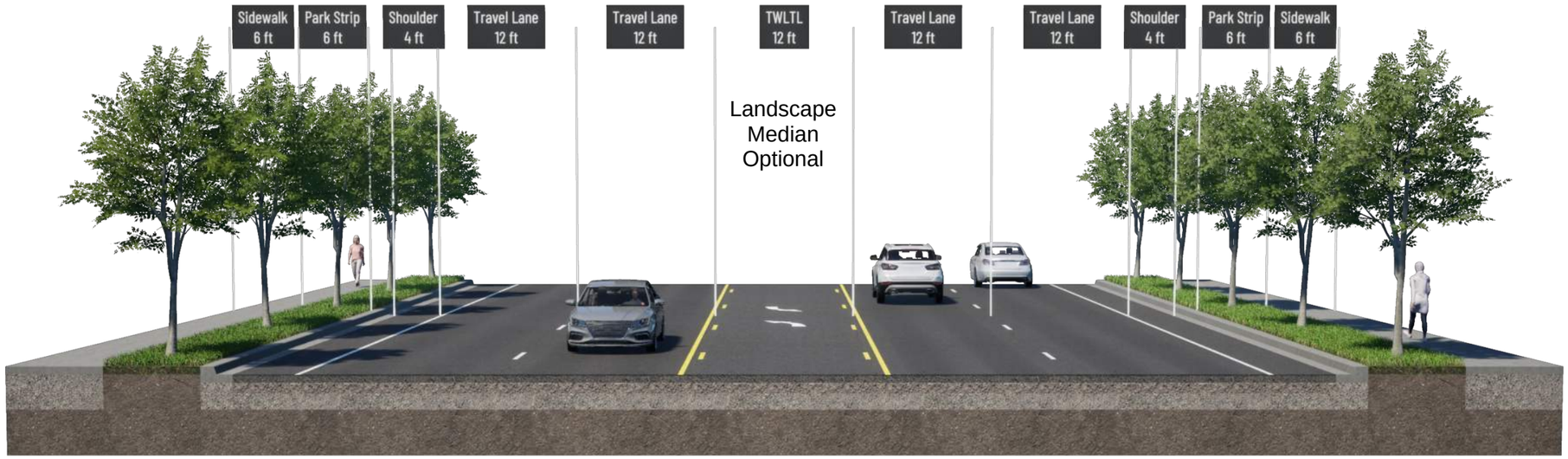
Unsignalized street spacing refers to the distance between two unsignalized intersections which can include public streets or private accesses to City roads. Research has shown that increasing the frequency of accesses (also referred to as access density) can increase the crash rate of a corridor as more conflict points are added. Average speeds can also be lowered as the additional accesses create “friction” from multiple vehicles entering and exiting the traffic stream at multiple locations.

CORNER CLEARANCE CRITERIA

The TRB Access Management Manual defines corner clearance as the distance from a public or private street to the nearest driveway (TRB 2017). The American Association of State Highway and Transportation Officials (AASHTO), *A Policy on Geometric Design of Highways and Streets*, also known as the “Green Book,” further states that driveways should not be placed within the functional area of an intersection which includes the queue storage distance, maneuver distance, and perception-reaction distance as these areas are critical areas for the safe and efficient operations of an intersection. Inadequate corner clearance can cause driveway blockages as well as decrease the overall safety of an intersection.

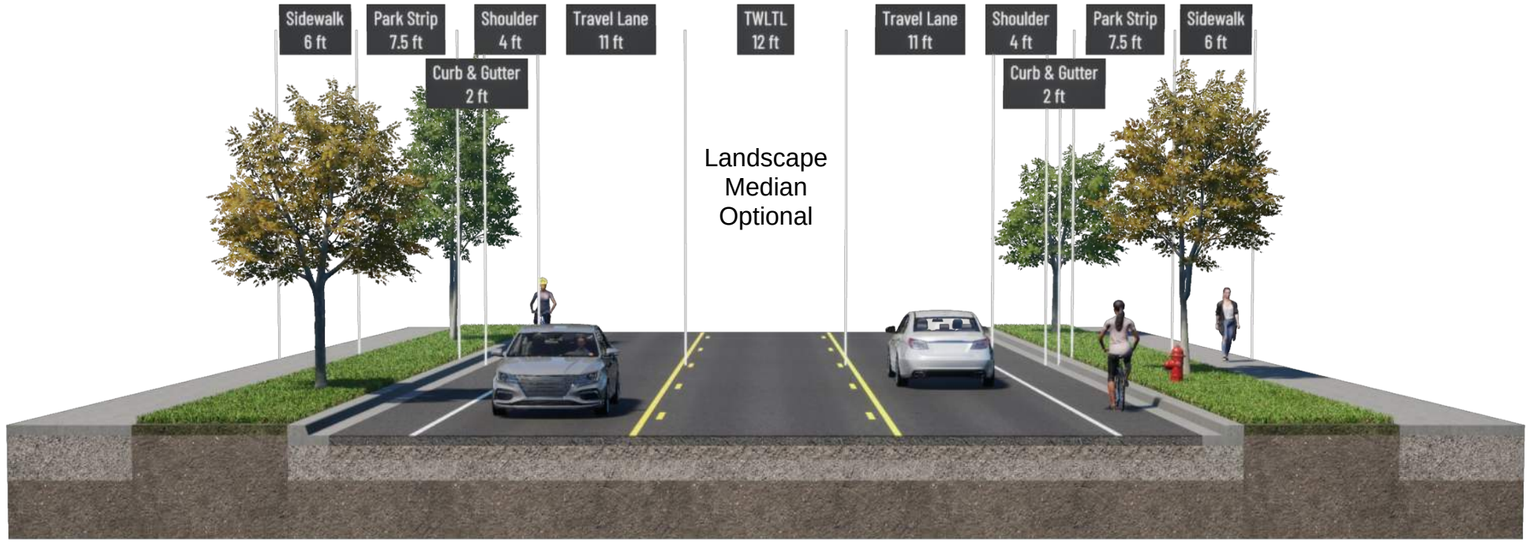
Major Arterial (5 Lanes)

Major Arterial (5 Lanes)
96+' *ROW*



Minor Arterial (3 Lanes)

Minor Arterial (3 Lanes)
73' *ROW*



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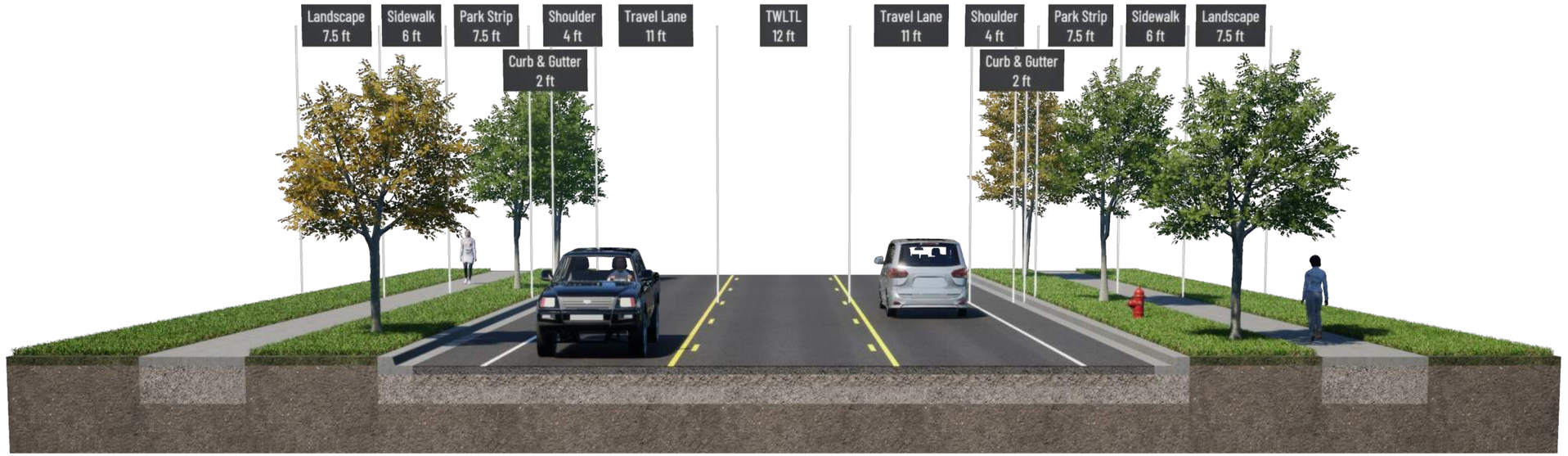
Arterial Cross Sections

Vineyard TMP

DATE 01/17/2025
PROJECT UT23-2453
Figure 2

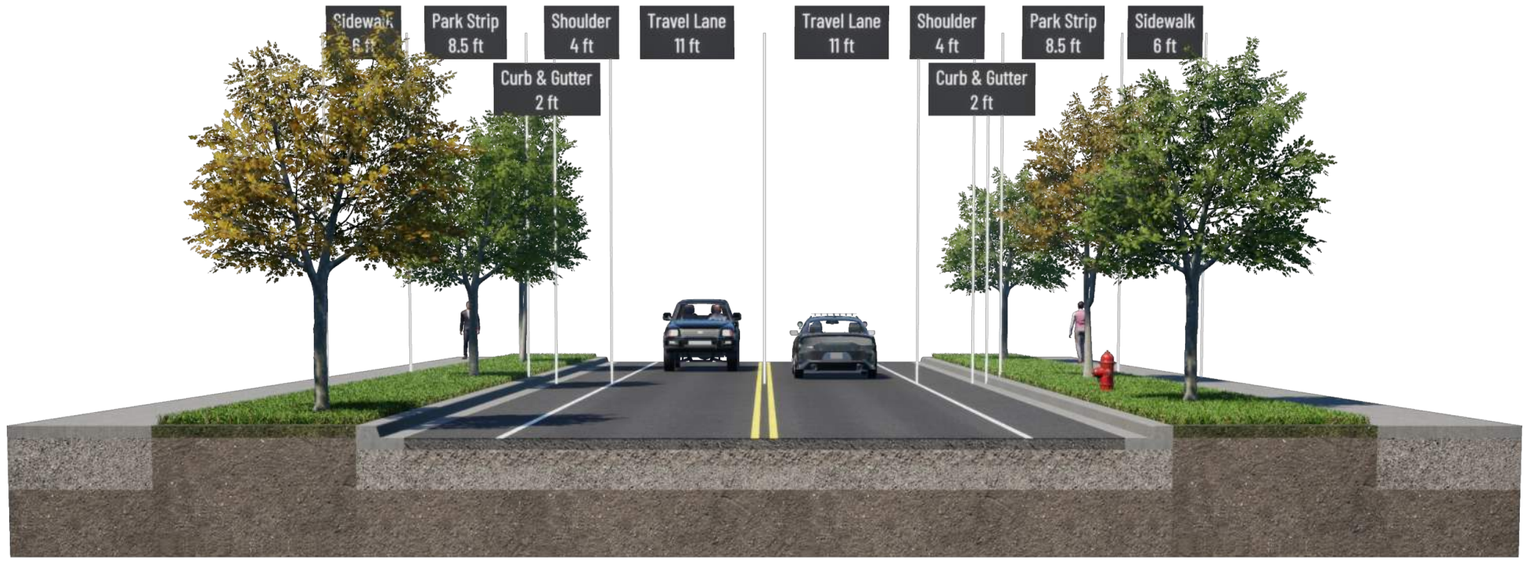
Major Collector (3 Lanes)

Major Collector (3 Lanes)
88′ *ROW*



Minor Collector (2 Lanes)

Minor Collector (2 Lanes)
63′ *ROW*



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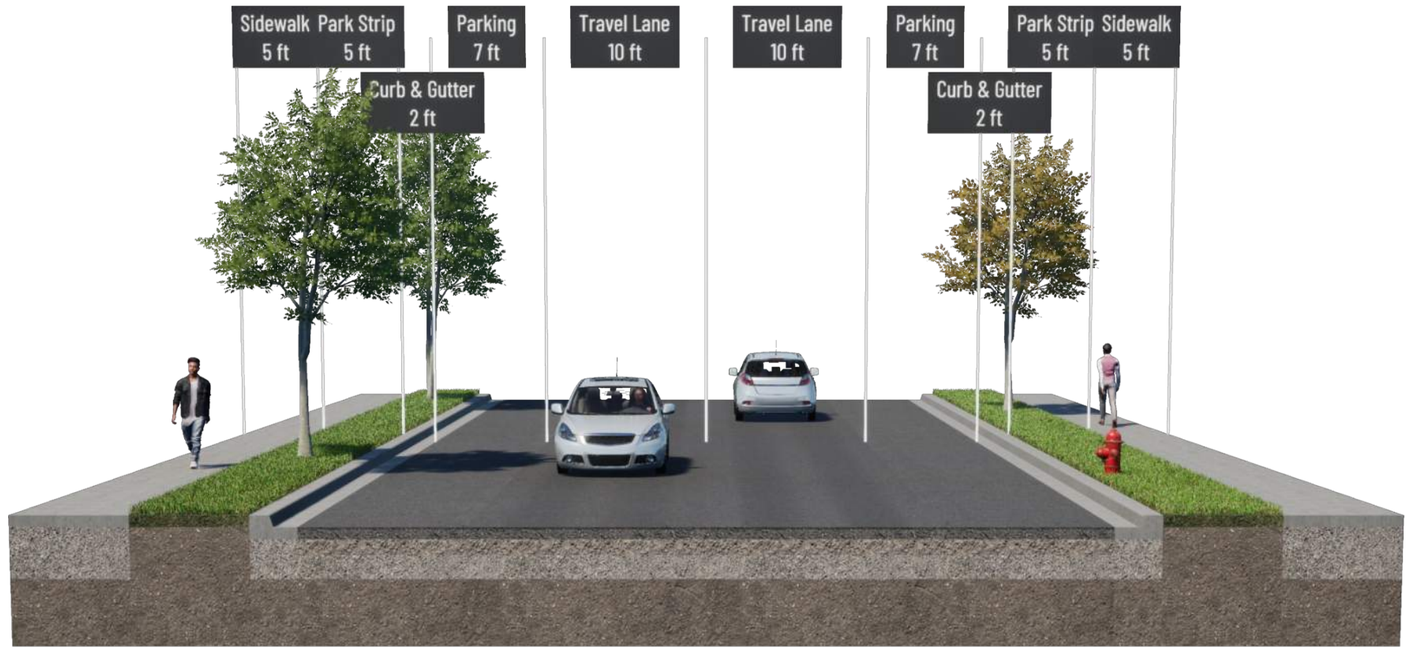
Collector Cross Sections

Vineyard TMP

DATE 01/17/2025
PROJECT UT23-2453
Figure 3

Local (2 Lanes)

Local (2 Lanes)
58' *ROW*



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Local Cross Section

Vineyard TMP

DATE 01/17/2025
PROJECT UT23-2453
Figure 4

MEDIAN TREATMENTS

The two most common types of medians include TWLTL areas and raised island medians. TWLTLs are safer and more efficient than no median at all; especially in commercial areas because they provide space for left-turning vehicles to exit the through traffic stream and wait for on-coming gaps to complete the left-turn movement. However, national research has shown that raised medians are even more effective in promoting safety because they provide a physical barrier to opposing directions of travel and help consolidate accesses and left-turn movements to predetermined locations. Raised medians are very effective for commercial corridors with high access density and locations with poor corner clearances and are often used as a retrofit access management technique instead of trying to remove existing accesses.

TURN LANES

Providing left-turn lanes is recommended because it removes traffic waiting for gaps out of the main traffic stream. A TWLTL or raised median accomplishes this objective on the main road. Left-turn lanes are also recommended on the minor street approaches or driveways, especially when the streets or driveways oppose another street or driveway. Opposing left-turn lanes help improve sight distance for the opposite left-turn movement, thus improving the safety of the intersection.

Exclusive right-turn lanes are also a form of access management, especially along busy corridors where there are a lot of right-turning vehicles. Because right-turn movements are usually completed at low speeds (approximately 10 mph), an exclusive right-turn lane provides refuge while the vehicle decelerates to make the right turn. At signalized intersections where right-turn-on-red movements are permitted, an exclusive right-turn lane decreases the delay for right-turning vehicles.

U-TURNS AS ALTERNATIVES TO DIRECT LEFT TURNS

U-turns as alternative to direct left turns are usually operated in conjunction with raised medians. As mid-block access is limited to right-in/right-out (RIRO) access only, left-turn ingress and egress movements must often make U-turns at other locations. These U-turns can be accommodated by having mid-block median opening with U-turns permitted, or by allowing U-turns at the next signalized intersection. When raised medians are present, some accommodation must be made for U-turns. Research has shown that U-turns as alternatives to direct left turns are safer than allowing direct left turns. Roundabouts can be an effective and safe way to make a U-turn movement, as long as it does not cause operation issues.

ACCESS SEPARATION FROM FREEWAY INTERCHANGES

Freeway interchanges have very high traffic volumes and often closely spaced signalized intersections. Research has shown that limiting access in close proximity to an interchange can reduce the need for complex signal timings, heavy weaving maneuvers, and queuing problems. Establishing good intersection spacing adjacent to freeway interchanges is crucial even if the interchange area is not very developed.

FRONTAGE/BACKAGE ROADS

Frontage roads are an effective access management alternative because they can provide increased access to property adjacent to a principal arterial or freeway with periodic access to the principal arterial at well-spaced locations. Frontage roads act like a collector street but allow good visibility to the adjacent corridor. Frontage roads are often referred to as backage roads when they are placed behind adjacent buildings, thus providing even better visibility to the corridor.

ROUNDABOUTS

Roundabouts are a form of access management because they can provide efficient and safe access to side streets as an alternative to signalized or stop-controlled intersections. While not necessarily the best solution for all intersections, roundabouts are especially effective where approach volumes are fairly balanced and where a signal or all-way stop-control would cause excessive delay most of the day. Safety benefits of roundabouts are well documented in the literature as crashes at roundabouts are much less severe than crashes at signalized intersections because they are usually rear-end or side-swipe collisions and not right-angle or head-on collisions as is often the case at signalized intersections. Additionally, crashes at roundabouts typically occur at lower speeds, thus reducing the overall severity.

SHARED (CROSS) ACCESS

In commercial corridors, an effective measure to consolidate access and limit access points on an arterial road is by providing shared access or cross access. Shared access is usually accomplished by straddling an access for two separate properties on the property line. This decreases the number of access points to the main road which improves operations and safety as discussed above as well as pedestrian safety as the number of sidewalk crossings are limited. Development and maintenance costs may also be reduced.

Cross access usually is accomplished by connecting the parking lots of two adjacent properties so that vehicles can cross between the two properties without using the public street. Cross access can be provided so that fewer accesses can be utilized for several adjacent properties, or, even if the number of accesses is not reduced, cross access can limit the number of trips on the adjacent roadway if vehicles are accessing multiple land uses. For example, trips could be reduced when an office building has cross access with a fast-food restaurant, or when a big-box retail establishment has cross access with a bank.

ACCESS ALIGNMENT/OFFSET

Good access alignment and appropriate offsets are a form of access management. According to the AASHTO Green Book, “To reduce costs and crash frequencies, intersecting roads should meet at, or nearly at, right angles, unless roundabouts are utilized. Roads intersecting at acute angles need extensive turning roadway areas and tend to limit visibility. Acute-angle intersections also increase the exposure time for the vehicles crossing the main traffic flow.” (AASHTO 2018, pg. 9-31). In addition, acute-angle

intersections are particularly difficult for elderly drivers because of the lack of flexibility in the neck of an elderly driver to check for gaps more than 90 degrees to the left or right. The AASHTO Green Book states that providing an angle of at least 75 degrees provides most of the benefits of a 90-degree intersection angle (AASHTO 2018, pg. 9-33).

Whenever possible, driveways or side streets should be aligned directly opposite from driveways or streets on the opposite side of the main road. This can increase safety as sight distance is better for opposing left turns and as it can eliminate overlapping left turns on the main road. If intersection offset must occur, it should be designed such that a vehicle waiting to turn left into one access does not occupy the same space as a vehicle waiting to turn left into the other access. Figure 5 illustrates the recommended and non-recommended types of offset.

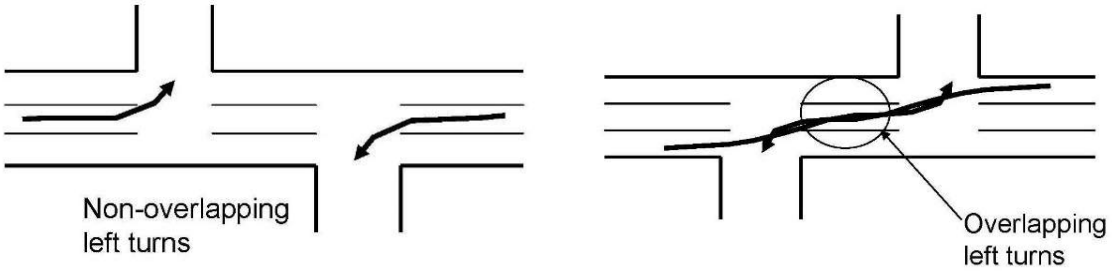


Figure 5: Offset intersection scenarios

Accesses should also be avoided near tight horizontal or vertical curves as appropriate sight distance may be difficult to obtain.

ACCESS CONTROL

Certain movements of an access can be limited or controlled to reduce conflicts thereby increasing safety and reducing delay. The most common is to designate an access as a RIRO access. A RIRO access allows only right-turn ingress and right-turn egress movements. Left turns in or out as well as crossing movements (if applicable) are not permitted. A similar, but less restrictive type of access is a three-quarter access, of which two configurations are possible. A three-quarter access can allow right ingress, right egress, and either left ingress or left egress movements, thereby eliminating only one of the four movement types (thus the name “three-quarter access”).

The effectiveness of a RIRO or three-quarter access is dependent upon the physical controls put into place for these types of accesses. Compliance is low when adequate signing and raised curbs are not present. The most effective way to enforce a limited access driveway is by use of a raised median. A raised median makes left turns physically impossible, and a directional median opening can allow either the left-ingress or left-egress movements when desired. Simply placing signs or even installing a “pork-chop” island may not prevent many drivers from making illegal turns, thus significantly reducing their effectiveness as

access management techniques. Figure 6 shows a vehicle turning left into a RIRO access. Figure 7 shows a vehicle making a left turn out of a RIRO access. Figure 8 and Figure 9 show two RIRO accesses that are operating more effectively because of medians enforcing the desired access management.

Figure 6: Vehicle making an illegal left turn into a RIRO

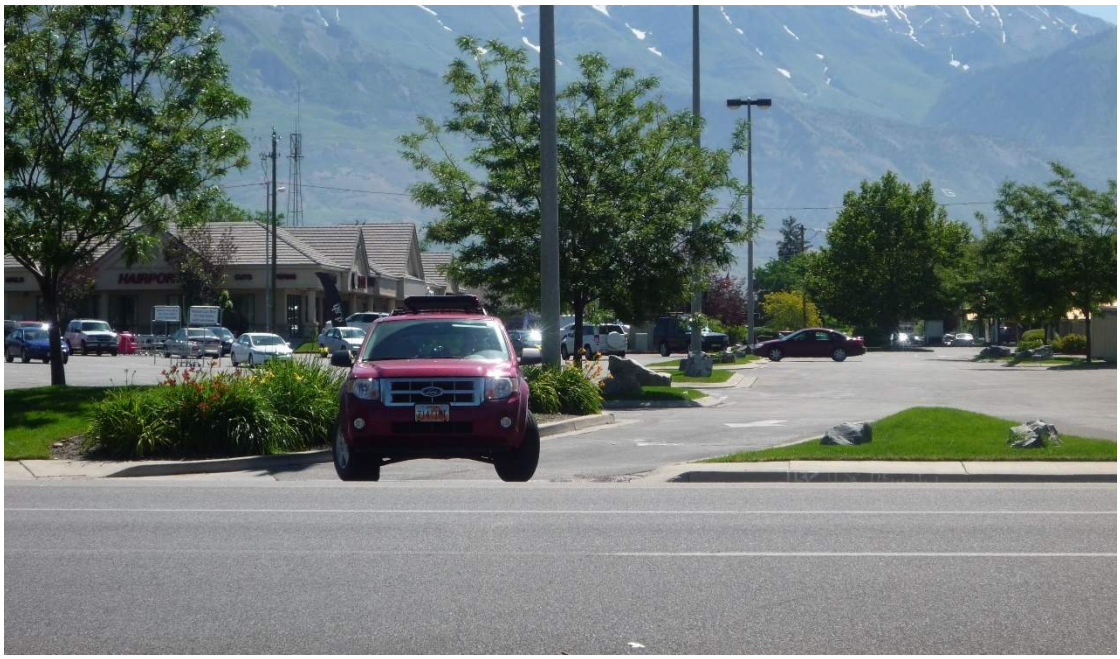


Figure 7: Vehicle making a left turn out of a RIRO

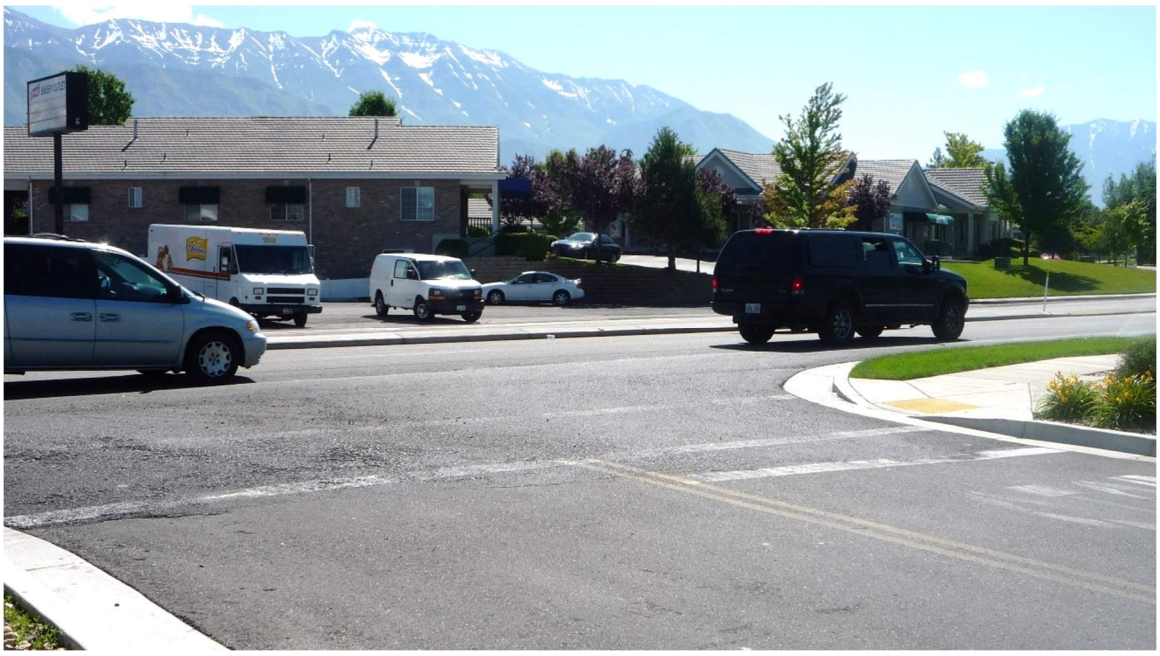


Figure 8: Raised island enforces RIRO

Figure 9: Channelized island and delineators enforce RIRO

ACCESS CHARACTERISTICS

Appropriate design of accesses to a roadway is a critical component of access management. Poorly designed accesses can create safety and operational hazards along a corridor to both through traffic and

turning traffic. The main design features of an access are the curve radii and the width of the access. Many factors influence the design including the design vehicle, design speed, traffic volume utilizing the access, and pedestrian presence.

The design vehicle used to create an access can affect the width and corner radius, especially if a driveway is designed for large trucks. A smaller corner radius can cause vehicles entering an access to cross the centerline of the access road; therefore, when heavy volumes are present, smaller radii require wider driveways. The opposite is also true because with a large enough radius, even a large vehicle will not need to cross the center line of the driveway. However, large radii increase the distance for a pedestrian to cross the access, therefore in areas with high pedestrian presence, a smaller radius may be ideal.

The type of curb opening can also affect traffic operations. The three main types of curb openings include curb returns, dropped curbs, and dustpan curbs. However, dropped curb and dustpan designs usually require much larger driveway widths as their effective radii are relatively small.

The vertical profile of an access is important because when abrupt transitions occur between the cross-slope of the roadway and the slope of the driveway, the front or rear end of a vehicle can scrape the road when a vehicle enters or exits the driveway. This causes drivers to make turns into or out of driveways at angles larger than 90 degrees which in turn can cause safety hazards, especially if the driveway is well utilized. Care should be taken to avoid an abrupt change in slopes so that the driveway can be utilized as intended without damaging vehicles. Figure 10 shows an appropriate vertical curve provided for smooth transition on this sloped access driveway.

Figure 10: Smooth vertical curve transition

The throat length of an access can also be a critical design element of an access that can impact safety and operations both on and off of the site. The driveway throat length refers to the distance of the driveway between the street and the first on-site parking area or intersection encountered. Insufficient throat length can create queuing both on- and off-site. The throat length must be long enough to handle queuing of vehicles attempting to exit the site as well as for queuing occurring as vehicles enter the site and wait for parking spots or make movements within the parking lot. Figure 11 shows an example of appropriate throat length for a driveway into a large development.

Figure 11: Example of good access throat length

INTERSECTION LIGHTING

Lighting can improve the safety and efficiency of intersections. The AASHTO Green Book (2018) recommends that lighting be present in suburban, urban, and urban core contexts "where there are concentrations of pedestrians and roadside intersectional interferences…" (pg. 3-188). Beyond traffic safety and operational benefits, street and intersection lighting can also benefit crime prevention and other community needs and should therefore be coordinated with the city agency responsible for these programs.

Intersection lighting is especially recommended when the intersection has channelized movements, large turning radii, wide cross sections, and high pedestrian volumes. Figure 12 shows typical intersection lighting.

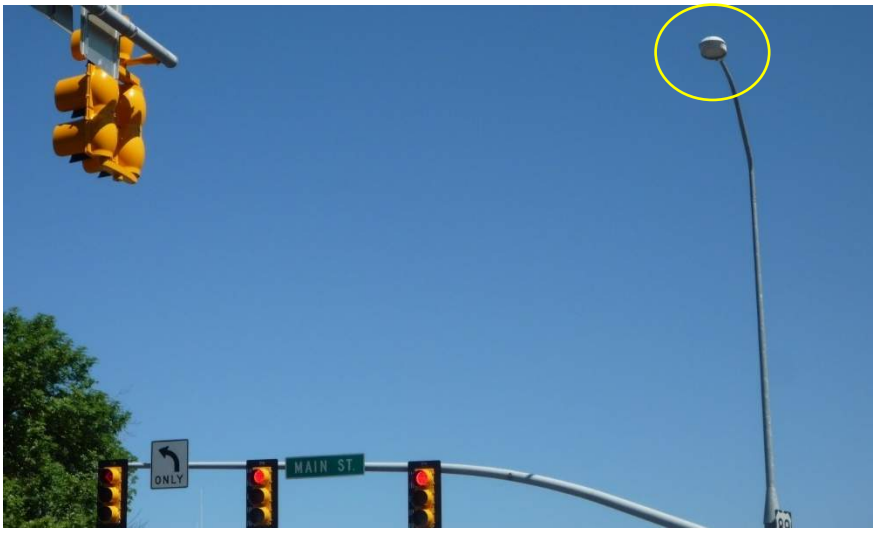


Figure 12: Typical intersection lighting

Three cities were surveyed to determine their intersection and street lighting requirements are. These requirements are summarized in Table 1 below.

Table 1: Intersection and Street Lighting Requirements

Jurisdiction	Intersection Lighting Required	Spacing Required		
		Residential Streets	Collector Street	Arterial Streets
Lehi, Utah	Yes	400’ Staggered	400’ Staggered	400’ Staggered
Provo, Utah	Yes	Mid-Block	Per IES Guidelines[1]	Per IES Guidelines[1]
South Jordan, Utah	Yes	200’-250’ Staggered	300’-350’ Staggered	300’-350’ Staggered

1. Illuminating Engineers Society

BENEFITS OF ACCESS MANAGEMENT

The three primary benefits of access management include operational benefits, safety benefits, and economic benefits. These three are discussed in the following sections in greater detail.

OPERATIONAL BENEFITS

Good access management can result in travel times and delays being reduced and road capacity being increased. Often this can result in a road functioning at appropriate levels of service despite increased

traffic growth. This in turn can save money for the agency responsible for the road as capacity enhancing projects such as road widening can be pushed later into the future.

SAFETY BENEFITS

Because left-turn maneuvers are typically associated with the more severe types of crashes, minimizing these conflicts through access management can improve the overall safety of a corridor. Both the quantity and severity of crashes has been shown to be reduced through implementation of access management. Sometimes less-severe crashes such as rear-end crashes increase with certain types of access management; however, the benefits of reducing right-angle crashes far outweigh the cost of additional minor crashes.

Adequate access spacing in busy urban corridors also helps reduce the decisions and workload normally required as drivers pass driveways and other intersections. This allows drivers to be more vigilant to other conditions thus improving the overall safety of the corridor.

ECONOMIC BENEFITS

A large concern of business owners and developers is that reducing direct access of businesses to major roads will hurt sales because access management techniques will make access to businesses more inconvenient, thus reducing the number of customers that will patronize the businesses. In fact, the Federal Highway Administration (FHWA) found that the opposite was true. In a study released in 2006 (Safe Access is Good for Business), the FHWA reported that before and after studies in several states showed that “the vast majority of businesses do as well or better after the access management projects are completed” because the overall travel time to access the businesses are reduced due to reductions in delay. This in turn actually makes patronizing the establishments more convenient and can increase the market area as travel times are reduced. Developments that are difficult to enter and exit due to poor access management and congestion become less attractive to customers.

ACCESS MANAGEMENT STATE-OF-THE-PRACTICE

INTRODUCTION

This chapter discusses the current state-of-the-practice for access management related standards including the current policies of Utah Department of Transportation (UDOT) and several other cities in Utah.

UTAH DEPARTMENT OF TRANSPORTATION (UDOT)

UDOT began a formal access management program in 2003 with Administrative Rule R930-6, *Accommodation of Utilities and the Control and Protection of State Highway Rights of Way*. Chapter 7 of this rule outlines the access management plan for all UDOT-owned roads. Several topics are coved by this program including:

- Access management classifications (Category 1 through 9)
- Access spacing requirements for each classification including signal spacing, street spacing, access spacing, and spacing from crossroads to freeway interchanges.
- Access design standards and specifications
- Turn lane requirements
- Permitting and variance processes

UDOT ACCESS LOCATION AND DESIGN STANDARDS

Table 2 shows the access spacing requirements for UDOT roads. UDOT's access spacing requirements serve as a good starting point for Vineyard access spacing requirements, especially for Vineyard's higher classification roadways. However, UDOT's requirements do not cover lower classified roads such as residential streets and collector streets.

Table 3 shows recommended minimum and maximum access widths for driveways on UDOT facilities based on land use type. Table 4 shows the recommended minimum and maximum radii for urban accesses on UDOT facilities. Table 5 shows the desirable and minimum approach angles of access to UDOT facilities, that is, the maximum allowable skew of an access.

Table 2: UDOT State Highway Access Management Standards

Category		Minimum Signal Spacing (ft)	Minimum Street Spacing (ft)	Minimum Access Spacing (ft)	Minimum Interchange to Crossroad Access Spacing (ft)		
					To 1st RIRO[1]	To 1st RIRO Intersection[2]	From Last RIRO[3]
1	Freeway/Interstate	Not Allowed			Not Applicable		
2	System Priority-Rural	5,280	1,000	1,320	1,320	1,320	1,320
3	System Priority-Urban	2,640	No Unsignalized Access Permitted		1,320	1,320	1,320
4	Regional-Rural	2,640	660	500	660	1,320	500
5	Regional Priority-Urban	2,640	660	350	660	1,320	500
6	Regional-Urban	1,320	350	200	500	1,320	500
7	Community-Rural	1,320	300	150	Not Applicable		
8	Community-Urban	1,320	300	150			
9	Other	1,320	300	150			
10	Freeway One-way Frontage Road	1,320	660	Not Allowed			

1. The distance from interchange off-ramp gore area (point of widening) to the first RIRO driveway intersection.
2. The distance from the interchange off-ramp gore area (point of widening) to the first major intersection.
3. The distance from the last RIRO driveway intersection to the interchange off-ramp gore area (point of widening).

Source: UDOT R930-6-7, Table 1 (2019)

Table 3: UDOT Access Width Guidance

Land Use	Direction Use	Minimum Access Width (ft)	Maximum Access Width (ft)
Commercial or Industrial	Two-way	25	50
	One-way	16	30
Residential	Two-way or one-way	16	30
Farmland	Two-way or one-way	16	32

1. If two one-way approaches are adjacent and separated by a non-traversable median between 4 and 25 feet wide, the access is treated as one access.

Source: UDOT R930-6-7.4 (2019)

Table 4: UDOT Access Radii (Urban Areas)

Land Use	Location	Minimum Radius (ft)	Maximum Radius (ft)
Commercial, Industrial, Agricultural	Urban	30	60
	Rural	20	60
Residential	Urban	10	15
	Rural	20	30
1. Examine the vehicle profile utilizing the subject access and design appropriate radii. Source: UDOT R930-6-7.4 (2019)			

Table 5: UDOT Access Driveway Angles

Direction Use	Desirable (degrees)	Minimum (degrees)
Two-way	90	80
One-way (right-in or right-out)	90	60
Source: UDOT R930-6-7.4 (2019)		

ACCESS MANAGEMENT STANDARDS

INTRODUCTION

The following sections discuss access management standards for Vineyard City. These are based on national and local research, as well as the current state-of-the-practice by other jurisdictions as previously discussed.

ACCESS PROVISIONS

This section discusses the types of accesses that should be permitted on the various types of roadways within the City. The roadway network and land use are interconnected. Therefore, allowing certain types of land use and accesses adjacent to certain types of roadways will lead to maximizing the life and traffic operations of the roadway. Table 6 shows recommended allowable accesses for each roadway classification.

Table 6: Access Provisions

Street Classification	Commercial Access	Multi-Family Residential Access	Residential Access	Public Street Access
Arterial	Yes[1]	No[3]	No	Yes
Collector	Yes	Yes	Yes[4,5]	Yes
Local Street	No[2]	Yes	Yes	Yes

1. Preferably, commercial access to an arterial should be consolidated for several parcels and gained using a traffic signal or a public street. Where direct access is given to an arterial, if possible, the access should be a RIRO access.
2. Exceptions to this recommendation would be for small commercial developments or for secondary access to a commercial development.
3. Very large multi-family developments may have private accesses that resemble public streets in form and function, and therefore would be an exception to this recommendation.
4. Direct access and frontage of residential properties to a minor collector may result in less-than-desirable livability for residents and should be avoided where practical.
5. Direct access and frontage of residential properties to a major collector may result in less-than-desirable livability for residents and should be avoided where practical; however, if base residential zoning allows access, then a traffic impact study showing acceptable operations and safety can be mitigated, then an engineering review will determine the applicability of this standard.

The standards listed in Table 6 may not always be feasible depending on whether or not other access exists for a given parcel of land. The feasibility of these recommendations is also highly dependent upon land use and transportation planning by Vineyard City.

INTERSECTION AND ACCESS SPACING

Standards for minimum signalized, public street and private access spacing have been compiled and are shown in Table 7. Guidance for access widths and angles are summarized in Table 8, and Table 9, respectively.

Table 7: Vineyard Access Management Standards

Functional Classification	Signal Spacing[1] (ft)	Street Spacing[1] (ft)	Access Spacing[1] (ft)		
			Full	3/4[2]	RIRO[3]
Major Arterial	2,640	1,320	1,320	990	660
Minor Arterial	1,320	660	660	330	330
Major Collector	1,320	330	330		
Minor Collector	1,320	330	150		
Local	N/A	150	35		

1. Includes intersecting streets and driveways. Signal and access spacing may be adjusted by the City Engineer based on traffic warrants as found in the latest Manual on Uniform Traffic Control Devices (MUTCD) and engineering judgement.
2. Restricts left-turns and through movements from the minor approach OR left-turns from the major approach
3. Limits access to right turns into and out of the minor approach only

Table 8: Vineyard Access Width Standards

Land Use	Desired Access Width (ft)	Maximum Access Width (ft) [3]
Private Residences	Match width of driveway	30[1]
Residential Development	12 feet for each entry/exit lane	30
Commercial Development	14 feet for the entry lane & 12 feet for each exit lane	30[2]
Industrial Development	16 feet for the entry lane & 12 feet for each exit lane	40

1. For residential lots with a width less than 60 feet, the driveway width may not exceed fifty percent (50%) of the lot width.
2. Subject to the approval of the City Engineer, the maximum width may be increased to 40 feet in the C-1 General Commercial District based on traffic needs. Other Commercial Districts may be allowed a maximum width driveway of 40 feet, based on a Traffic Impact Analysis and subject to approval of the City Engineer.
3. Maximum width shall be measured at the right-of-way line.

Table 9: Vineyard Access Driveway Angles

Land Use	Direction Use	Driveway Angles	
		Desirable (degrees)	Minimum (degrees)
Commercial or Industrial	Two-way	90	75
	One-way (right-in or right-out)		60
Residential or Farm Land	Two-way or one-way		75

1. If two one-way approaches are adjacent and separated by a non-traversable median between 4 and 25 feet wide, the access is treated as one access.

CORNER CLEARANCE REQUIREMENTS

The corner clearance requirements are the same as the minimum access spacing requirements as were shown previously in Table 7. In general, minimum corner clearance can be shorter on the downstream leg of the minor street at an intersection, especially if the access is a RIRO access. This distance can be as low as 120 feet. For all other corner clearance distances, the values in Table 7 for minimum access spacing apply.

CROSS ACCESS (SHARED ACCESS) REQUIREMENTS

Access to private property from the public transportation network cannot be prohibited. However, when parcels have small frontages, especially along arterials and collectors, it is highly recommended that a cross access and/or shared access be utilized where practical. Where adjoining parcels have the same ownership, Vineyard City should require the use of cross or shared access in order to maintain the recommended access spacing requirements as previously discussed. When adjacent parcels do not have common ownership, incentives should be provided to promote shared and cross access.

INTERSECTION ALIGNMENT / OFFSETS

Where possible, accesses on opposite sides of the street should be lined up directly across from each other. Sometimes this is not possible due to site restrictions or property lines. If accesses cannot be lined up across from one another, the preferable offset is so that left turns entering each respective access do not overlap, as was discussed previously in this document and shown in Figure 5. Table 10 shows the minimum offset for intersections on opposite sides of the street when the potential for overlap does occur. However, a traffic impact study could determine that a larger offset is required depending on the level of queuing that could occur at the intersections.

Table 10: Minimum Access Offset Requirements

Street Classification	Minimum Offset (feet)[1]
Minor Arterial[2]	300
Collector	180

1. These values are a minimum requirement and are subject to change based on the results of a traffic impact study. Offset requirements are not applicable in the case of RIRO accesses such as when a raised median is present.
2. Access should only be provided to arterial streets when reasonable alternative access does not exist.

ON-STREET PARKING

Permitting on-street parking can be a tool to make a corridor more pedestrian friendly as parked vehicles provide a buffer between through traffic and pedestrians on the sidewalks. Vehicles parking and un-parking along a roadway may cause side friction that can result in through traffic being slowed down or impeded. To determine whether or not a road should have permitted on-street parking depends primarily on what the function of the roadway is. As was discussed previously, the purpose of most arterial type roads is to provide mobility, not access, whereas the purpose of a local street is to provide access and not mobility. However, another important factor is adjacent land use.

A roadway in a core business area, even if classified as an arterial, can benefit from having on-street parking, where a lower classified road, such as a minor collector within an industrial area, may not need on-street parking, therefore the cost to build and maintain this type of road will be less expensive by prohibiting on-street parking. Finally, the available cross-section width should also be considered when determining whether on-street parking should be permitted. A minimum of 7 feet of cross-section width should be provided for on-street parking on one side or 14 feet when parking is desired on both sides of the road. Typically, the gutter pan can be used for additional width for parking beyond the 7 feet of pavement.

As shown previously in Figure 2 through 4, the typical cross-sections only provide for on-street parking on local roads by default. However, if the City and/or development groups desire on-street parking along a corridor based on the land use context, on-street parking may be accommodated within the right-of-way by reducing the size of the park strip and widening the shoulder. This will also bring the sidewalk closer to the on-street parking, making it easier for users to get in and out of parked vehicles.

ACCESS CHARACTERISTICS

Standards for access characteristics discussed in this section include driveway width, curb return radii, vertical profile of driveway, driveway throat length, and minimum separation of gate on private access from public street.

All recommendations in this section assume the following:

- The design vehicle for residential and commercial accesses is a passenger car
- The design vehicle for industrial accesses is a WB-50

Although some larger vehicles such as delivery vehicles do need access to commercial areas, these types of trips do not typically occur during the peak hours of the day. The entire access (ingress and egress side) can therefore be used by a larger vehicle during off-peak times. This is more efficient than utilizing more area to make larger radii and access widths and is also more ideal for pedestrians. Access driveways that will be heavily utilized by trucks and buses during peak periods should be designed to the industrial recommendations. Table 11 shows curb radii for various intersection types depending on the functional classification of the adjacent roadway.

Table 11: Curb Return Radii

Access Type	Curb Return Radii in Feet		
	Arterial	Collector	Local
Residential (SFDU) 1 dwelling unit	n/a	n/a	n/a
Multi-Family (less than 3 units)	n/a	n/a	n/a
Multi Family (more than 3 units)	20	20	25
Commercial (1 exit lane)	20	20	25
Commercial (2 exit lanes)	20	n/a	n/a
Industrial	45	45	n/a

Source: *AASHTO Green Book* (2018)

Table 12 shows the required curb radius measured from top back of curb (TBC) for the various street intersections within Vineyard City. Deviation from these standards requires approval in writing from the City Engineer.

Table 12: City Street Curb Radii

Minor Street Classification	Curb Radii (ft) by Major Street Classification			
	Local	Collector	Minor Arterial	Major Arterial
Local	15	15	15	25
Collector	n/a	25	30	30
Minor Arterial	n/a	n/a	30	30
Major Arterial	n/a	n/a	n/a	40

Source: *AASHTO Green Book* (2018)

Table 13 contains maximum change in grade between the cross-slope of the roadway and the slope of the driveway. The maximum change in grade reported is the algebraic difference in slope. For example, if a negative 2 percent cross-slope connects to a positive 2 percent driveway slope, the algebraic change in grade is 4 percent. Likewise, if the cross-slope is negative 2 percent and the driveway slope is negative 6 percent, the algebraic change in grade is also 4 percent. Table 13 also shows the maximum change in grade with vertical curves provided.

Table 13: Change in Driveway Vertical Profile

Access Type	Maximum Change in Grade – No Vertical Curve Required[1]			Maximum Change In Grade – Vertical Curve Required		
	Arterial	Collector	Local	Arterial	Collector	Local
Residential (SFDU)	n/a	8%	10%	n/a	10%	12%
Multi-family (3 or less units)	n/a	8%	10%	n/a	10%	12%
Multi-family (4 or more units)	4%	8%	10%	5%	10%	12%
Commercial (1 exit lane)	4%	8%	10%	6%	10%	12%
Commercial (2 exit lanes)	4%	n/a	n/a	5%	n/a	n/a
Industrial	4%	-	n/a	5%	-	n/a

1. Rounding by taking care to avoid abrupt changes in grade.

Source: Transportation and Land Development (ITE, 2002)

Table 14 shows the recommended driveway throat lengths for various access types and based on what type of conflict is closest to the adjacent road. When an internal intersection is the first conflict encountered when entering a driveway, a shorter throat is typically needed then for a site where the driver will encounter parking spots after entering the access.

Table 14: Recommended Driveway Throat Length (feet)

Access Type	First conflict within the site is:	
	Parking	Internal Intersection
Residential (SFDU)	n/a	n/a
Multi-Family (3 or less units)	n/a	n/a
Multi Family (4 or more units)	75	30
Commercial (1 exit lane)	75	30
Commercial (2 exit lanes)[1]	75	50
Industrial	75	75

1. For signalized accesses with three egress lanes, throat length should be at least 200 feet long. For signalized accesses with four egress lanes, throat length should be at least 300 feet long. These lengths should also be verified by a traffic study.

Source: *Transportation and Land Development* (ITE, 2002)

Table 15 shows the minimum separation of a gate on a private access from the edge of traveled way for various design vehicles. If a sidewalk, trail, and/or bike lane exist, the edge of traveled way should be considered as the closest edge of traveled way for any of these modes of transportation (e.g. setback should be measured from the gate to the edge of sidewalk if present). This separation is necessary so that a vehicle can park in front of the gate while it is still closed without the rear of the vehicle obstructing the flow of traffic. Where the possibility of queuing exists, such as at a gated residential community, a traffic study should be completed to determine the 95th percentile queue length during the peak hour.

Table 15: Minimum Setback of a Gate on a Private Access from an Adjacent Street

Design Vehicle	Minimum Distance (feet)[1]
Passenger Car	25
Single Unit Truck	35
Bus	50
Recreational Vehicle	35
Recreational Vehicle Pulling a Trailer	60
WB-40	50
WB-62	75
WB-67	80

1. If multiple vehicles are expected to queue up at the gate, a traffic study should be completed to determine the required distance.

Source: AASHTO Green Book (2018)

INTERSECTION SIGHT DISTANCE

Appropriate intersection sight distance (ISD) should be provided for at each access and intersection based on the type of control (signal, stop sign, yield sign, roundabout, etc.), the design speed of the roadways, the design vehicle, the permitted movements at the intersection, and the cross-sectional width of the road to be traversed. Pedestrian usage can also be a factor in required intersection sight distances. The AASHTO *A Policy on Geometric Design of Highways and Streets* ("Green Book") provides standards for calculating the appropriate intersection sight distances. Figure 13 and Figure 14 show examples of poor intersection sight distance because of bushes, trees, and other structures.

This section discusses recommended intersection sight distance for several intersection types based on AASHTO Green Book (2018) recommendations. These recommendations are made for various intersection control scenarios as well as functional classifications of the intersecting roads. Additionally, sight distances to accommodate trucks have also been calculated. Scenarios discussed in the following sections include intersection sight distance for stop-controlled, yield-controlled, and uncontrolled

intersections. Sight distance requirements for a left turn from the major street onto a minor street are also given. A licensed professional engineer should calculate all intersection sight distances.

Figure 13: Sight distance obscured by landscaping features

Figure 14: Sight distance obscured by curvature and structure

For all of the scenarios, the following assumptions have been made:

- Design Speeds:
  - Access: 15 mph
  - Local: 30 mph
  - Minor Collector: 35 mph
  - Major Collector: 40 mph
  - Minor Arterial: 45 mph
  - Major Arterial: 50 mph
- Intersections are flat (all slopes are assumed 3 percent or less)
- All roads are assumed to be 2-lane facilities. Adjustments may be needed for wider roads depending on the ISD case.

All calculations are based on *AASHTO Green Book* (2018) assumptions. Because the grade of the major or minor street does affect sight distance, the values presented in the sections below should be adjusted when grades are more than 3 percent. These adjustments should be made on an individual case-by-case basis by consulting the *AASHTO Green Book*. Additionally, alternative design speeds or cross sections will also require adjustments to these sight distances.

Once intersection sight distances have been determined for a given intersection, a "clear sight triangle" can be formed which should remain clear of anything that will obstruct the driver from seeing other vehicles within the intersection sight distance. The *AASHTO Green Book* states that the height of a driver's eye in a passenger vehicle is approximately 3.5 feet. The height corresponding to the driver of a combination or single unit truck is approximately 7.6 feet. Therefore, objects should not be placed in the clear sight triangle between 3.5 and 7.6 feet in height.

Objects such as buildings, fences, and parked cars are examples of objects that will block the intersection sight distance. Landscaping features such as shrubbery and decorative rocks are acceptable as long as they are less than 3.5 feet high. Trees are acceptable as long as the trunk is located outside of the clear sight triangle and the lowest branches are at least 7.6 feet tall. The *AASHTO, Roadside Design Guide,* provides additional guidance and should be consulted for concurrence or variance.

STOP-CONTROLLED INTERSECTIONS

AASHTO defines three different cases for stop-controlled intersections:

- Case B1: Left turns from the minor road
- Case B2: Right turns from the major road
- Case B3: Crossing the major road from a minor-road approach

Intersection sight distances for stop-controlled intersections include both full-movement and RIRO intersections. Cases B1 and B3 apply to full-movement intersections and Case B2 applies to RIRO intersections.

Sight distances for each case are unique based on the design speed of the major road. When drawing the sight triangle for stop-controlled intersections, the vertex (decision point) of the sight triangle on the minor street leg should be located 14.5 feet behind the edge of the major-road traveled way. The edge of traveled way is defined as the outside striping of the closest major-road lane or the edge of pavement if there is not striping.

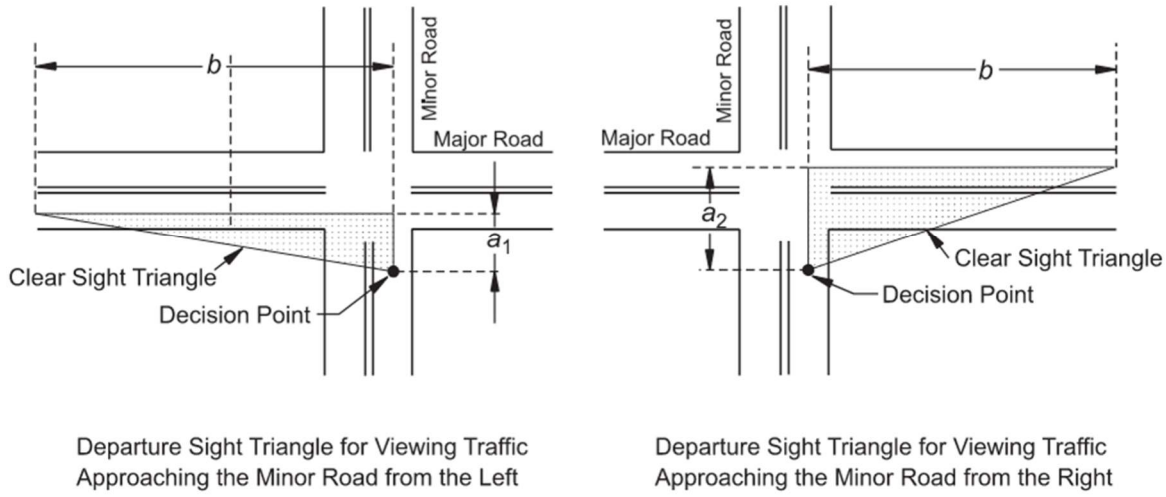
Table 16 shows the sight distance required for left-turn movements from the minor road (Case B1). Table 17 shows the sight distance required for right-turn movements from the minor road (Case B2) and crossing maneuvers from the minor road (Case B3). The value shown in the table is how far to the left and/or right for which the stopped vehicle should have a clear sight triangle from the decision point. Figure 15 illustrates these distances and the sight triangle.

Table 16: ISD Case B1 – Left-turn from Minor Road

Design Vehicle	ISD (ft) Major Street Design Speed		
	30 mph	40 mph	50 mph
Passenger Car	335	445	555
Single Unit Truck	420	560	700
Combination Truck	510	680	850
Source: *AASHTO Green Book* (2018) Case B1 (pp. 9-43 to 9-47)			

Table 17: ISD Cases B2 and B3 – Right-turn and Crossing Maneuvers from Minor Road

Design Vehicle	ISD (ft) Major Street Design Speed		
	30 mph	40 mph	50 mph
Passenger Car	290	385	480
Single Unit Truck	375	500	625
Combination Truck	465	620	775
Source: *AASHTO Green Book* (2018) Cases B2 and B3 (pp. 9-47 to 9-50)			



Departure Sight Triangle for Viewing Traffic Approaching the Minor Road from the Left

Departure Sight Triangle for Viewing Traffic Approaching the Minor Road from the Right

Figure 15: Intersection sight triangles for stop control

YIELD-CONTROLLED INTERSECTIONS

Intersection sight distance for yield-controlled intersections include two cases:

- Case C1: Crossing maneuver from the minor road
- Case C2: Left- and right-turn maneuvers from the minor road.

In both scenarios, the major street does not stop. For four-leg intersections, Cases C1 and C2 both need to be evaluated since crossing maneuvers are possible. For three-leg intersections, only Case C2 needs to be evaluated.

Table 18 shows the sight distance required for Case C1. Table 19 shows the sight distance required for Case C2. Figure 16 illustrates these distances and the sight triangles. As shown, the length of the sight triangles listed in the tables are measured to the center of the lane.

Sight distance values are only shown for passenger cars as it is assumed that roads with significant truck traffic will not be yield-controlled intersections. Also, it was assumed that the major streets do not have classifications higher than minor collector, as these types of high classification streets should at least have stop control on the minor street. If conditions are different than the assumptions stated, unique sight distance values should be calculated based on the AASHTO Green Book (2018). If an intersection location does not meet the required ISD for cases C1 and C2, stop control is required.

Table 18: ISD Case C1 – Crossing Maneuvers from Yield Control

Minor Street Design Speed	ISD (ft) by Major Street Design Speed		
	30 mph	40 mph	50 mph
20-50 mph	290	385	480
Source: *AASHTO Green Book* (2018) Case C1 (pp. 9-51 to 9-54)			

Table 19: ISD Case C2 – Left- and Right-Turn Maneuver from Yield Control

Design Vehicle	ISD (ft) by Major Street Design Speed		
	30 mph	40 mph	50 mph
Passenger Car	355	475	590
Single Unit Truck	445	590	735
Combination Truck	530	710	885
Source: *AASHTO Green Book* (2018) Case C2 (pp. 9-53 to 9-55)			

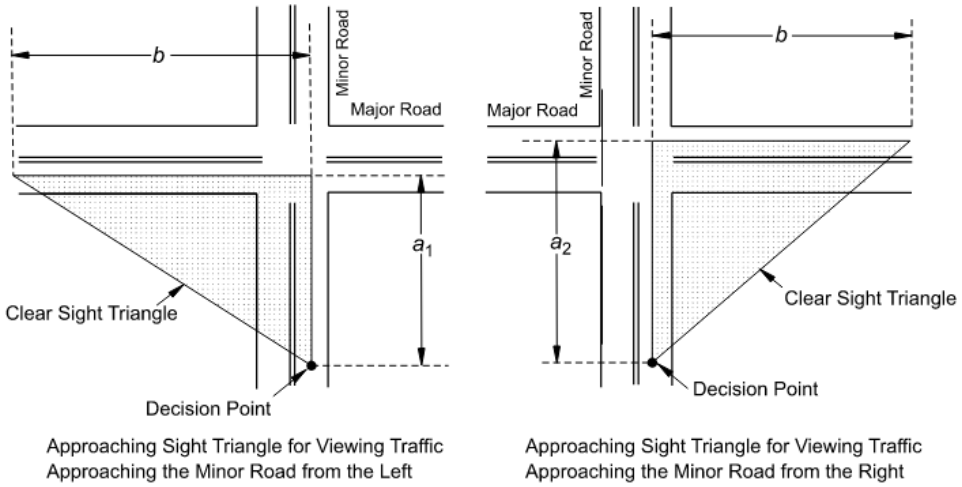


Figure 16: Intersection sight triangles for yield control

UNCONTROLLED INTERSECTIONS

Uncontrolled intersection sight distances are for those intersections where neither the minor nor the major street has any control. These streets are typically very low volume roads primarily in residential subdivisions. An uncontrolled intersection is defined as Case A by AASHTO. Table 20 shows the sight distance required at uncontrolled intersections. Only access roads and local streets were shown as any other higher classification road should have some intersection control. The distance shown in the table

corresponds to the leg of the sight distance triangle for the respective type of road. Figure 16 above illustrates the sight distance triangle for this type of intersection. Sight distance values were only calculated for passenger cars as it is assumed that roads with significant truck traffic will not be yield-controlled intersections. If an intersection location does not meet the required ISD listed in Table 20, stop or yield control should be considered.

Table 20: ISD Case A – Uncontrolled Intersection (feet)

Length of Approach Leg by Major Street Design Speed		
30 mph	40 mph	50 mph
140	195	245
Source: AASHTO Green Book (2018) Case A (pp. 9-40 to 9-41)		

LEFT TURNS FROM THE MAJOR ROAD

Intersection sight distance for left turns from the major road include any left turn movement where the driver must yield to oncoming traffic (through and right-turning vehicles) before turning left onto the minor street. This is defined as Case F by AASHTO. Table 21 shows the values for the sight distance triangles based as a function of design vehicle. Figure 17 illustrates the sight distance triangles for this type of movement.

Table 21: ISD Case F – Left Turns from Major Street

Design Vehicle	ISD (ft) by Major Street Design Speed*		
	30 mph	40 mph	50 mph
Passenger Car	245	325	405
Single Unit Truck	290	385	480
Combination Truck	335	445	555
Source: AASHTO Green Book (2018) Case F (pp. 9-56 to 9-58) **These values assume one opposing through lane. Adjustments are necessary if more than one opposing through lane or opposing right-turn lane with a shared receiving lane exist.*			

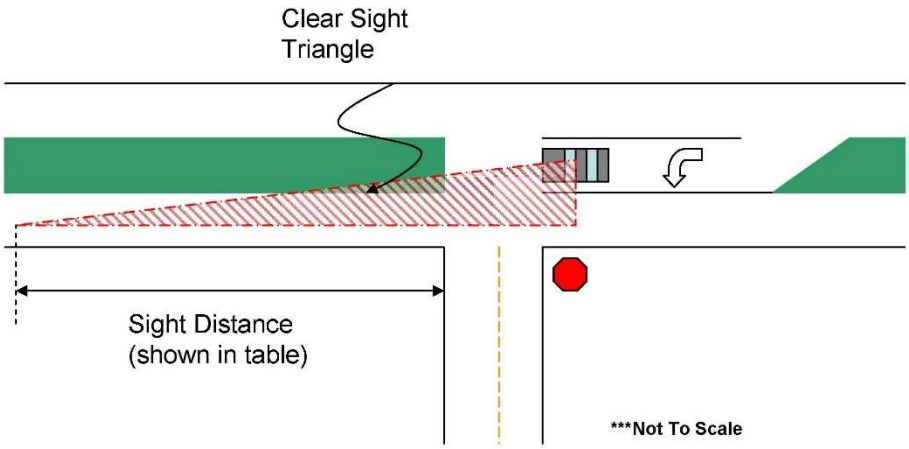


Figure 17: Intersection sight triangle for a major street left turn

VARIANCE PROCESS

An access variance grants permission to depart from the standards and requirements of the Vineyard City access management manual.

Applicants seeking a variance from the Vineyard City access management manual will submit the written request as an attachment to the formal project submittal and application. A subsequent request for a variance may be allowed in accordance with the completeness check review procedure as a supplement to a previously submitted application if Vineyard City determines that it is in the public interest to do so. The City Public Works Director or Engineer will review all requests for variance. If a variance request affects a federal aid roadway (both state highway and local roads) UDOT may need to be consulted as well.

The request for variance will specify in writing why the variance is appropriate and necessary and should be completed and stamped by a licensed professional traffic engineer. Included in the request, documentation of conditions with and without the variance with the documentation showing that the applicant has considered all practical and reasonable mitigation alternatives. The variance request results from the application of the standard or requirement of this access management manual suffered directly and solely by the applicant and is not self-created or self-imposed such as by the applicant acting with or without knowledge of the applicable standard or requirement. A variance will not be granted for procedural requirements.

The applicant is responsible for showing that the variance request meets minimum acceptable engineering, operation, and safety standards, the variance is not detrimental to the public health, welfare and safety, and the variance is reasonably necessary for the convenience and welfare of the public.

The City Public Works Director or Engineer will consider the following factors in determining that the granting of a variance will not negatively impact the current and proposed operation of the roadway:

1. The applicant has considered all other feasible alternatives to provide reasonable access to the land use or development and can demonstrate that better alternatives in terms of roadway operations are not feasible or do not exist.
2. The applicant has considered access through a shared use or cross access driveway or access point with an adjacent land use and such a shared use access or cross access is not feasible. A letter from the adjacent land owner stating that cross access or shared access is not feasible shall be provided.
3. The applicant is providing on-site or off-site traffic improvements that might offset the negative impacts of granting an access that does not meet standards.
4. The applicant has considered and demonstrated trip reduction strategies that allow the access to properly function without creating a negative impact to the roadway.

5. The applicant has provided traffic engineering or other studies to determine that the access will not degrade the efficient flow of traffic on the roadway in terms of safety, capacity, travel speed and other functional features of the roadway.

The review and final action of whether to approve or disapprove the variance will be completed within twenty (20) working days of the date of acceptance of the request for variance application.

Include the documentation of reasons for approving/denying the variance in the project files and records. State in terms and conditions of the approved permit and variance that the permittee may be required to improve, modify, eliminate, or correct the condition responsible for the variance when it is evident that the justification for the variance is no longer valid.

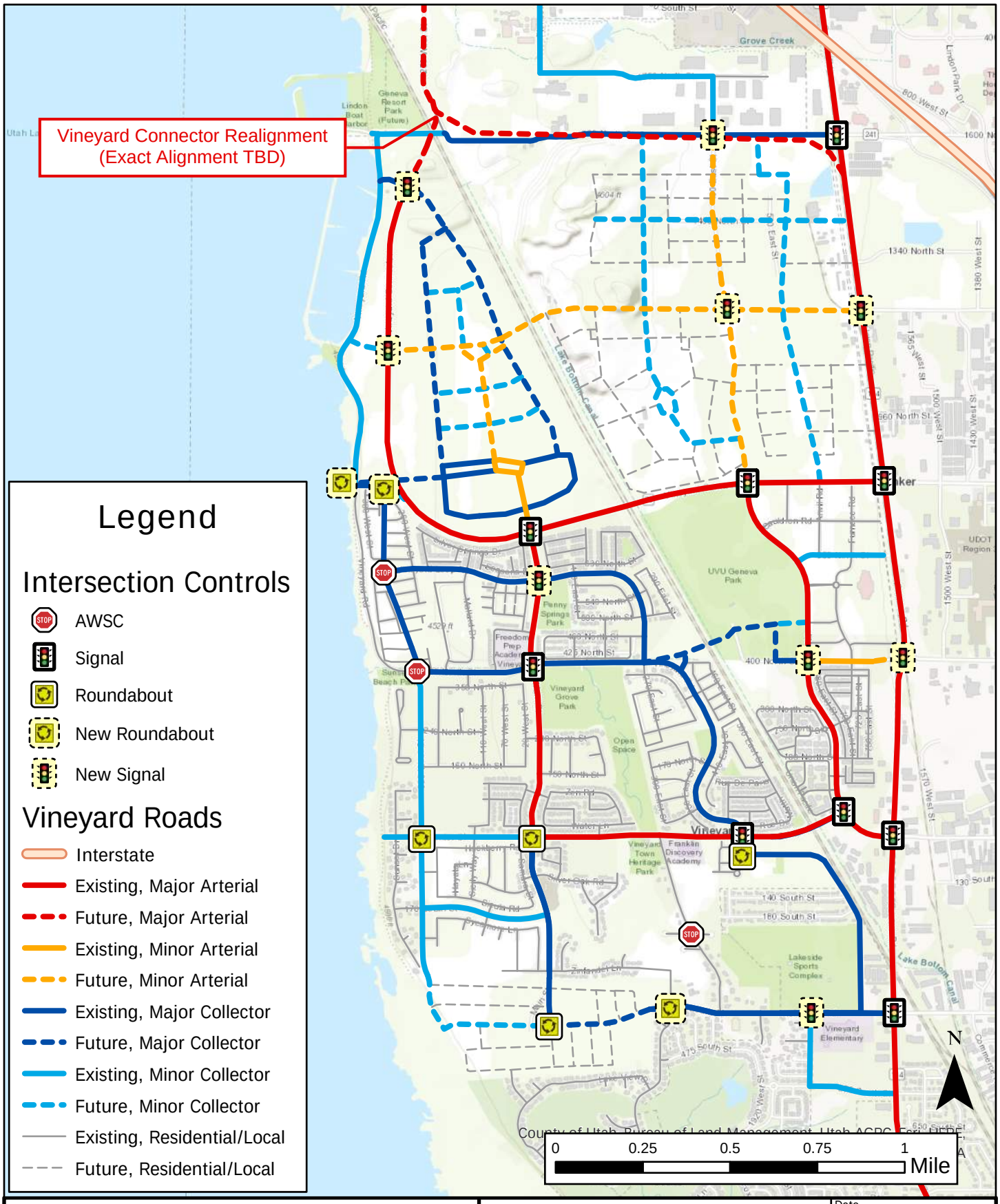
The permit may stipulate conditions and terms for the expiration of the permit when the necessity for the variance no longer exists, allowing direct access to a roadway when the access proposal cannot meet the standards of this access management manual, or when the property would otherwise be without reasonable alternative access if a variance were approved.

If a variance is denied, the applicant may initiate an appeal to the City Administrator, only after complete review and determination of the access permit application.

Appendix A

Vineyard City TMP

Future Roadway Network



VINEYARD
STAY CONNECTED
TRANSPORTATION MASTER PLAN

Future (2050) Roadway Network

Date 6/17/2025

Project UT23-2453

Appendix A

RESOLUTION NO. 2025-61

A RESOLUTION AMENDING THE CONSOLIDATED FEE SCHEDULE

WHEREAS, Section 10-3-717 UCA authorizes cities to establish the amounts of fees to be charged for municipal services to be set by resolution, and

WHEREAS, The City Ordinances, in various locations, provides for the establishment of fee amounts for certain municipal services, by resolution of the City Council.

WHEREAS, a Public Hearing was duly noticed and was held on the 10th day of December 2025 on the proposed amendments.

NOW THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF VINEYARD, UTAH AS FOLLOWS:

Section 1. The City Council hereby adopts the amended Consolidated Fee Schedule, which is attached hereto and incorporated herein by reference.

Section 2. A copy of the Consolidated Fee Schedule shall be placed in the Vineyard City Offices and be available for review.

Section 3. This resolution shall take effect upon passage.

Section 4. All other resolutions, ordinances, and policies in conflict herewith, either in whole or in part, are hereby repealed.

PASSED and ADOPTED by the City Council of Vineyard, Utah this 10th day of December 2025.

APPROVED:

_____
Julie Fullmer, Mayor

ATTEST:

_____
Tony Lara, Deputy City Recorder

VINEYARD SEAL UTAH

Consolidated Fee Schedule
2024–2025 Fiscal Year

Table of Contents

Administrative....2

Recreation....3

Utilities....5

Sanitation....6

Facilities....6

Special Event Permit....8

Code Enforcement Fees....9

Business Licensing....10

Land Use Application....11

Building Permit Fees....14

Building Inspection Fees....15

Impact Fees....16

Pass-through Fees....16

Utility Meter & Connection Fees....17

ADMINISTRATIVE FEES	
Records (GRAMA) Requests	per hour for staff time after the first 15 minutes (based on the lowest paid employee working on the request) Copies - $0.10 per page
Returned Checks	$14
Colored Map Copies – 8 ½ by 11	$3.00
Black and White Maps Copies	Free
Notarization	Free
Library Card/Fitness Center Reimbursement	$80 annual reimbursement per Vineyard household (can be used toward non–resident library card OR municipal fitness center membership)
Weed Abatement	Actual Abatement Costs
Bond Processing Fee	$60
Administrative Citation	$100
Credit Card Fee	3% of Transaction Total
Candidate Filing Fee	$50
Candidate Late Financial Disclosure Statement	$50
City Offense Fines	Class B misdemeanor – not to exceed $1,000 Class C misdemeanor – not to exceed $750
Sixteen-Year-Old Curfew (Class C)	$75
Eighteen-Year-Old Curfew (Class C)	$75

Parent Liability (Class C)	$125
Prohibited Travel on Trails (Infraction)	$40
Leash Requirement (Infraction)	$40
Sleeping on Public Property (Class C)	$75
Camping Prohibited (Class C)	$75
Unlawful Parking (Infraction)	$40
Parking w/Snow Present (Infraction)	$40
Driving or Riding on Sidewalk (infraction)	$40
Engine Brake Restriction (Class C)	$75
Hours of Operation (Infraction)	$75
Fires and Campfires (Class C)	$125
City Council-Designated Local Residential Streets	$20 Per Permit
City Council-Designated Amenity Roads	$60

RECREATION FEES	
Adult Pickleball	$50 – Team
Adult Soccer	Team - $500 Individual - $50
Adult Soccer Tournament	Team - $160 Individual - $20
Adult Tennis Clinic	$50 – Individual
Cornhole Tournament	Team - $30 Individual - $15

CUTA Tennis	$100 – Individual
E-Sports	$50 – Individual
Pickleball Tournament	Team - $30 Individual – 15
Race Registration	5k/10k – $25 Kids 1k – $10 Household Discount - $55 Group Rate – $20 per person
Race T-Shirts	$15 – individual
Senior Program	$50 – Individual
Spikeball Tournament	Team – $30 Individual – $15
Sports Trivia/Fantasy Class	$50 – Individual
Pee-wee Sports Clinic	$60 – Individual
Youth Arts	$50 – Individual
Youth Baseball Clinic	$50 – Individual
Youth Basketball Clinic	$55 – Individual
Youth Coach Pitch	$55 – Individual
Youth Street Hockey League	$65 – Individual
Youth Pickleball League	$100 – Individual
Wiffleball Tournament	$100 – Team
Youth Flag Football	$ 80 – Individual
Youth Jr Jazz Basketball	$100 – Individual
Youth Kickball	$ 60 – Individual
Youth Machine Pitch	$ 80 – Individual
Youth Pickleball Programs	$50 – Individual
Youth Soccer Programs	$75 – Individual
Youth T-Ball	$55 – Individual
Youth Tennis Clinic	$50 – Individual
Youth Ultimate Frisbee	$50 – Individual
Youth Volleyball	$90 – Individual
Youth Wrestling	$ 55 – Individual

Ski/Snowboard Program	$300 - Individual
Youth Fishery Program	$50 - Individual
Bingo	$10 – Individual
Additional Non-Residential Fee	Up to 20% of Registration Fee
Recreation Program Cancellation Fee	Up to 100% of Registration Fee
Memorial Bench	$2,000
Memorial Tree	$500
Gammon/Sunset Beach Park Food Stand Concessionaire	$10 per day
Grove Park Semi-Permanent Trailer/Kiosk Concessionnaire	$33 per day
Food Truck Concessionaire	$25 per day

UTILITY USE FEES*	
Water Base Rate ¾" Meter	$31.61 first 5,000 gallons
Water Base Rate 1" Meter	$44.26 first 5,000 gallons
Water Base Rate 1 ½" Meter	$56.91 first 5,000 gallons
Water Base Rate 2" Meter	$91.68 first 5,000 gallons
Water Base Rate 3' Meter	$347.72 first 5,000 gallons
Water Base Rate 4" Meter	$450.98 first 5,000 gallons
Water Base Rate 6" Meter	$663.83 first 5,000 gallons
Water Base Rate 8" Meter	$885.09 first 5,000 gallons
Water Multi-Family Residential Base Rate	$18.56 per unit
Residential Water Usage Rates: Tier 1 (5,001 – 15,000) Tier 2 (15,001– 30,000+) Tier 3 (30,001 – 50,000) Tier 4 (50,001+)	 $2.07 per 1,000 gallons $2.37 per 1,000 gallons $3.15 per 1,000 gallons $3.62 per 1,000 gallons

Commercial Water Usage Rates: Tier 1 (5,001 – 30,000) Tier 2 (30,001 – 100,000) Tier 3 (100,001+)	 $2.07 per 1,000 gallons $2.92 per 1,000 gallons $3.62 per 1,000 gallons
Sewer Base Rate	$19.22 per 1,000 gallons
Sewer Multi-Family Residential Base Rate	$10.71 per unit per month
Sewer Usage Rate	$6.27 per 1,000 gallons
Transportation Utility (KSF=1,000 Square Feet)	$4.75 per ERU $36 per Office KSF $70 per Retail/Commercial KSF $84 per Light Industrial KSF* $36 per Flex Space KSF*
Storm Water Utility	$6.50 per ERU
*Non-Vineyard Resident & Business Fee	Rate X2
Collection for Any Unpaid Utility Bills, Fees, or Civil Penalties	May be subject to collections if payment has not been made within 30 days of the due date at the cost of the resident

SANITATION FEES	
90-Gallon Residential Can	$16.25
Second 90-Gallon Residential Can	$10
Recycling Can	$7.50
Replacement Can	$90

FACILITIES RENTAL FEES	
Council Chambers Rental	$75 per hour for Resident

	$150 per hour for Non-Resident
Council Chambers Cleaning Deposit	$75 for Resident $150 for Non-Resident
Small Park Pavilion Rental	$40 for Resident $80 for Non-Resident
Small Park Pavilion Cleaning Deposit	$40
Large Park Pavilion Rental	$75 for Resident $150 for Non-Resident
Large Park Pavilion Cleaning Deposit	$75
Special Event Rental Deposit	$300
Multi-Day Special Event Rental Deposit	$500 per day
Pavilion Rental Cancellation Fee	Up to 100% of reservation cost
Hourly Field Rental at Gammon Park (Monday – Thursday)	$300 Deposit + $20 for Residents, $40 for Non-Resident or Holiday Reservations
4 Hour Field Rental at Gammon Park (Monday – Thursday)	$300 Deposit + $75 for Residents, $150 for Non-Resident or Holiday Reservations
Hourly Field Rental at Gammon Park (Weekend)	$300 Deposit + $30 for Residents, $60 for Non-Resident or Holiday Reservations
4 Hour Field Rental at Gammon Park (Weekend)	$300 Deposit + $100 for Residents, $200 for Non-Resident or Holiday Reservations
All other parks, single soccer fields or fields hourly rental (Monday – Thursday)	$300 Deposit + $40 for Residents, $80 for Non-Resident or Holiday Reservations
All other parks, single soccer fields or fields 4 Hour Rental (Monday - Thursday)	$300 Deposit + $150 for Residents, $300 for Non-Resident or Holiday Reservations

All other parks, single soccer fields or fields hourly rental (Weekends)	$300 Deposit + $60 for Residents, $120 for Non-Resident or Holiday Reservations
All other parks, single soccer fields or fields 4 Hour Rental (Weekend)	$300 Deposit + $200 for Residents, $400 for Non-Resident or Holiday Reservations
Hourly Rental per Soccer Goal Set	$10 for Residents $20 for Non-Residents
Hourly Rental per Soccer Corner Flag Set	$10 for Residents $20 for Non-Residents
Court Rental	$25 per hour per court
Pickleball Net Rental	$50 Refundable Deposit
Pickleball Net Repair/Replacement Fee	Up to $300
Non-Existing Line Painting – Per Field	1–499 Feet – $100 500–999 Feet – $150 1500+ Feet – $200
Remarking Line Painting – Per Field	1–499 Feet – $50 500–999 Feet – $60 1500+ Feet – $80

SPECIAL EVENT FEES*	
Special Event Permit	$50
Special Event with Vendors	$75
Special Events with >250 Participants	$100
Special Events longer than 6 hours	$150
Multi-Day Special Event	$200
Film Permit	$50
Children's Market	$25
Vineyard Days Vendors	$100
Boo-A-Palooza Vendor Fee	$50

Bounce House Deposit	$100
Food Truck Vendor	$50 – 100
Onsite Dumpster or Equipment Permit	$72 per dumpster
Additional Dumpster Reserved	$174 per 6-yard dumpster
Excess Garbage Pickup	Up to $600 based on quantity picked up
Extra trash cans with bags	$15 per 5 cans
Personnel (total compensation per employee, per hour, during regular business hours)	City staff per person– $35 Parks Department – $35 Streets Department – $35 Special Events Department – $32
Penalty for operating without a permit	Double the application fee and any damage caused by the special event
*Special Events and facility rental fees may be waived at the discretion of the City Council. See Special Event Code for fee waiver consideration reasons.	

CODE ENFORCEMENT FEES	
Code Violation Fee (per calendar year from first offense)	1st Offense – $100 2nd Offense – $200 3rd (or more) Offense – $400
Civil Penalty Fee	$25 minimum to $1,000 maximum per day, per violation
Civil Penalty Fee– Occupancy Violation	$100 per day, per violation
Civil Penalty Fee– Home Occupation Operating without License	$25 per day, per violation
Civil Penalty Fee– Commercial Business Operating without License	$50 per day, per violation
Code Violation Fee – Interest	20% per annum of total outstanding amounts

Default/Administrative Code Enforcement Hearing Fee	$100
Animal Defecation without Removal Fine	$250
Off–Leash Animal Fine	$250
Illegal Trash Dumping	$250
Illicit Discharge and Stormwater Runoff	As Found in State Code 10-5-100
Code Violation by City (via Contract Services)	Cost plus 10%

BUSINESS LICENSING FEES	
Home-Based Occupation (exceeds residential impact)	$50
Home-Based Occupation (does not exceed residential impact)	$0
Accessory Dwelling Unit Business License (Biennial)	Initial Fee $100 Renewal Fee $50
Industrial Manufacturing/Distribution	$250
Restaurant/Food	$190
Food Truck Fee (Based in Vineyard)	$25
Retail	$215
Service Related	$150
Fire Inspection	Equal to Orem Fire's fee as dictated in Orem City's Fee Schedule
Accessory Dwelling Unit Re-Inspection Fee	$85
Renewal Fee (all license types except Alcohol and Towing/Parking	$25
Alcohol and Towing/Parking Enforcement Renewal Fee	Same as Initial Fee
Solicitor License	$30
Temporary/Seasonal Use Business License	$50
Temporary/Seasonal Use Business License Refundable Deposit	$300
Towing/Parking Enforcement Qualification	$50
Class A – D Beer License	$400 + Proof of $5,000 Bond
Class E Beer License	$400 + Proof of $10,000 Bond
Class A Liquor License	$300 + Proof of $10,000 bond
Class B Liquor License - Limited-service Restaurant	$300 + Proof of $5,000 bond

Class B Liquor License - Full-service Restaurant	$300 + Proof of $10,000 bond
Class C Liquor License	$300 + Proof of $1,000 Bond
Unclassified Business	$25 Base fee until classification established by Resolution
Business fitting in 2+ Categories	Higher rate
Late Renewal Fee (during renewal grace period)	$25
Daily penalty fee if license not renewed by end of renewal grace period	Half of the license fee
Penalty Fee for doing business without a Vineyard Business License	Equivalent to the license fee

LAND USE APPLICATION FEES	
Development Agreement	$1,500
Development Agreement	$1,500
Subdivision – Preliminary Plat	$1,930 + $6.20 per lot
Subdivision – Preliminary Plat – Additional Review	$786 + $2.50 per lot
Subdivision – Final Plat	$1,940 + $6.20 per lot
Subdivision – Final Plat Additional Reviews	$1,010 + $2.50 per lot
Condominium Plat – New or Conversion	$1,406 + $25 per unit
Major Plat Amendment	$1,706
Minor Plat Amendment	$1,406
Neighborhood Plan	≥ 10 acres = $2,663 < 10 acres = $500
Planned Unit Development	$1,000
Recording Fees	As charged by Utah County Recorder
Site Plan – Residential	$2,663
Site Plan – Non-Residential	$3,756

Site Plan – Non-Residential – Additional Reviews	$1,693 for each additional review after two reviews
Site Plan – Minor Amendment	$500
General Plan Text Amendment	$1,000
General Plan Map Amendment	$1,000
Land Use Text Amendment	$1,000
Land Uset Map Amendment	$1,000
Lot Line/Property Boundary Line Adjustment	$300
Conditional Use Permit	$400
Temporary Use Permit	$75
Variance	$100
Appeals	$100
Zoning Verification	$100
Sign Permit	$150
Sign Standard Waiver	$250
Commercial Temporary Sign Permit	$25
Special Planning Commission Meeting	$390 per meeting
Water Sampling	Lab Cost + 10% & $300
Land Disturbance Permit	$50 + $20 per acre + $30 per month
Land Disturbance Permit – Subdivision and Site Plan	Included in engineering inspection fees
Site Plans Technical Review	$1,500 per application, first 50 plan sheets. Up to 3 revisions
Additional Site Plan Technical Review	$65 per additional plan sheet or each sheet after 3rd revision
Engineering/Public Works Inspection/Service Fees – Subdivision – Related	3% of certified bid tabulation, approved by Engineering Office

Engineering/Public Works Inspection/Service Fees	$150 per hour
Engineering/Public Works Re−Inspection Fees	$150 per hour, 2−hour minimum
After Hours Engineering/Public Works (M−F between 5pm and 8am OR Saturdays, Sundays)	$300 per hour, 2−hour minimum
New Street Light Install Fee	$10,000 per light
Street Sign Fee	Cost plus 10%
Demolition	$500 plan review fee
Encroachment Permit	$150 plus $1 per square foot of disturbed asphalt
Driveway Approach in Public Right−of−Way Inspection Fee (after Encroachment Permit)	$250 for up to 2 inspections $150 per reinspection
Sampling and Lab Testing Fee - Water, Sewer, Storm Water, Streets	Cost + 10% Administration Fee
Vacuum Truck	$250/hour, minimum of 2 hours
Fine for Use of Public Right of Way without Approved Permit	$300 plus $150 per hour
Infrastructure Construction Bond	Bond/Escrow account as determined by bid tabulation 110% Performance 10% Warranty
Final Grading Residential Lot Bond	$1,000 up to 1 acre, $500 each additional half acre
Building Relocation	$500 Plan Review Fee
Full or Partial Road Closure Application	$50 per Road Segment Plan Review Fee
City Barricades for Road Closure, if approved by the Public Works Director	$150 Application Fee, $75 per barricade per day. $100 refundable

	deposit per set of barricades
Repair to Damaged Public Infrastructure (All Streets or Utilities) by Contract	Cost plus 10% Administrative Fee
Red Curb Request Application	$50
Address Change Request/ADU Secondary Address Request*	$150
Tree Replacement Due to Damage: Diameter < or = 1” Diameter > 1” and < or = 2” Diameter > 2” and < or = 3” Diameter > 3”	 $500 per tree $750 per tree $950 per tree Cost assessed by City Arborist, minimum of $1,200 per tree
*Does not include Cost of Additional Physical Mailbox charged to Property Owner by USPS	

BUILDING PERMIT FEES	
TOTAL VALUATION	**FEE**
$1 to $1,300	$86
$1,301 to $2,000	$86 for the first $1,300; plus $3 for each additional $100 or fraction thereof, to and including $2,000
$2,001 to $40,000	$107 for the first $2,000; plus $11 for each additional $1,000 or fraction thereof, to and including $40,000
$40,001 to $100,000	$525 for the first $40,000; plus $9 for each additional $1,000 or fraction thereof, to and including $100,000
$100,001 to $500,000	$1,065 for the first $100,000; plus $7 for each additional $1,000 or fraction thereof, to and including $500,000

$500,001 to $1,000,000	$3,865 for the first $500,000; plus $5 for each additional $1,000 or fraction thereof, to and including $1,000,000
$1,000,001 to $5,000,000	$6,365 for the first $1,000,000: plus $3.5 for each additional $1,000 or fraction thereof, to and including $5,000,000
$5,000,001 and over	$20,354 for the first $ 5,000,000; plus $2 for each additional $1,000 or fraction thereof
Residential Plan Review	65% of Building Permit Fee
Commercial Plan Review	65% of Building Permit Fee
Simple/Duplicate Plan Review	25% of Building Permit Fee
Reinstating an Expired Permit	$50 + any additional review time
Fire Inspection & Plan Review	10% of Building Permit Fee

BUILDING INSPECTION FEES	
Inspections outside of normal Business hours	$75 per hour, two–hour minimum
Re–inspection	$75 per hour
Inspection for which no specific fee is indicated	$75 per hour, one–hour minimum
Additional plan review required by changes, additions, or revisions to plans	$85 per hour, one–hour minimum
Use of outside consultants for plan checking and inspections, or both	Actual costs, including administrative and overhead costs
Fire Inspection	See Business License Fees

Work Without a Permit*	$100 per infraction
Working Beyond a Stop Work Order*	$200 per infraction
*Fines doubled for each subsequent infraction	

IMPACT FEES (Impact Fee Area Maps may be found on the City's Website)	
Sewer Facilities	• $637 Per ERU
Drinking Water Per Meter Size[1,2,5]	• $4,207.49 per ERU or Per Table 19 (By Meter Size) From Vineyard City Water Impact Fee Analysis (View Chart Below)
Roadway Facilities Per Trip End Unit based on ITE	• Area A – $3,586 per Trip End • Area B (RDA) – $1,286 per Trip End
Storm and Ground Water Per ERU[1,4]	• Area A – $222 per ERU • Area B – $337 per ERU • Area C – $237 per ERU
Parks and Recreation Facilities	• $3,422.88 Per Household[5]

1 inch water connection is 1 ERU: 1 ERU = 1 ERC

[2] Additional fees may apply to units with more than 5-bathroom equivalent drains.
[3] Additional fees may apply to certain high water uses (e.g., Car Wash) without water reduction measures in place.
[4]Additional fee may apply to certain sites if above city's maximum impervious area requirement.
[5] Household as defined by US Census Bureau
[6] Drinking water includes all water service connection types including landscaping meters

TABLE 19: MAXIMUM FEE PER ERC BY METER SIZE

Meter Size	ERCs	2025	2026	2027	2028	2029	2030
3/4"	1	$4,207.49	$4,360.81	$4,491.21	$4,602.71	$4,707.52	$4,808.14
1"	1.67	$7,026.51	$7,282.55	$7,500.32	$7,686.52	$7,861.56	$8,029.60
1 ½"	3.33	$14,010.94	$14,521.50	$14,955.72	$15,327.01	$15,676.04	$16,011.12
2"	5.33	$22,425.91	$23,243.12	$23,938.14	$24,532.42	$25,091.07	$25,627.40
3"	10	$42,074.88	$43,608.11	$44,912.07	$46,027.06	$47,075.19	$48,081.43
4"	16.67	$70,138.83	$72,694.72	$74,868.43	$76,727.10	$78,474.34	$80,151.75
6"	33.33	$140,235.59	$145,345.83	$149,691.94	$153,408.18	$156,901.60	$160,255.41
8"	53.33	$224,385.36	$232,562.06	$239,516.09	$245,462.29	$251,051.97	$256,418.28
10"	76.67	$322,588.14	$334,343.39	$344,340.88	$352,889.45	$360,925.46	$368,640.34

PASS THROUGH FEES	
Timpanogos Special Service District	Equal to District's impact fee as dictated current Impact Fee Facilities
Orem Water Reclamation	Equal to Orem City's impact fee as dictated by the current Impact Fee
CUWCD Water Rights Costs Per ERC	Equal to Current Fiscal Year from EXHIBIT A – VINEYARD CITY CWP FY2025 Agreement
All impact fees will be assessed at the time building permits are issued. All other development Impact Fees will be calculated based on Equivalent Residential Units.	

UTILITY METER & CONNECTION FEES	
¾" Water Meter & Connection Fee	$580
1" Water Meter & Connection Fee	$795
1½" Water Meter & Connection Fee	$1,240
2" Water Meter & Connection Fee	$1,930
Water Meter Reconnect Fee	$50
After Hours Fee (between 5pm and 8am)	Reconnect Fee plus $150
Utility/Hydrant Meter Application Fee	$ 25
Fire Hydrant Meter Rental Deposit	$2100
Residential Daily Rental Rate – Fire Hydrant Meter (Residence Must have Certificate of Occupancy)	$10 daily rental fee - Water will be billed at the residential water usage rate as shown on utility use fees
Water Usage Rate – Fire Hydrant Meter	Monthly rental rate will be at the base rate of a 3" meter with water usage to be billed at commercial water usage rates and will be billed monthly

Residential Construction Water	$100 minimum
Non–Residential Construction Water	$100 minimum
Unauthorized Connection to System	$2,000 per occurrence
Unauthorized Opening of Meter Box	$250 + $300 for a min. of 2 hours of staff time
Water Main Flushing	Per commercial rate at 3X pipe volume per occurrence & $150 per hour per utility tech

VINEYARD CITY COUNCIL STAFF REPORT

Meeting Date: December 10, 2025
Agenda Item: Vineyard Station Area Plan (Resolution 2025 - 67)
Department: Community Development
Presenter: Anthony Fletcher, Morgan Brim

Background/Discussion:

Background

In 2022, the Utah State Legislature adopted HB 462, which requires all cities with a fixed-guideway transit station (such as a Frontrunner stop/ Station) to prepare a Station Area Plan (SAP). An SAP must establish a vision for development within a half-mile of the station and include strategies to:

- Increase housing availability and affordability, including moderate-income housing.
- Promote sustainable environmental conditions.
- Enhance access to jobs, education, recreation, and commerce.
- Improve transportation choices and connections.

Vineyard's SAP covers a half-mile radius as required by the HB 462. For a more comprehensive and wholistic planning approach, the city expanded the planning area to a one-mile radius for a better scope for the city, which included about 430 acres of undeveloped land on the northeastern section of the city, much of which is part of the former Geneva Steel site. The plan integrates land use, transportation, and open space concepts to guide redevelopment of this area in coordination with regional partners.

Current Status

The Draft SAP document was certified by the SAP committee on November 19, 2025. Per State requirement, the City is expected to adopt its certified Station Area Plan before the end of 2025. This will put the city in a better position to apply for funds for the implementation of the vision outlined in the SAP and general plan at large.

Fiscal Impact:

Recommendation:

Staff Recommends adoption of the SAP Committee Certified Plan for Vineyard City.

Sample Motion:

"I move to adopt Resolution 2025 - , the Certified Vineyard Station Area Plan as presented by staff. "

Attachments:

1. Resolution 2025-67 Adopting Vinayard Station Area Plan
2. Reviewed & Updated_Vineyard Station Area Plan Report 2.6 November 2025
3. SAP Certification Letter 2025

Resolution 2025-67
VINEYARD STATION AREA PLAN

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF VINEYARD, UTAH, TO ADOPT THE SAP COMMITTEE CERTIFIED STATION AREA PLAN.

WHEREAS, in compliance with Utah State Municipal Land Use, Development, and Management Act (LUDMA), **HB 462,** the City established a master plan as a companion document to the General Plan; and,

WHEREAS, the Station Area Planning Policy Committee has approved

WHEREAS, the Vineyard Station Area Plan provides guidance for future development of the city's undeveloped northeastern section of the city and places an emphasis on creating a framework for future development that is in line with the vision of Vineyard; and,

WHEREAS, the Vineyard Station Area Plan provides great options for land use and transportation connection while considering all forms of other forms of transportation; and

WHEREAS, the Vineyard Station Area Plan will provide opportunities for future grant funding as it reflects a unified vision as to how developments around the Vineyard Frontrunner station should be; and

WHEREAS, the City held several public meetings and workshops to obtain citizen feedback on how the Vineyard Station Area Plan should be in the future; and,

WHEREAS, the Planning Commission and City Council held a Joint Public hearing on September 24, 2025, and after fully considering public comments and staff recommendations, the Planning Commission recommended support by the City Council to submit the draft SAP Document for review and certification by the SAP Committee; and,

WHEREAS, the City Council of Vineyard made a motion of support of the draft plan to be reviewed and certified by the SAP Committee on October 8, 2025; and,

WHEREAS, the City Council reviewed the Vineyard Station Area Plan and after fully considering public comments, staff and Planning Commission's recommendations, evidence and testimony presented by the City, staff and other interested parties.

NOW, THEREFORE, BE IT RESOLVED BY THE GOVERNING BODY OF THE CITY OF VINEYARD:

Section 1: Adoption. The City Council of the City of Vineyard, Utah, hereby adopts the Vineyard Station Area Plan is attached hereto as Exhibit A, and incorporated herein by reference.

Section 2: Repeal. All City of Vineyard Plans which conflict with the Vineyard Station

Area Plan are hereby repealed.

Section 3: Savings and Severability Clause. It is hereby declared to be the legislative intent that the provisions and parts of this Resolution shall be severable. If any paragraph, part, section, subsection, clause, or phrase of this Resolution is for any reason held to be invalid by a Court of competent jurisdiction, such decision shall not affect the validity of the remaining portions of this Resolution.

Section 4: Publication. This Resolution, or a summary thereof, shall be published in the official newspaper of the City, and shall take effect immediately upon its passage, approval, and publication.

Section 5: Effective Date. This Resolution shall be in full force and effect after its passage, approval, and publication according to law.

PASSED AND ADOPTED BY THE VINEYARD CITY COUNCIL ON THIS 10th DAY OF DECEMBER 2025.

_____

Mayor , Julie Fuller.

Attest

_____

City Recorder , Pamela Spencer

Exhibit A: Vineyard Station Area Plan

VINEYARD
STAY CONNECTED

MAG
Expert Resources. Enriching Lives.

VINEYARD STATION AREA PLAN (VSAP)

Vineyard City, Utah

November 2025

SASAKI

Acknowledgment

This Station Area Plan report is envisioned as a dynamic document that will continue to evolve in response to changing conditions and circumstances. As such, it is anticipated that over the life of the Station Area Plan herein will be refined, waived, or amended to incorporate new conditions, special opportunities, and/or circumstances.

This plan will guide future work for this area and will identify specific steps for implementation in the first five years of the project. The plan will provide a coordinated vision for transportation, land uses, and open space for the approximate 430 acre site, and will provide a final report to be presented to the SAP Policy Committee, the planning commission, and the city council for approval.

ACKNOWLEDGMENTS

CLIENT TEAM

Mountainland Association of Governments
Vineyard City

CONTRIBUTING STAKEHOLDERS

Flagborough, LLC
Huntsman Cancer Institute
MS Properties of Vineyard
Utah Valley University

CONSULTING TEAM

Sasaki
Fehr & Peers
Zion Public Finance

TABLE OF CONTENTS

01 INTRODUCTION
Executive Summary
Process
Statements of Consistency

02 CONTEXT
Market Review
Existing Conditions
Site Analysis

03 STATION AREA PLAN VISION
Public Outreach
City of Vineyard Objectives
Development & Design Principles

04 FRAMEWORK PLAN
Concept Plan
Multimodal Transportation Plan
Open Space Plan
Land Use Plan
Neighborhoods & Nodes
Utility Infrastructure Plan

05 IMPLEMENTATION
5-Year Action Plan

01

Introduction

Executive Summary

The Vineyard Station Area Plan is more than a response to state law–it's a locally shaped vision for how Vineyard will grow around the FrontRunner Station in a way that serves residents, supports local businesses, and strengthens regional connections.

In 2022, the Utah Legislature passed House Bill 462 (HB 462), which requires communities with fixed transit stations to prepare Station Area Plans (SAPs). These plans coordinate land use, housing, and transportation within a half-mile radius of a major transit stop and must align with the Mountainland Association of Governments (MAG) regional transportation plan. The intent is to promote efficient, sustainable growth that increases access to housing, jobs, and transportation choices.

Under HB 462, every Station Area Plan is designed to advance four key objectives:

- Expand housing opportunities and affordability by allowing a mix of housing types and densities that make living near transit more attainable.
- Promote environmental sustainability through efficient land use, water conservation, improved air quality, and the integration of parks and open spaces.
- Enhance access to opportunity by connecting housing, employment, education, recreation, and commerce through mixed-use development and improved broadband connectivity.
- Increase transportation choices by investing in multimodal infrastructure, public transit, and safe, walkable, and bike-friendly streets.

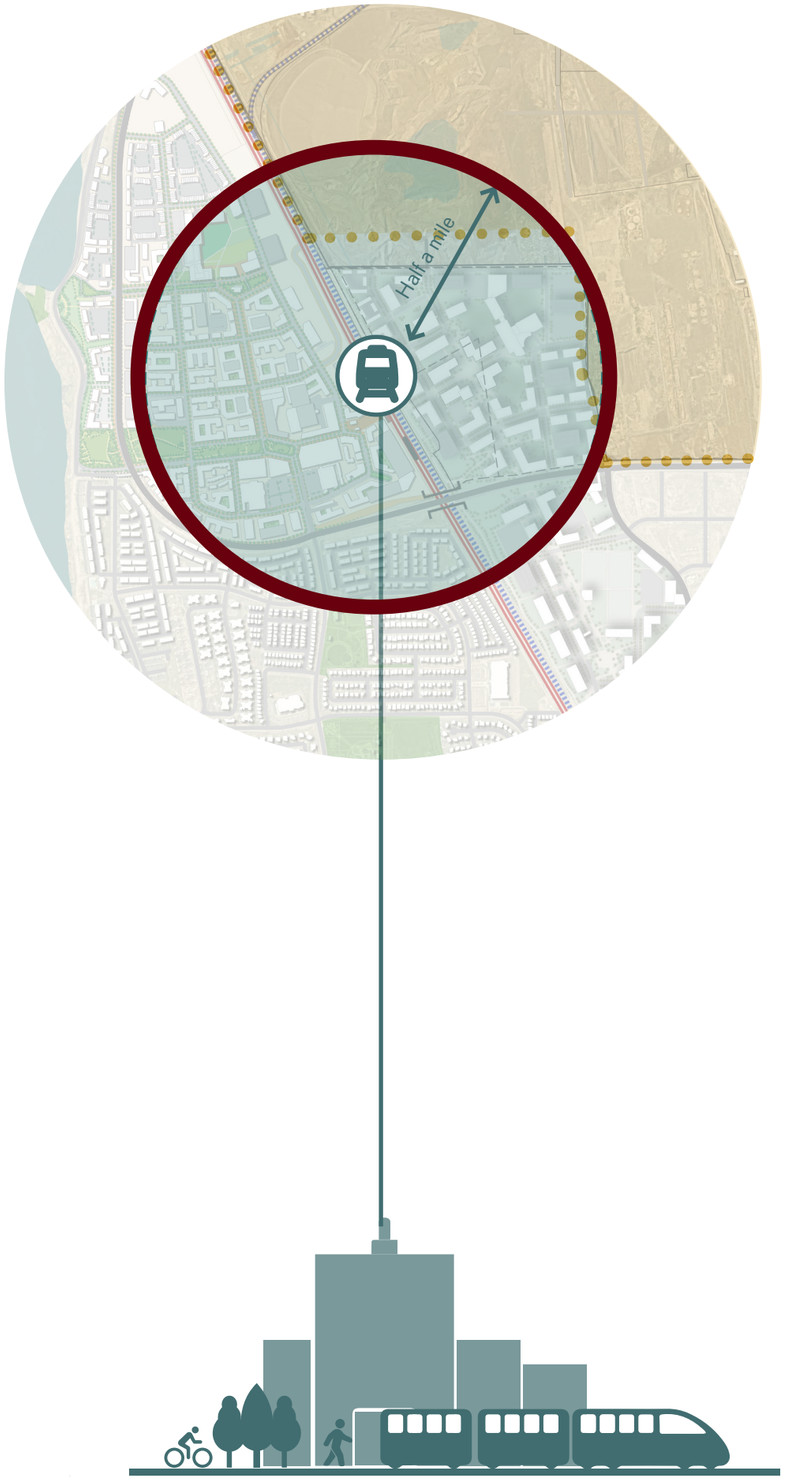
While this plan satisfies the state-required half-mile radius, Vineyard took a step further, expanding the planning area to one mile.

This broader boundary allows for a more holistic and practical approach, recognizing that certain portions within the half-mile radius remain impracticable for development due to portions of land under state ownership such as Utah Valley University property that fall outside the City's regulatory authority, and areas that are already planned, developed, or built out. By extending the planning area to one mile, Vineyard can address these limitations and plan more effectively for future growth in the northeastern undeveloped lands.

The one-mile framework also ensures a comprehensive vision that connects the core station area to the northeastern undeveloped lands, allowing Vineyard to plan infrastructure, open spaces, and land uses in a coordinated way across the district.

This Station Area Plan represents Phase 2 of a broader, long-term planning effort that began in 2015, when Vineyard established the Downtown Vineyard Special Purpose District. That first phase guided development west of the FrontRunner Station, establishing mixed-use zoning, open spaces, design standards, and trail connections to maximize the benefits of transit investment. Building upon that foundation, this current plan extends the vision eastward, ensuring seamless connections between the existing Downtown District, the East Geneva area, and Utah Valley University's future Vineyard Campus.

Half-Mile Radius. - Statutary requirement



Executive Summary

Developed collaboratively by Vineyard City and MAG (as a partner and administrator of state technical, assistance , providing guidance and support related to the certification process), the Station Area Plan combines technical analysis with local values to guide growth across approximately 430 acres. It integrates land use, potential workforce housing, mobility, open space, and economic development into a single, cohesive framework that reflects Vineyard's identity and goals.

In essence, a Station Area Plan serves as a guiding document that sets a vision and outline action steps for development within walking distance of transit. For Vineyard, it means creating a walkable, connected, and vibrant district that grows with intention and remains adaptable as conditions evolve.

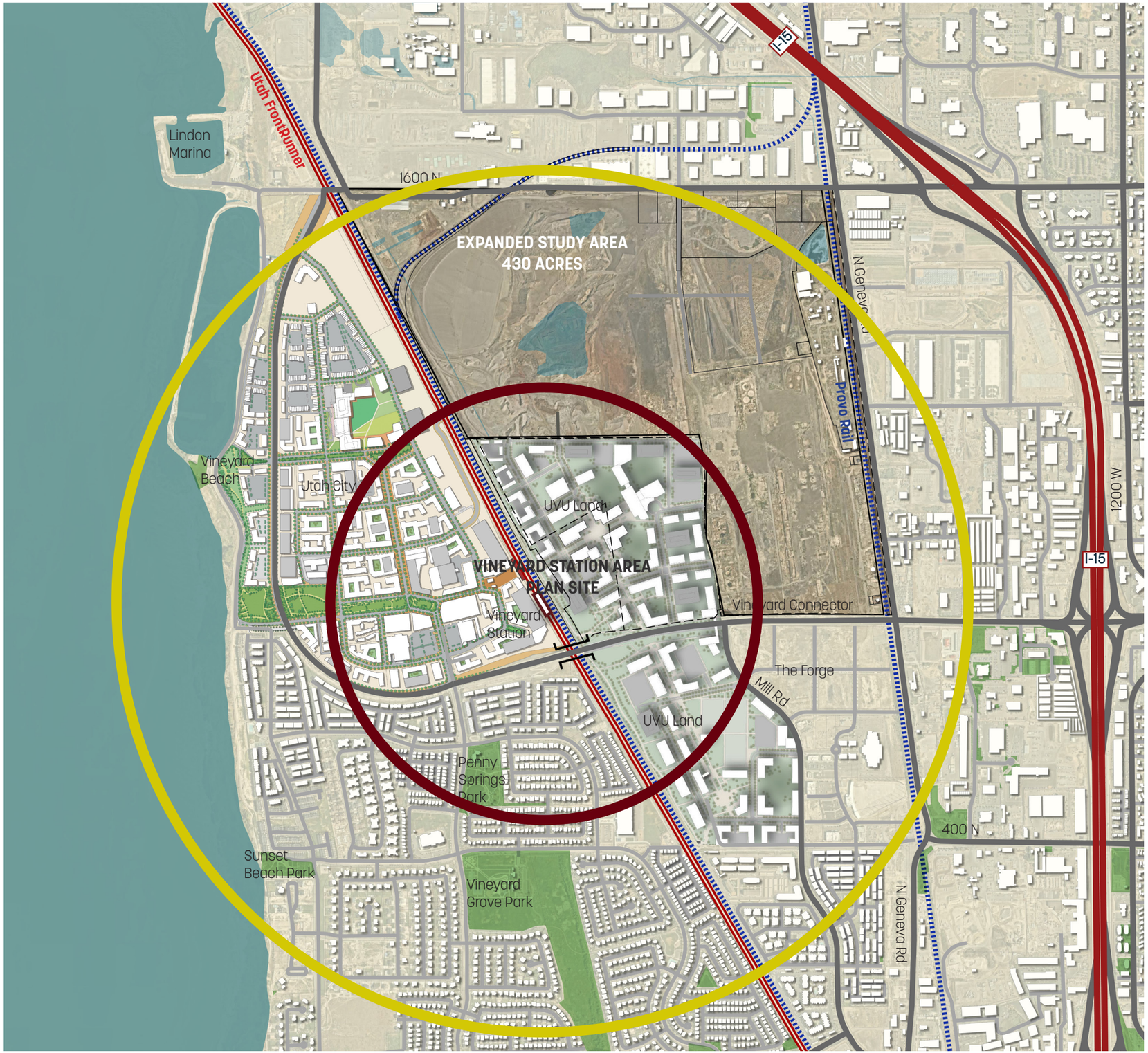
This Plan builds on the direction set in Vineyard's General Plan and Active Transportation Plan, outlining tangible steps for the next five years. It emphasizes a balanced mix of land uses that will expand mobility options, preserve open space, and improve access to jobs, services, and destinations both within Vineyard and across the region.

Most importantly, this Plan reflects Vineyard's ownership of its future. It's a roadmap built for and by the communitygrounded in local voices, local context, and local goals.

We invite residents, property owners, developers, and regional partners to see this Plan as a shared commitment: to grow thoughtfully, protect what makes Vineyard special, and shape a station area that benefits everyone who lives, works, studies, or visits here.

Half-Mile Radius. - Statutory SAP requirement

One-Mile Radius.



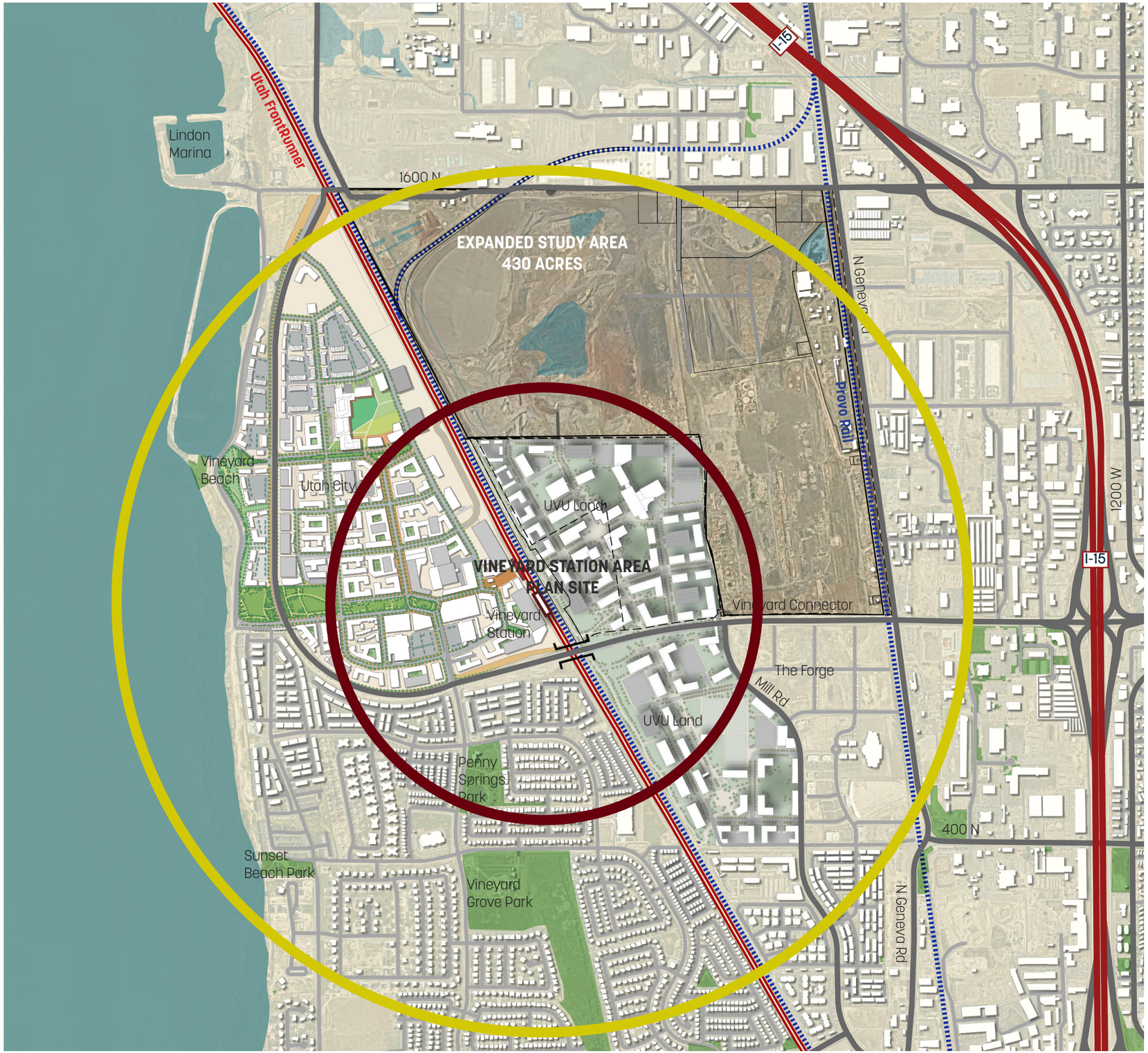
Note: Utah City and Utah Valley University (UVU) Plans in this image indicate future development on these properties.

VSAP SITE EXPLAINED

The red ring on the map shows the state-required half mile boundary for Station Area Plans as established by Utah House Bill 462. In Vineyard, more than 90 percent of the land within that boundary has already been planned, built out, or is currently under development. Because of this, there is little opportunity left for new planning or coordination within the required half mile area. In addition, part of the land within that area belongs to Utah Valley University, which is state owned and not under the city's land use authority.

For these reasons, the city chose to expand the planning area to include up to one mile from the station. This broader view gives a more complete and practical approach, allowing the city to plan for the undeveloped lands to the northeast and ensure strong connections to the station area and nearby neighborhoods.

This plan brings together land use, housing, mobility, open space, and economic development strategies into one coordinated framework. It builds on the city's General Plan and Active Transportation Plan and outlines clear steps for implementation over the next five years. Most importantly, it reflects Vineyard's local vision for how we want to grow around our station, create walkable and connected neighborhoods, and build a vibrant community that serves everyone who lives, works, studies, or visits here.



Half-Mile Radius. - Statutory SAP requirement

One-Mile Radius.

Note: Utah City and Utah Valley University (UVU) Plans in this image indicate future development on these properties.

Mount Timpanogos

Mahogany Mountain

Cascade Mountain

VIEW OF MOUNTAINS

VIEW OF MOUNTAINS

Interstate 15

Interstate 15

Vineyard Connector Rd

SAP Site

Vineyard Station

Interstate 15

VIEW OF UTAH LAKE

Process

The Station Area Planning process involved close collaboration between the City of Vineyard, project stakeholders, and the consultant team. With many recent and emerging plans for lands immediately around the Station Area, the planning process required close coordination and responsiveness to the momentum of planning and development just outside the site boundaries.

Vineyard FrontRunner Station Area Plan Process

Statements of Consistency

The Vineyard Station Area Plan builds on the goals in Vineyard's 2019 General Plan. As required by Utah House Bill 462, it focuses on how Vineyard will grow around the FrontRunner Station with attention to housing, transportation, land use, and access to opportunity. More importantly, it reflects the community's vision for a connected, livable city by applying local values such as providing housing choices, improving mobility, and protecting open space to one of Vineyard's key growth areas.

The plan aligns with the General Plan, Transportation Master Plan, Active Transportation Plan, and the city's Moderate Income Housing Strategy.

Land Use: It encourages a mix of housing, office, retail, and park spaces that create walkable neighborhoods and vibrant commercial areas.

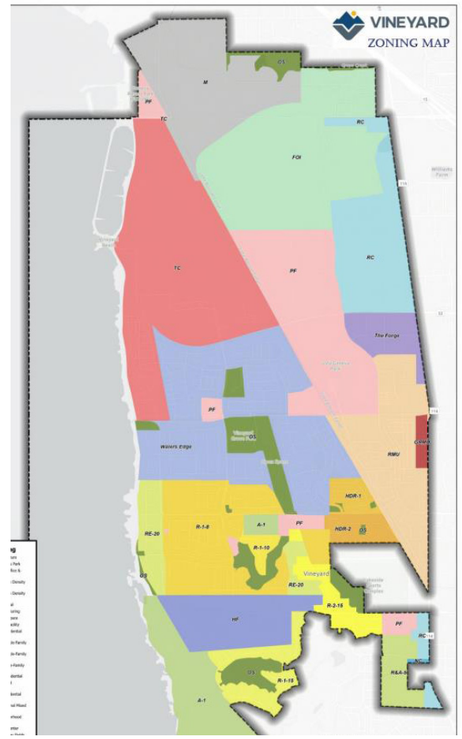
Transportation: The plan promotes a connected street network, safe walking and biking routes, and enhanced links to the station. It aligns with the city's transportation objectives of improving multi-modal options, reinforcing connections between neighborhoods and transit, and integrating land use and mobility to reduce dependence on single-occupant vehicles. These deliberate strategies reflect the city's commitment to creating access for all residents, connecting with the regional transit system, and supporting a resilient, equitable transportation framework for the future.

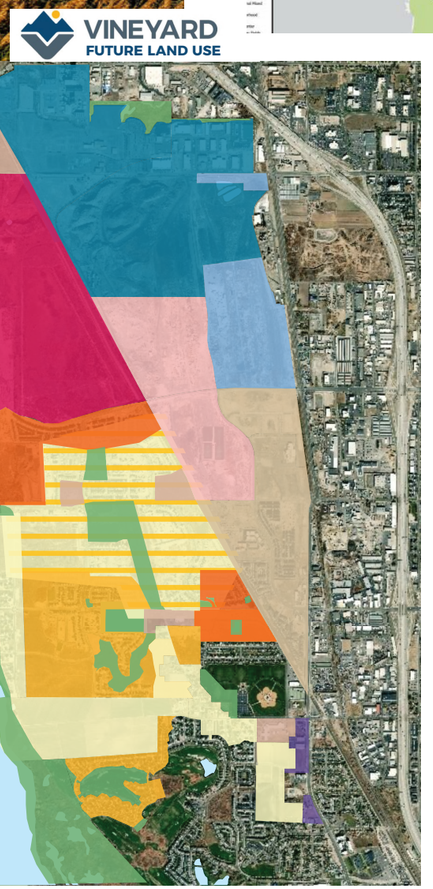
Open Space: It adds new parks, trails, and greenways that connect to the broader city trail system and enhance access to Utah Lake.

Housing: It supports diverse housing types, including moderate income and multifamily homes near jobs, schools, and transit. Vineyard has adopted strategies L, V, F, E, H, and Q of Utah State Code 10 9a 403 (2)(b)(iii) and continues to improve on them each year to meet state requirements and maintain a balanced, inclusive community.

Economic Development: It creates space for office, innovation, and light industrial uses to attract businesses, strengthen the local economy, and support nearby institutions like Utah Valley University.

Overall, the Station Area Plan turns Vineyard's long-term vision into an achievable plan for thoughtful, sustainable growth.



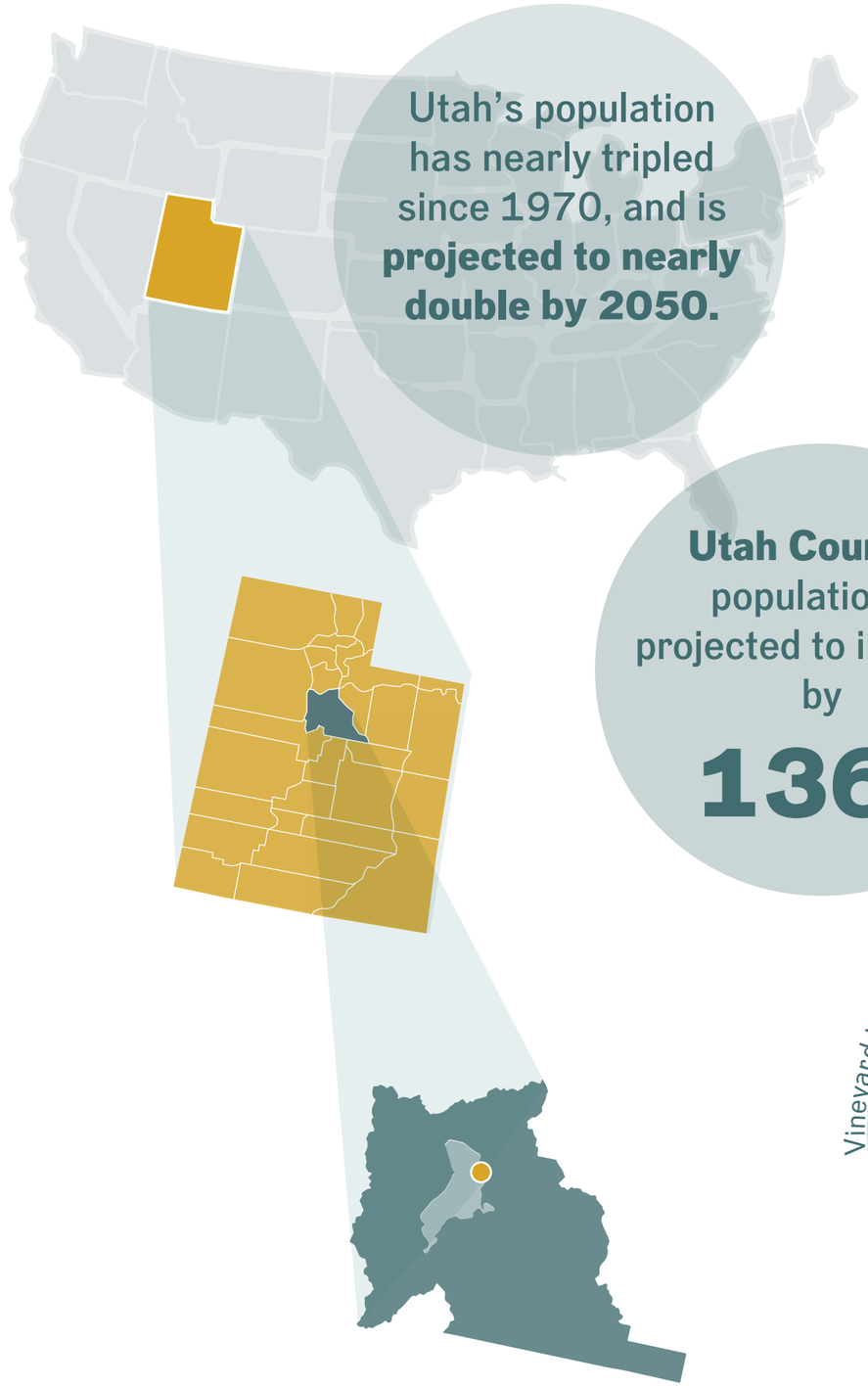


02

Existing Context

Understanding Growth

This Station Area Plan is one of many efforts that has the opportunity to steer development in Vineyard and within the region at a time when growth rates and projections are very high for both. Vineyard, Utah County and Utah are all growing quickly and projections are for each to continue growing for a while longer. Vineyard and the lands covered by this Station Area Plan will see increased demand as this growth continues to reshape life in the state.



Transportation

The creation of the FrontRunner rail line enhances opportunities in the Wasatch Front communities by introducing an alternative means of transportation between Salt Lake, Ogden, and Provo. As the communities here continue to grow, it can help alleviate traffic congestion along I-15, reduce air pollution, support local businesses, and provides convenient transit options for commuters, students, and residents.

Economic Development

Vineyard and its surrounding communities are home to many small and large businesses that provide careers and contribute to local communities. As the region's neighborhoods continue to grow, planning and investment in civic infrastructure can help grow the local economy and introduce new local jobs as well.

Housing Opportunities

Residential growth in Vineyard and its neighboring communities has been significant in recent years and the city is continuing to growth rapidly. The largest single project, Utah City, is located immediately west of these Station Area Plan lands and will introduce thousands of new units of housing to the community.

Vineyard Socio-economics

Vineyard is expected to nearly double its population by 2030. This represents average population growth of approximately 1,420 persons per year. With an average household size of 3 persons, this presents the need for about 456 housing units per year.

In general, the population of Vineyard is younger, with smaller household sizes, than the rest of the County. Average incomes are slightly higher than in Utah County but represent only 80 percent of the average incomes in Lehi.

PROJECTED POPULATION GROWTH

	Vineyard	Utah County
2022 (Historical)	12,663	666,021
2030	24,017	861,852
2040	33,870	1,080,082
2050	36,265	1,297,515

Sources: MAG 2030-2050 Population Projections (2019); US Census Bureau ACS 5-year Data (2022)

DEMOGRAPHIC CHARACTERISTICS

	Vineyard	Lehi	American Fork	Utah County
Median Age	**24.5**	**26.6**	**28.0**	**25.2**
Median HH Income	$94,018	$117,243	$90,490	$91,263
Average HH Size	3.11	3.62	3.27	3.46
Owner-occupied only	3.43	3.72	3.48	3.78
Renter-occupied only	2.85	2.90	2.77	3.05
Education (population age 25+)				
High school graduate or higher	96.6%	97.2%	94.3%	95.3%
Bachelor's degree or higher	44.0%	48.4%	40.9%	42.8%
Graduate or professional degree	12.9%	14.8%	11.7%	13.0%

Source: US Census Bureau ACS 5-year Data (2022)

The full market study completed as part of this Station Area Planning process can be found in the appendix of this document.

Market Review

Utah County is one of the most rapidly growing areas in the country. Employment growth is strong, fueled by an educated population and a strong workforce coming from two major universities in the area, as well as other educational institutions. The northern part of the County, along I-15, is referred to as Silicon Slopes and attracts worldwide companies such as Texas Instruments and Adobe. A young and rapidly-growing population, along with world-class recreational opportunities, makes Utah County one of the most desirable business locations in the country.

OPPORTUNITIES

RESIDENTIAL

Most of the multi-family residential development at the site will be for 4-story complexes with densities of up to 50 units per acre. If rents continue to rise in the area, and we have seen significant rent increases over the past few years, then wrap construction with 60-80 units per acre may be feasible in some locations.

OFFICE

Office development is still in the recovery stages in Utah County with new construction activity at a 5-year low. Office development on the site could be geared to UVU expansion space or possible startup companies from the many entrepreneurial businesses generated by programs at UVU and BYU.

INDUSTRIAL / FLEX OFFICE

Industrial/flex office is a promising use for the areas of the site near the tailings in the NW corner, as well as nearer to Geneva Road. While industrial/flex office densities can vary considerably, a rule of thumb that reflects an average of industrial development is for a floor area ratio of 38 percent. There is strong competition for industrial space from the central and southern part of the County where land is less expensive and therefore these areas are seeing significant growth

RETAIL

Retail is greatly needed in Vineyard which sees large amounts of sales leakage to surrounding areas such as Orem and American Fork. Retail would need to be located in the areas with the highest traffic counts and visibility such as along the Vineyard Connector or any other major connections into the Town Center.

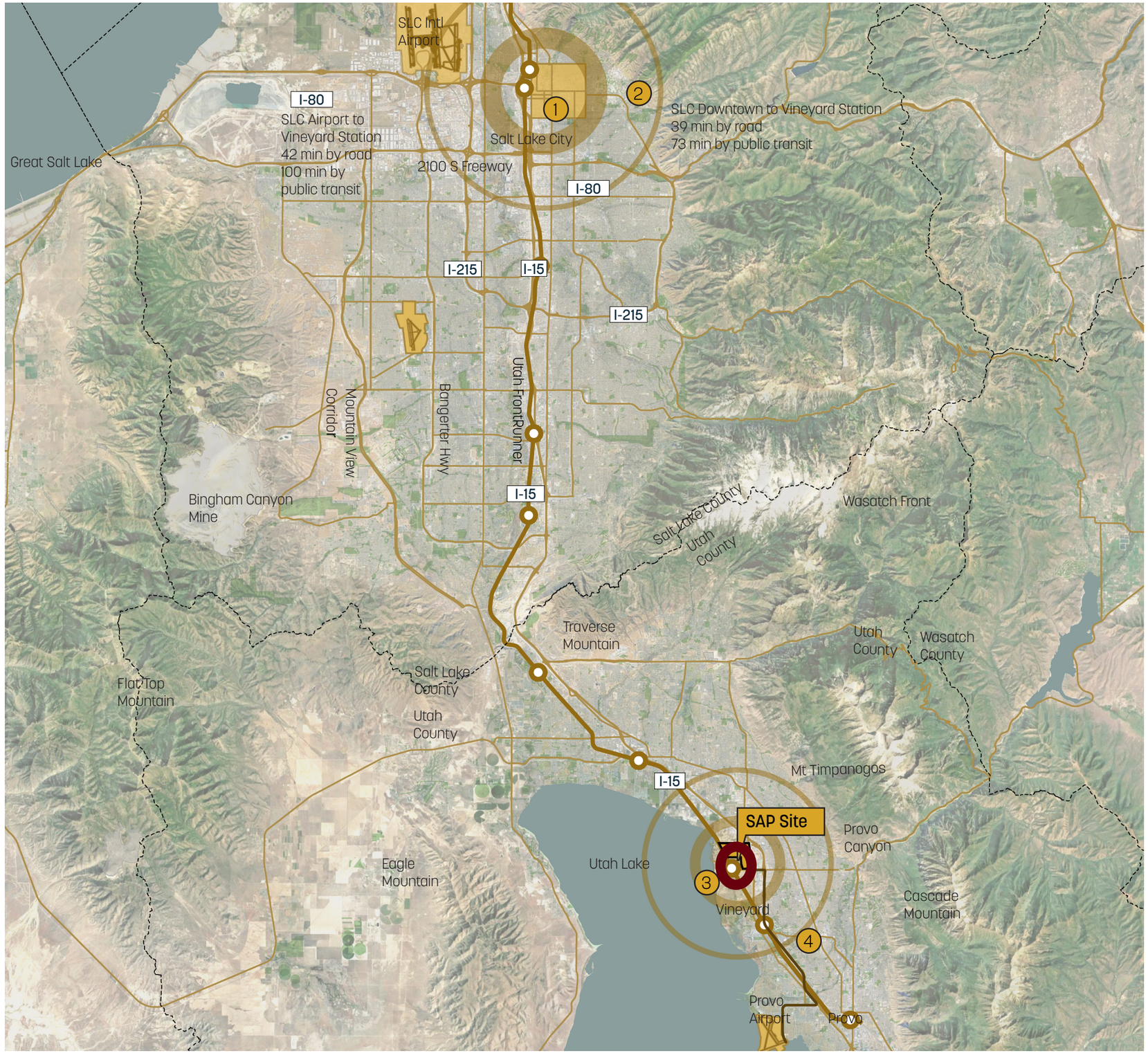
MAJOR FINDINGS OF THE MARKET REVIEW

- Utah County is one of the fastest growing areas in the county
- Vineyard is projected to grow by approximately 1,420 persons per year between 2022 and 2030, presenting the need for close to 450 new housing units per year
- Incomes are good; slightly higher than the County but only 80 percent of those in neighboring Lehi
- Vineyard has a significantly higher percentage of rental units (54.4%) when compared to Utah County (31.3%).
- Over 53 percent of households in Vineyard spend more than 30 percent of their household income on rent, compared to 30 percent in Lehi where rents are similar and incomes are higher
- Median home prices in Vineyard ($481,800) are 88 percent of median home prices in Utah County ($548,100).
- Since 2017, Vineyard has increased its share of households making less than 80 percent of Area Mean Income (AMI), suggesting that there is more attainable housing in Vineyard
- Industrial comprised thirty-eight percent of commercial permits in Utah County, while industrial comprised nearly fifty-four percent of commercial permits in Vineyard.
- Retail permits have been slow in Vineyard, representing only 0.9 percent or permitted valuation, yet population growth represents 9.1 percent; 590,000 sf of retail are planned for the Town Center Housing and Transit Reinvestment Zone (HTRZ) area.
- The office market is in a state of uncertainty at the present time but has seen significant growth along the Silicon Slopes corridor in Lehi. The HTRZ Town Center area has plans for 2.6 million square feet of office space.

The full market study completed as part of this Station Area Planning process can be found in the appendix of this document.

Urban Context

Vineyard and the Station Area Plan lands are located within the Wasatch Front, along the banks of Utah Lake, approximately five miles north of downtown Provo and thirty miles southeast of downtown Salt Lake City. The communities are connected by the new FrontRunner passenger rail line.



1. Salt Lake City Downtown
2. University of Utah / Huntsman Cancer Institute
3. Vineyard Station (Utah FrontRunner)
4. Utah Valley University

Commuter Rail (Utah FrontRunner)

Important Destinations

Vineyard Station Area Plan (SAP) Site

Regional Corridors

Vineyard and the Station Area Plan lands are connected to the larger region by several major regional corridors, with Interstate 15 serving as the major regional connector. These highways provide Vineyard and the Station Area plan lands with easy access to major regional destinations , like the airports in Salt Lake City and Provo and several regional universities, including the University of Utah and Utah Valley University.

Regional Corridors

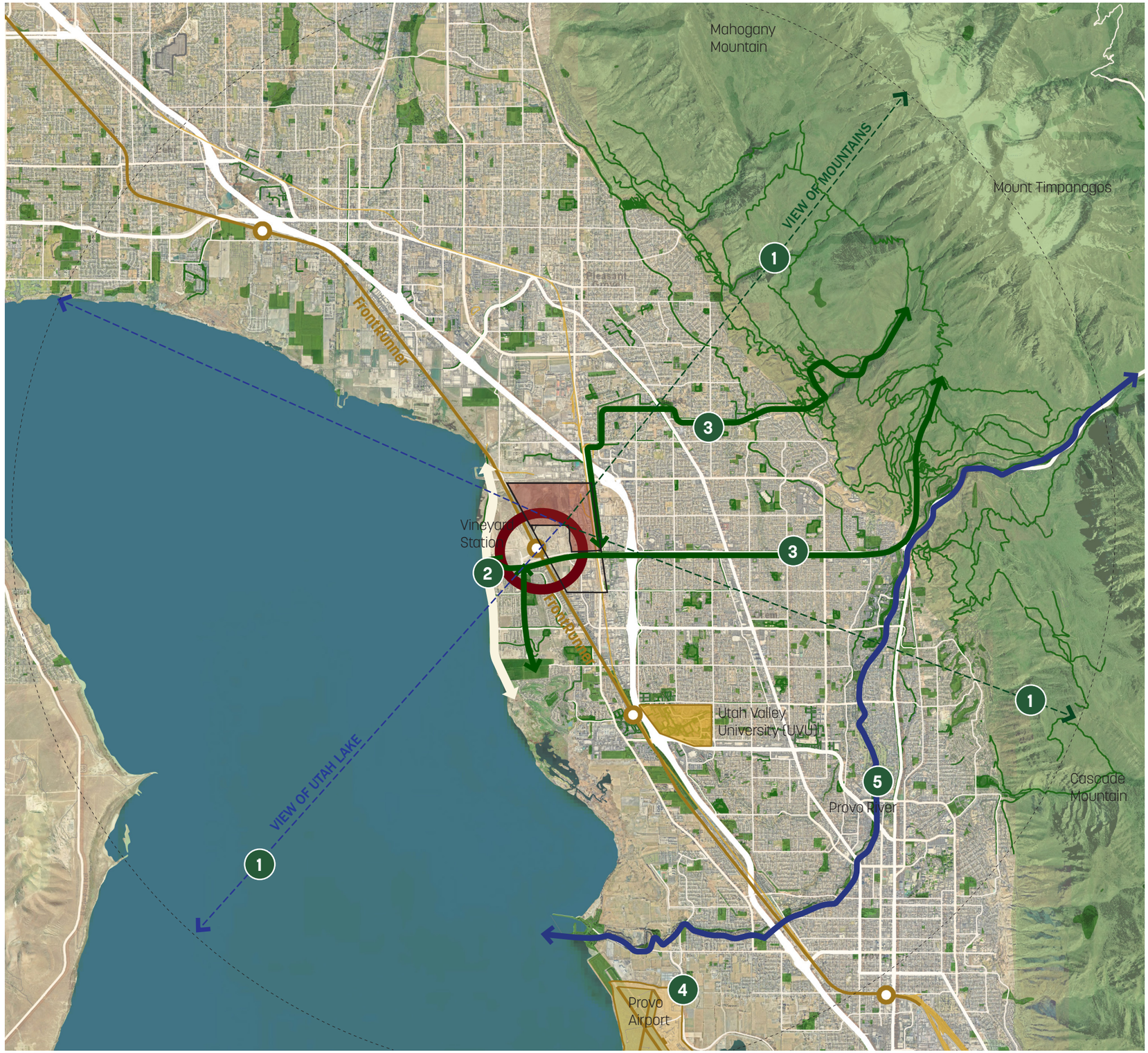
Arterial Roads

Important Destinations

Vineyard Station Area Plan (SAP) Site

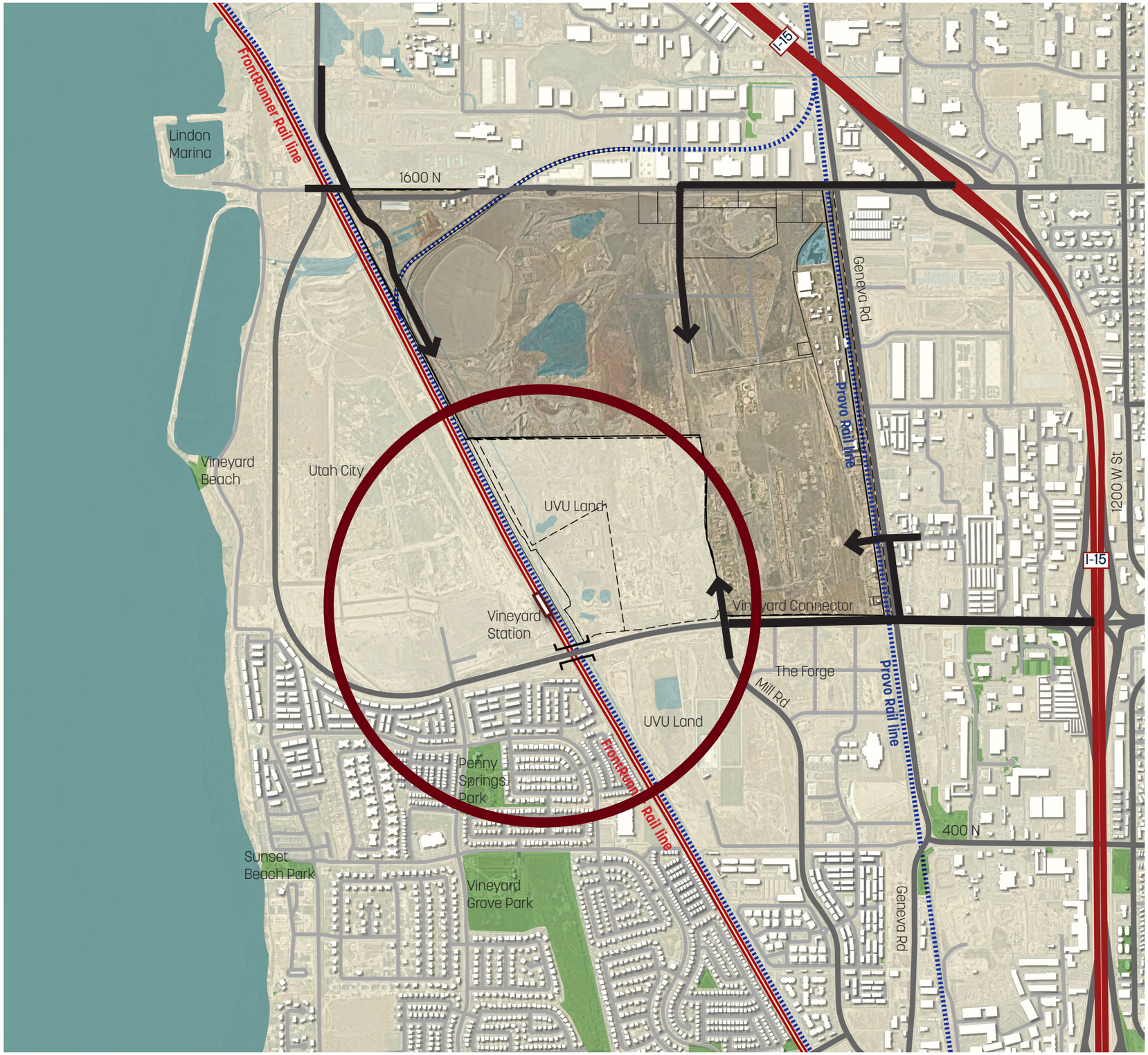
Site Context Features

1. Scenic views of the Wasatch Mountain Range and Utah Lake.
2. Direct access to the Utah Lakefront via Vineyard Connector Road.
3. Trail and pathway connections from the site to Mt. Timpanogos, linking neighborhood parks and recreation areas.
4. Provo Airport is only a 15-minute drive from the site.
5. The Provo River flows from Deer Creek Reservoir to Utah Lake, creating a natural landscape system that ties together open spaces in Orem and Vineyard.



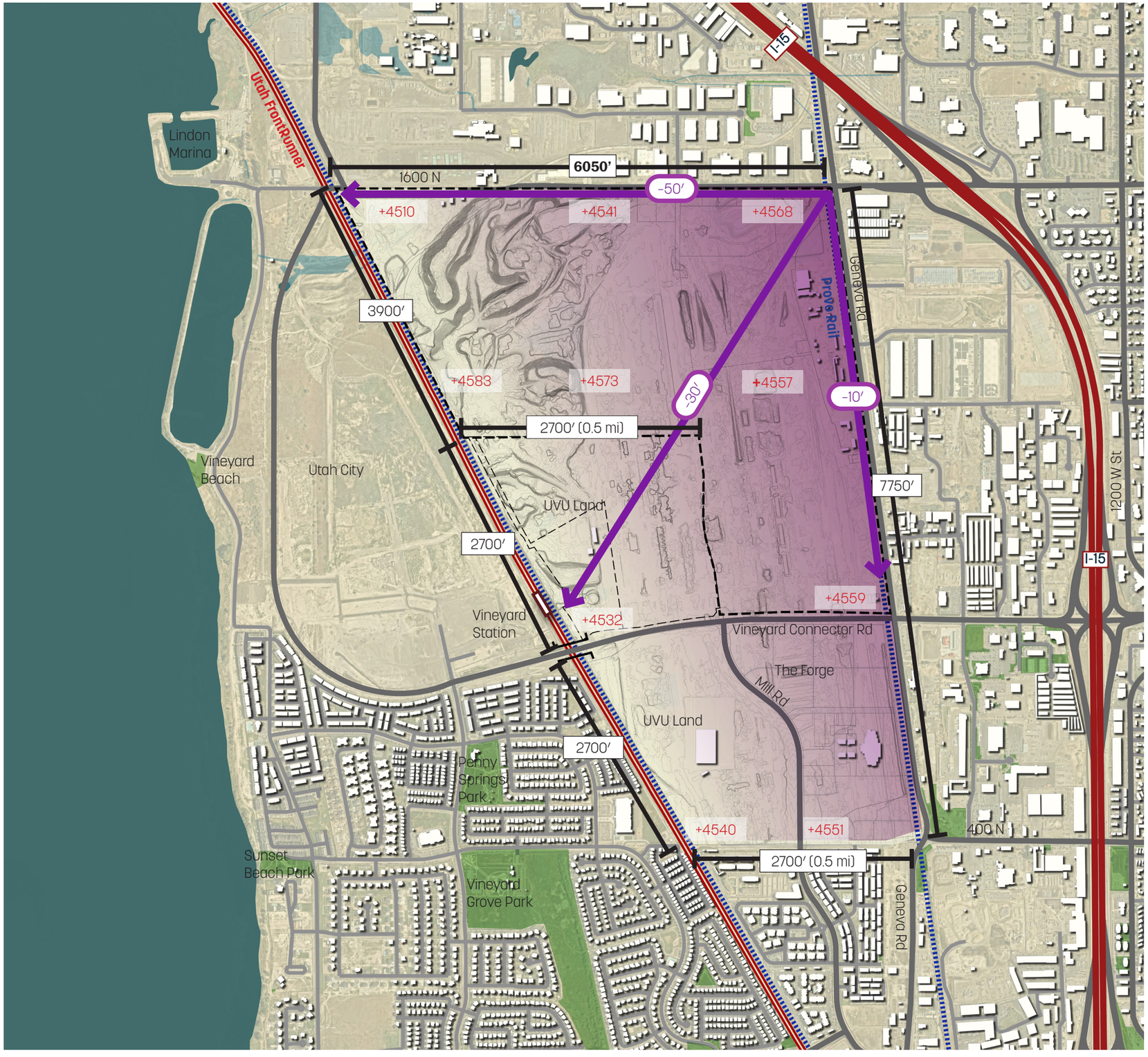
Site

The site area for this Station Area Plan comprises 430 acres and is bounded by 1600 N to the north, Geneva Road to the east, Vineyard Connector to the south, and the FrontRunner rail line to the west. Vehicular access to the site is possible at four gateways, including an entry at the south aligned with Mill Road, an entry to the east aligned with 960 N, an entry to the north aligned with 400 E, and an entry from the northwest aligned with W 2000.



Site Topography

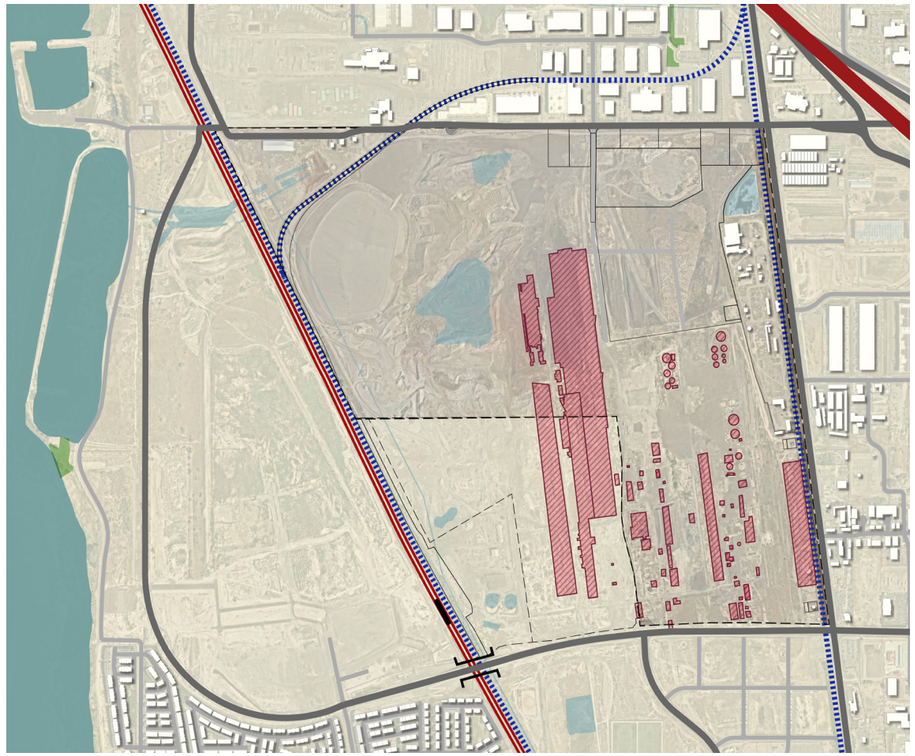
The site's topography is characterized by a relatively gentle slope from generally higher lands in the northeast corner and along the eastern edge to low points along the western edge toward the lake. Exceptions to this general slope are found in the western-central area of the site, where there are several of the site's highest elevations.



Demolished Buildings & Foundations

The Station Area Plan (SAP) lands, together with the area south of 800 North, were once part of the former Geneva Steel mill in Vineyard. While most industrial facilities have been removed, remnants such as building foundations and large concrete floors remain. The site also contained an extensive rail yard that supported steel operations.

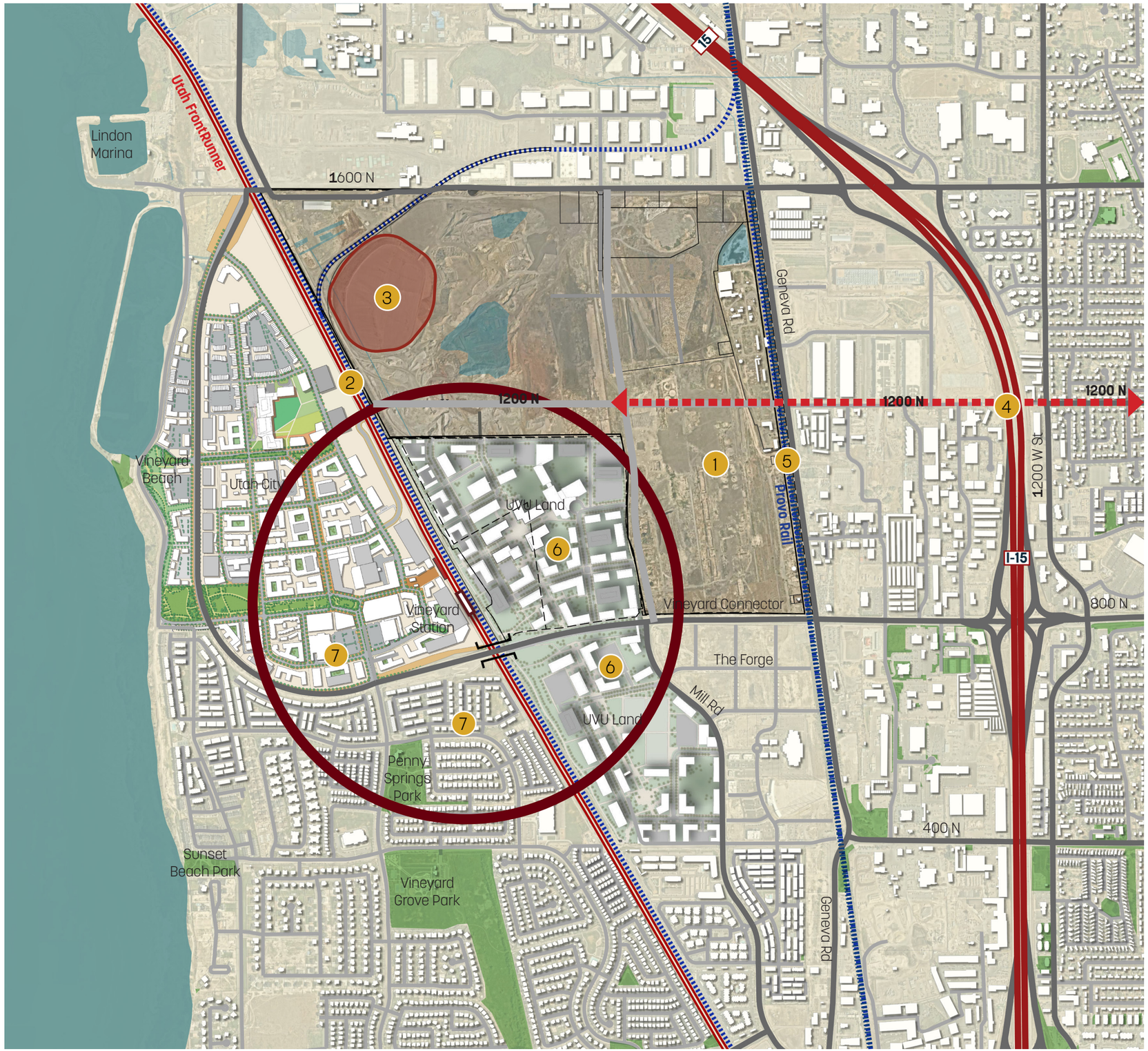
Today, the 430-acre SAP area is undergoing ongoing remediation and restoration to clear these remaining structures. This process will continue over the coming years, preparing the land for redevelopment and transforming it from a former industrial site into a new community hub.



Constraints

Planning for the future of these lands requires an evaluation of the potential constraints that may negatively impact efforts to implement infrastructure improvements and redevelop the land.

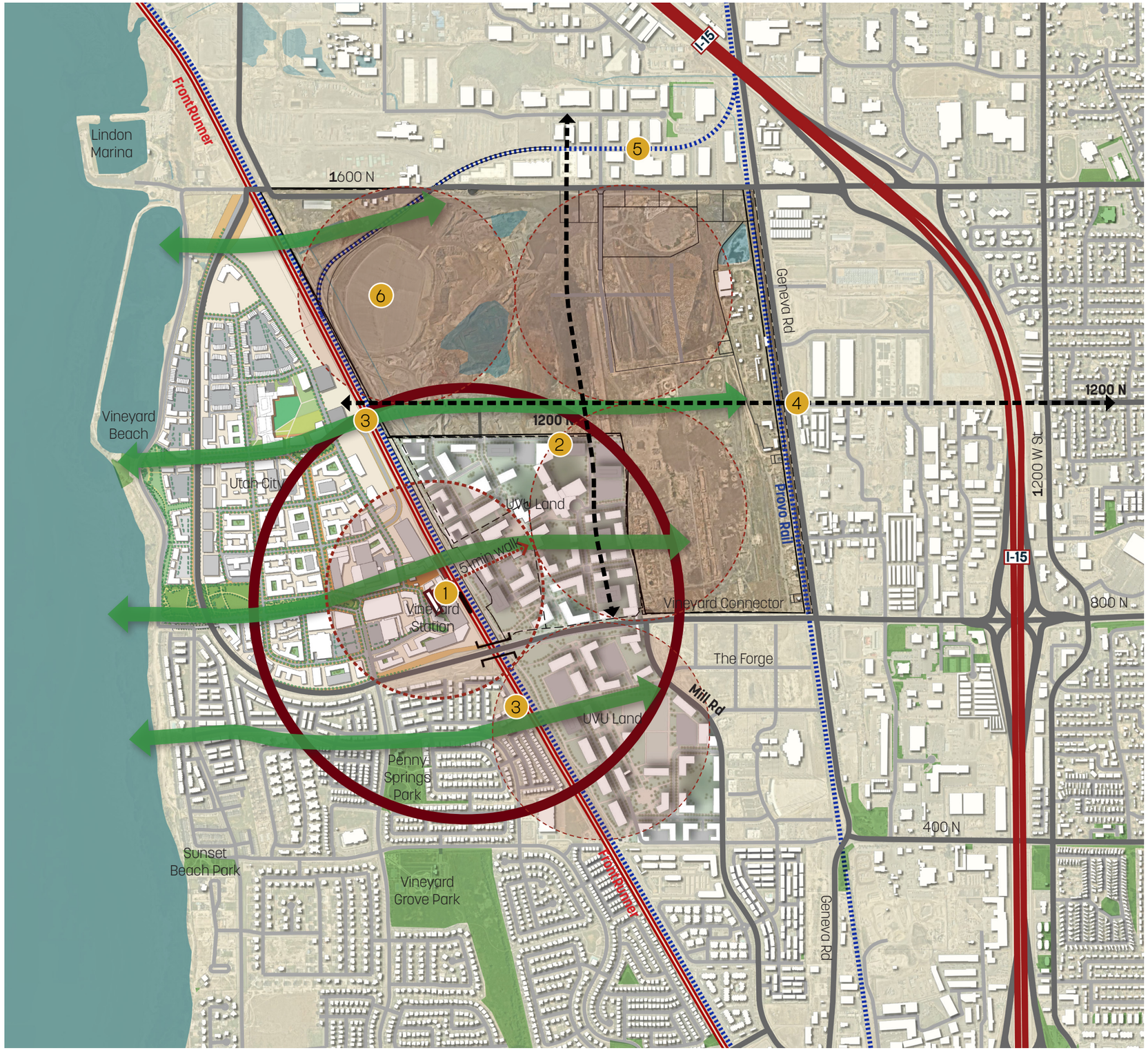
1. Land remediation of steel mill property - Most proposed uses that may include a component of residential may be permitted on the former steel mill property only in areas that meet the conditions of the environmental permit.
2. FrontRunner rail line as barrier in accessing the Utah Lake beach shore.
3. The Corrective Action Management Unit (CAMU) in the northwest portion of the site limits future land use options. Due to environmental and regulatory constraints, this area may only be appropriate for low-impact or light recreational uses
4. 1200N requires an underpass to Interstate-15, in order to connect the site with areas east of the Interstate-15.
5. Provo Industrial Rail along eastern edge of the site is a barrier for access from Geneva Rd, until the rail is re-routed through East Lake Industrial Park
6. Limited landuse authority over land owned by UVU.
7. Over 90% of the land area within the statutory half-mile requirement for the SAP is impracticable, due to already planned and developed land (i.e., Utah City Providence, Springs & Preserves Neighborhoods) and



Opportunities

The Station Area Plan lands are rich with opportunities given the growth of the area, the momentum of its neighboring properties, and its great connections to local and regional roads and rail.

1. Vineyard Station (FrontRunner) is a key public transit stop along the Wasatch Front, located between the line's northern terminus in Ogden and its southern terminus in Provo, providing convenient access to central hubs like Salt Lake City."
2. 5-min circles show the potential for SAP land to have a highly walkable district.
3. Connections to Vineyard Town Center via linear parks across the commuter rail line.
4. Potential extension of 1200 N and Mill Road to connect with Vineyard Town Center
5. Proposed rail re-routing (UDOT) will create access along Geneva Rd with removal of the Provo industrial rail line.
6. The Corrective Action Management Unit (CAMU) in the northwest area presents a future redevelopment opportunity. Upcoming planning efforts will explore potential adaptive reuse of this site.



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Station Area Plan Vision

City of Vineyard Objectives

The City of Vineyard adopted a General Plan in July 2019. This plan articulates several goals related to growth and the future of the community. These goals, as outlined here, served as the foundation for the planning of the Vineyard Station Area Plan.

TRANSPORTATION

To promote the development of an efficient multi-modal transportation system that meets the needs of Vineyard's current and future residents while increasing safety and sustainability, decreasing auto-dependency, balancing mobility and accessibility and integrating into existing infrastructure.

City of Vineyard Goals

1. Provide multiple connections between neighborhood, city-wide and regional systems that safely and effectively move people through, into and out of the city while mitigating traffic congestion.
2. Reduce auto dependency in Vineyard to improve air quality, reduce traffic congestion and enhance the quality of life.
3. Maintain and enhance Vineyard's environmental standards as the City's transportation system grows.
4. Provide a diverse range of transportation options–including light rail, commuter rail, and bus service–while prioritizing active transportation through safe, connected bicycle paths/ trails, and pedestrian routes.
5. Adopt a Complete Streets Policy to ensure safe access for all users, including pedestrians, bicyclists, vehicles, and transit riders of all abilities.

PUBLIC & OPEN SPACE

To provide high quality, maintainable, diversified parks, recreation and open spaces that engage all ages to support the needs of a growing healthy Vineyard community.

City of Vineyard Goals

<u>Open Space:</u>

- OS1. Protect existing wetlands and open spaces utilizing sustainable green infrastructure.
- OS2. Support the formation and development of the Walkara Way Conservation Area.
- OS3. Increase the amount of publicly accessed open spaces provided throughout Vineyard.

<u>Parks:</u>

- P1. Provide an appropriate number and size of parks and open space for all Vineyard residents and visitors.
- P2. Ensure all residents have access to well- maintained, clean and safe open space, parks and recreational facilities.
- P3. Provide a range of recreation amenity types that appeal to all Vineyard residents and visitors.

<u>Trails:</u>

- T1. Enhance, improve and connect existing bicycle and pedestrian trail network throughout the city and to the regional trail network.
- T2. Prepare a comprehensive Bicycle Master Plan to strategically plan for the future of cycling in Vineyard and the region.

<u>Lakefront:</u>

- L1. Ensure the Lakefront is an active, celebrated, and engaging place that residents and visitors enjoy by improving and developing sections of the shoreline and making needed improvements to adjacent lands.

City of Vineyard Objectives

FUTURE LAND USES

To promote responsible growth, through well-planned neighborhoods that honor natural surroundings and strategically fit our close- knit and diverse community spirit, to continue to improve Vineyard's quality of life.

City of Vineyard Goals

1. Enhance Vineyard's identity as a community with a high standard of living, a diverse economy, and rich mixture of housing and recreation opportunities.
2. Participate in larger scale, regional planning to coordinate land uses and to maintain regional networks.
3. Develop a central business area that is easily accessible to all residents and visitors to serve as Vineyard's downtown.
4. Encourage a pattern of growth that reflects the City's ability to efficiently provide necessary services and anticipates the resource needs of future generations.
5. Provide an adequate supply of public and private parking options in Vineyard.

MODERATE INCOME HOUSING

To ensure the availability of a range of housing options, including moderate income housing, to meet the needs of the population that desires to live in Vineyard.

City of Vineyard Goals

1. Provide opportunities for moderate income households to purchase attainable housing to support the economic vitality of the community.
2. Encourage and promote affordable housing developments by incentivizing developers to build this type of housing.
3. Provide the framework for the successful integration of a mix of housing types in the community's various neighborhoods.

ECONOMIC DEVELOPMENT

To support an economic program that attracts new businesses and target industries, increases municipal revenue streams, creates long-term fiscal health, and supports the economic vitality and wellbeing of residents and businesses.

City of Vineyard Goals

1. Create an effective and proactive business recruitment program that directs resources toward targeted businesses and industries.
2. Establish criteria and methodology for reviewing, evaluating and updating City incentives to attract new businesses.
3. Maintain and improve the long-term economic strength of the community with a business retention program.
4. Ensure the City's long-term fiscal health by taking measures to establish a larger tax base of both property and sales tax revenues.
5. Establish zoning that encourages strategic, accessible and centralized economic centers that will integrate appropriately into the community.
6. Activate Vineyard's natural resources, including the lakefront and Utah Lake, to improve the tourism sector of the economy and attract new businesses.
7. Focus future development and investment efforts on implementing the Town Center and Forge Special Zoning Districts while maintaining the intent of these districts to create distinctive walkable village centers.
8. Unify and brand the Eastlake Industrial District as one cohesive business park district.
9. Leverage Utah Valley University's technology assets and human resources to promote economic development in Vineyard.

Public Outreach

The Vineyard Station Area Plan was shaped by input from a wide range of local stakeholders and community members through both in-person and virtual engagement.

In June 2023, the planning team hosted a booth at the well-attended Vineyard Days community event. Team members from Sasaki and the City of Vineyard spoke with dozens of residents and families, gathering feedback on key topics that helped guide the plan.

In addition, a virtual workshop presentation was created for the City to share during online meetings.

Throughout the planning process, the team held regular discussions with key stakeholders–including elected officials, City staff, nearby property owners, developers, and representatives from Utah Valley University, the Huntsman Cancer Institute, and surrounding jurisdictions.

Community Open House

Vineyard Days Event
June 2023

- 75+ Attendees
- 60 Comments
- 4 Public input points
- comment cards

Community Virtual Workshop Presentation

Vineyard Station Area Plan
Presentation

- Presentation developed for use by the City
- Live-input Question with Menti integration
- Potential for hundreds of participants

Skakeholder Engagement

From the very beginning of the Vineyard Station Area Plan, the City understood that the future of the station area would rely on close coordination among its many partners and neighbors. Throughout the planning process, Vineyard City staff and the consultant team met often with key stakeholders to make sure the plan reflected both local priorities and regional opportunities.

These stakeholders included MAG, elected officials, city staff, nearby property owners, developers, and representatives from Utah Valley University, the Huntsman Cancer Institute, Utah Lake Authority, Utah Transit Authority, and surrounding communities such as Orem and Utah County. Each group offered valuable insight that helped the team understand the technical, environmental, and practical factors that would shape the area's redevelopment.

Regular Coordination Meetings

The planning team worked closely with city departments including Community Development, Engineering, and Public Works. Regular coordination meetings allowed staff to review ideas, share updates, and align plans for infrastructure, zoning, and transportation. These discussions helped ensure the plan would be realistic to implement and consistent with the city's broader goals and future capital projects.

Property Owner and Developer Conversations

Because most of the land within the Station Area is privately owned, Vineyard City met frequently with property owners and developers such as Flagborough, MS Properties, and The Forge. These meetings focused on development timing, land readiness, and how ongoing environmental cleanup could influence phasing. Their collaboration helped refine the plan's land use and open space framework to match the realities on the ground.

Institutional and Regional Partners

Utah Valley University and the Huntsman Cancer Institute were actively engaged in the planning process. Their teams provided feedback on mobility, access, and future growth, helping shape recommendations for new roadway connections, transit integration, and innovation-related job opportunities. The City also worked with the Mountainland Association of Governments, Utah Department of Transportation, and Utah Transit Authority to make sure transportation improvements supported the long-term vision for the station area.

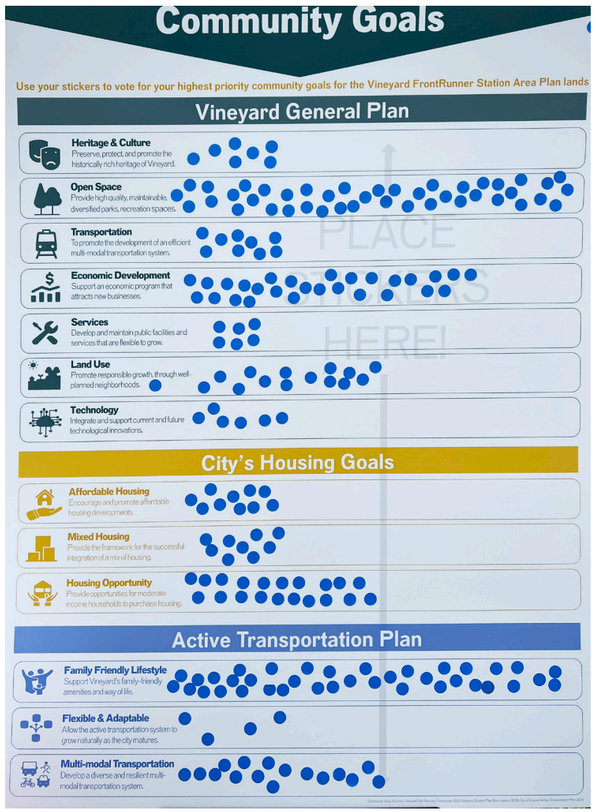
Ongoing Collaboration

Engagement with stakeholders did not stop once the plan was completed. Vineyard City continues to coordinate with property owners, developers, and agency partners as work moves toward implementation. These ongoing conversations are focused on environmental cleanup, infrastructure improvements, and public space design. The City remains committed to working together with all partners to bring the plan to life in a way that benefits residents, businesses, and visitors while staying true to Vineyard's values and community vision.

The Sasaki team and representatives from the City of Vineyard interacted with dozens of community members of all ages at the City's Vineyard Days event in June 2023.

Community Goals

At the June 2023 Vineyard Days event, the planning team invited residents to share their vision for the future of their growing community. Participants used blue stickers to vote on the 2019 Vineyard General Plan goals they felt were most important for the Vineyard Station Area Plan area. The photo below shows the completed activity with the sticker votes, and the chart to the right summarizes the results.



Priority Goals for Vineyard Station Area Plan Lands

GENERAL

Open Space — 43
Provide high quality, maintainable, diversified parks, recreation spaces.

Economic Development — 28
Support an economic program that attracts new businesses.

Land Use — 15
Promote responsible growth, through well-planned neighborhoods.

Transportation — 9
Promote the development of an efficient multi-modal transportation system.

Heritage & Culture — 7
Preserve, protect, and promote the historically rich heritage of Vineyard.

Services — 6
Develop and maintain public facilities and services that are flexible to grow.

Technology — 6
Integrate and support current and future technological innovations.

HOUSING

Housing Opportunity — 20
Provide opportunities for moderate income households to purchase housing.

Affordable Housing — 10
Encourage and promote affordable housing developments.

Mixed Housing — 9
Provide the framework for the successful integration of a mix of housing.

TRANSPORTATION GOALS

Family Friendly Lifestyle — 38
Support Vineyard's family-friendly amenities and way of life.

Multi-modal Transportation — 16
Develop a diverse and resilient multi-modal transportation system.

Flexible & Adaptable — 4
Allow the active transportation system to grow naturally as the city matures.

Future Uses

At the June 2023 Vineyard Days event, the planning team asked residents what types of uses or destinations would draw them to the Vineyard Station Area Plan area in the future. Participants used yellow stickers to vote, as shown in the photo of the completed activity below. The chart to the right provides a summary of the results.

What uses would bring you here?

I want to work/make/shop here.

Retail/Food & Beverage	72
Office	8
Industry	1

I want to live (or have the option to live) here.

Low-rise Housing	33
Multifamily Housing	9
High-rise Multifamily Housing	8

I want to work/make/shop here.

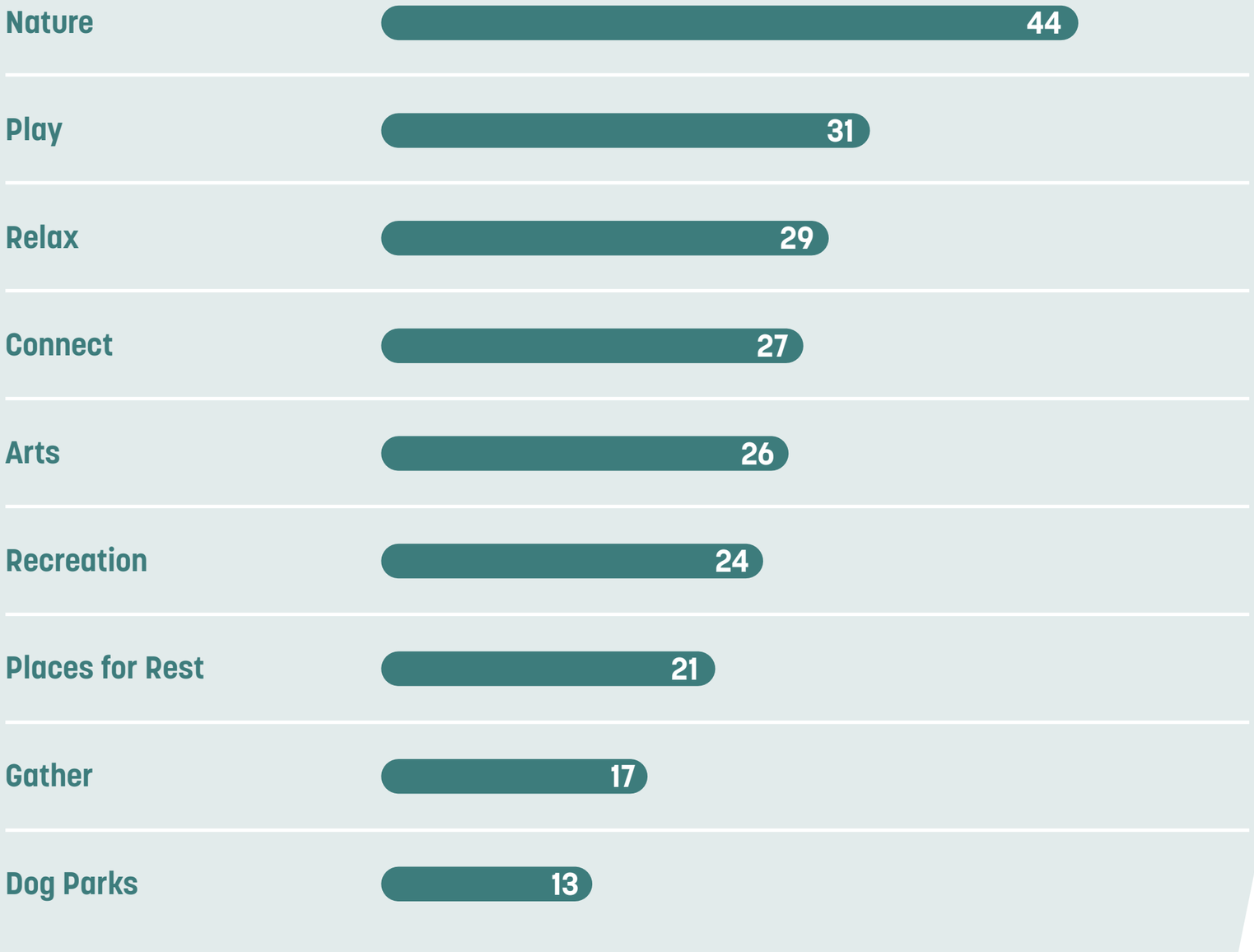
Parks & Nature	56
Entertainment	32
Community, Culture, Arts & Events	20

Public Spaces

At the June 2023 Vineyard Days event, the planning team asked residents questions about their the kind of uses that would bring them to the Vineyard Station Area Plan lands in the future. Their votes are depicted with yellow stickers on the photograph of the completed activity below and are tallied in the chart to the right.

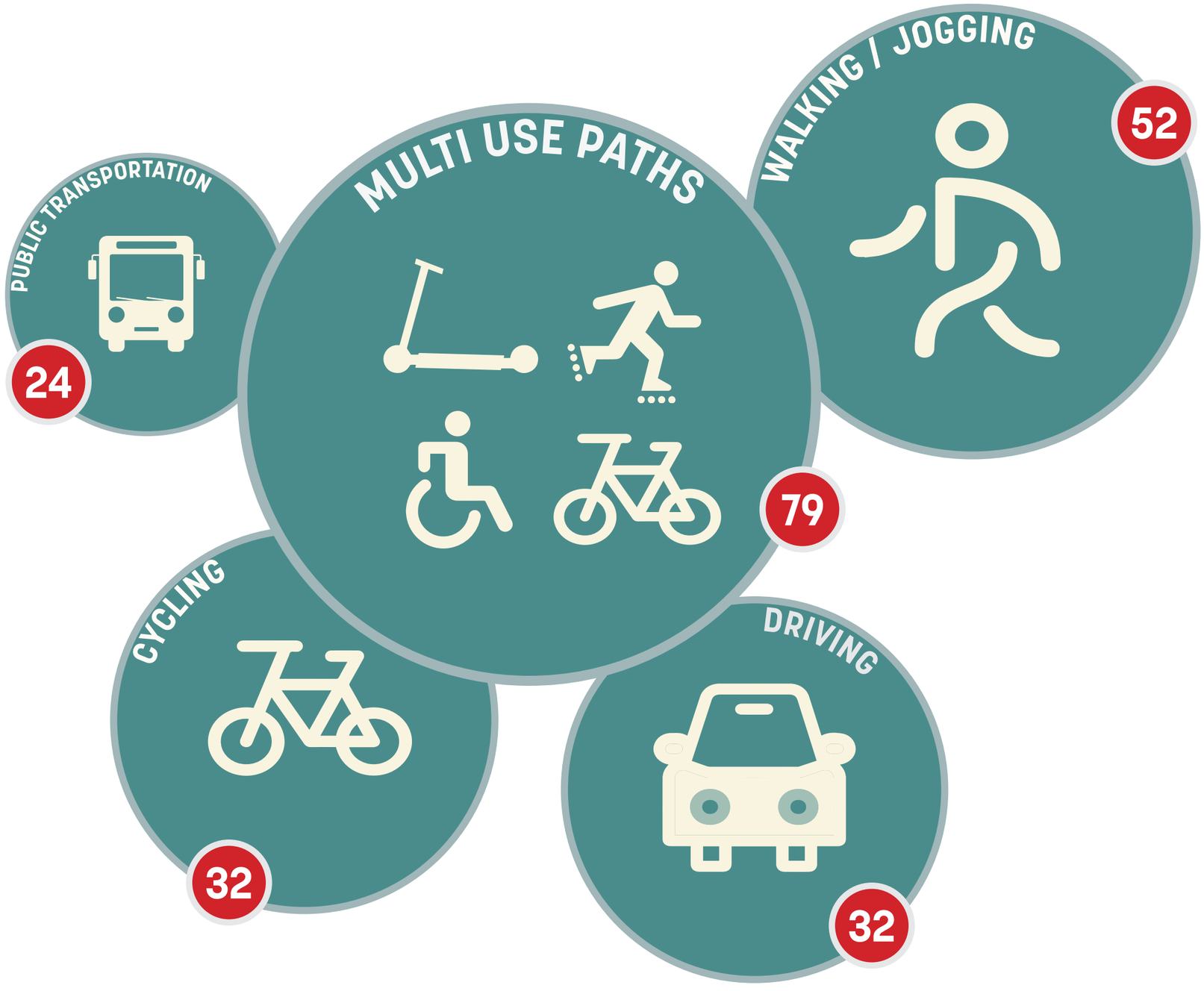
What kind of public spaces does Vineyard need more of?

Public realm, open space, and activities you would like to see more of:



What We Heard

At the June 2023 Vineyard Days event, the planning team asked residents questions about their preferences to moving to, through, and from the Station Area Plan lands in the future. Their votes are depicted with red stickers on the photograph of the completed activity below and are represented scaled by popularity to the right.



Development Principles

The following principles emerged from the planning team's engagement with City leaders and staff, project stakeholders, community members, and established local objectives.

Supporting Growth

Vineyard as a crossroad across the region providing connections to regional networks across Utah county

Job Growth

Vineyard as a crossroad across the region providing connections to regional networks across Utah county

Transportation

Vineyard as a crossroad across the region providing connections to regional networks across Utah county

Housing & Recreation

Vineyard as a crossroad across the region providing connections to regional networks across Utah county

Design Principles

Design Principles for the Vineyard Station Area plan serve to connect local goals and priorities, site-specific features and opportunities, and best practices in planning and urban design to inform a future redevelopment and public realm configuration within the 430-acre area.

Design Principles provide a basic framework for parks and greenways, neighborhoods and urban centers, and key connective corridors.

Parks and Greenways

This framework creates two park spaces with linear east west mixed-use corridors. This framework creates a loop of greenways connecting a series of open spaces together.

Neighborhood Centers

Neighborhood centers create nodes of density and activity, where active ground floor uses meet major street corridors and greenways.

Mill Road Corridor

This framework centers Mill Road as a commercial Main Street. Mill Road is designated to serve multi-modal transit and primary pedestrian corridor.

04

Framework Plan

Disclaimer:
All illustrations in this document are conceptual and intended to show one possible approach to land use. They are not final, binding, or regulatory, and may change as planning and development progress.

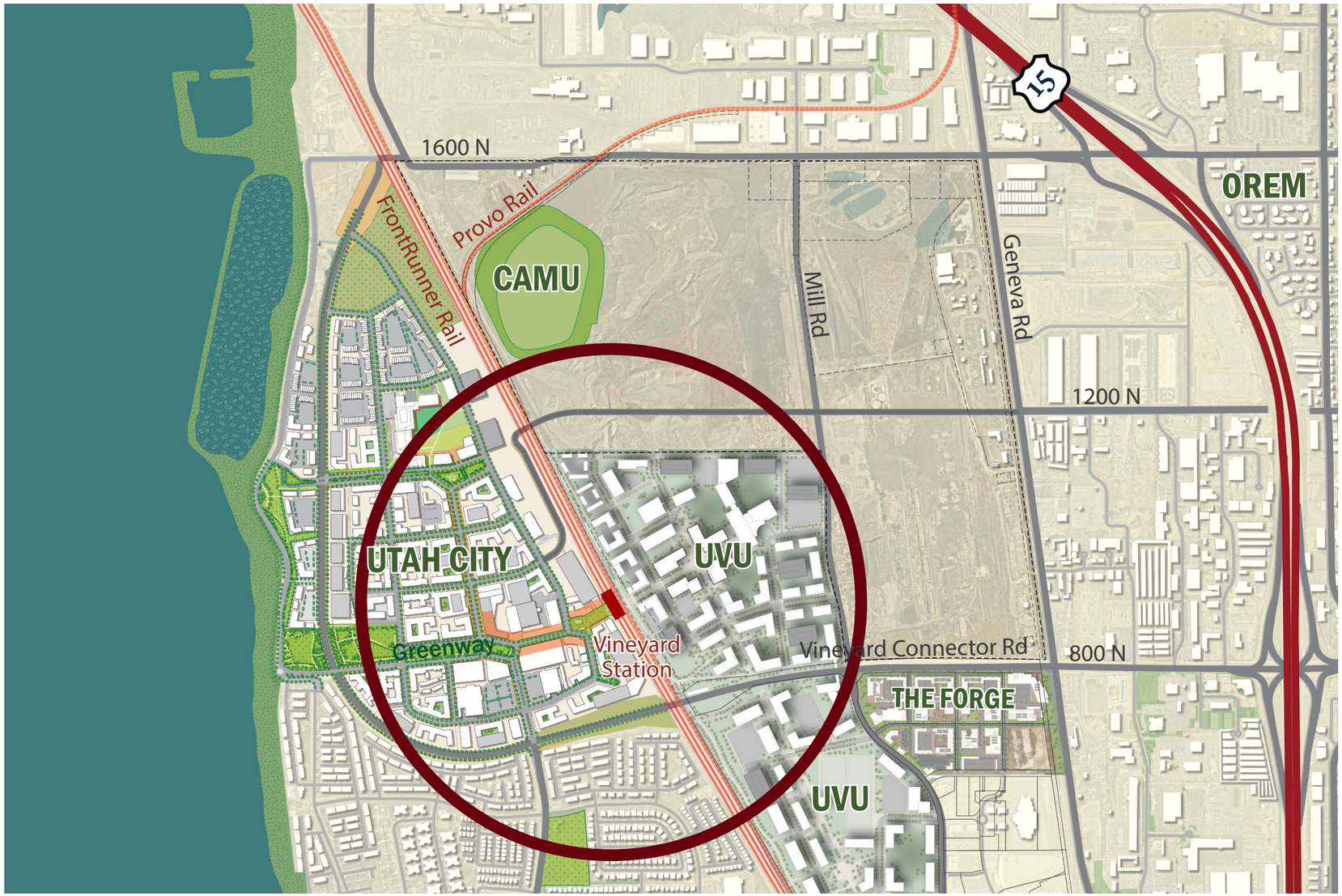
Contextual Influences

The framework plan for the Vineyard FrontRunner Station Area Plan is influenced by much of what is happening around it. The Utah City development to the west of the FrontRunner train line will soon bring thousands of new residents and daytime employees to the area, along with regionally attractive institutions and retail destinations.

Immediately southwest of the Station Area Plan lands, Utah Valley University (UVU) controls an area that is planned for expanded university programs, including facilities for academic, housing, student life, and institutional partners. Directly south of the Station Area lands, The Forge at Geneva is taking shape, including several blocks of medium density multifamily residential development and associated uses.

To the north and east of the Station Area Plan lands, across 1600N and Geneva Road, large swaths of low density commercial and industrial lands operate with easy access to I-15 and the area's rail infrastructure.

In considering the potential future of the Station Area Plan's 430 acres, the near and long-term future of its neighbors will have a major impact on what takes shape here and the quality of the place that emerges. Responding to these contextual influences requires a site framework that organizes future development in a way that connects to urban development to the west and south of the site while positioning future commercial and industrial uses on site to the north and east. This distribution and growth strategy will help ensure comfortable transitions between uses well into the future.



Half-Mile Radius - Statutory SAP Site

Note: Utah City and Utah Valley University (UVU) Plans in this image indicate future development on these properties.

0 1/4 mi 1/2 mi N

Concept Vision and Framework Plan

The conceptual plan for the Vineyard FrontRunner Station Area envisions a mixed-use district that is well connected to surrounding neighborhoods through extensions of key roadways. The plan builds on the area's existing context and responds to adjacent land uses.

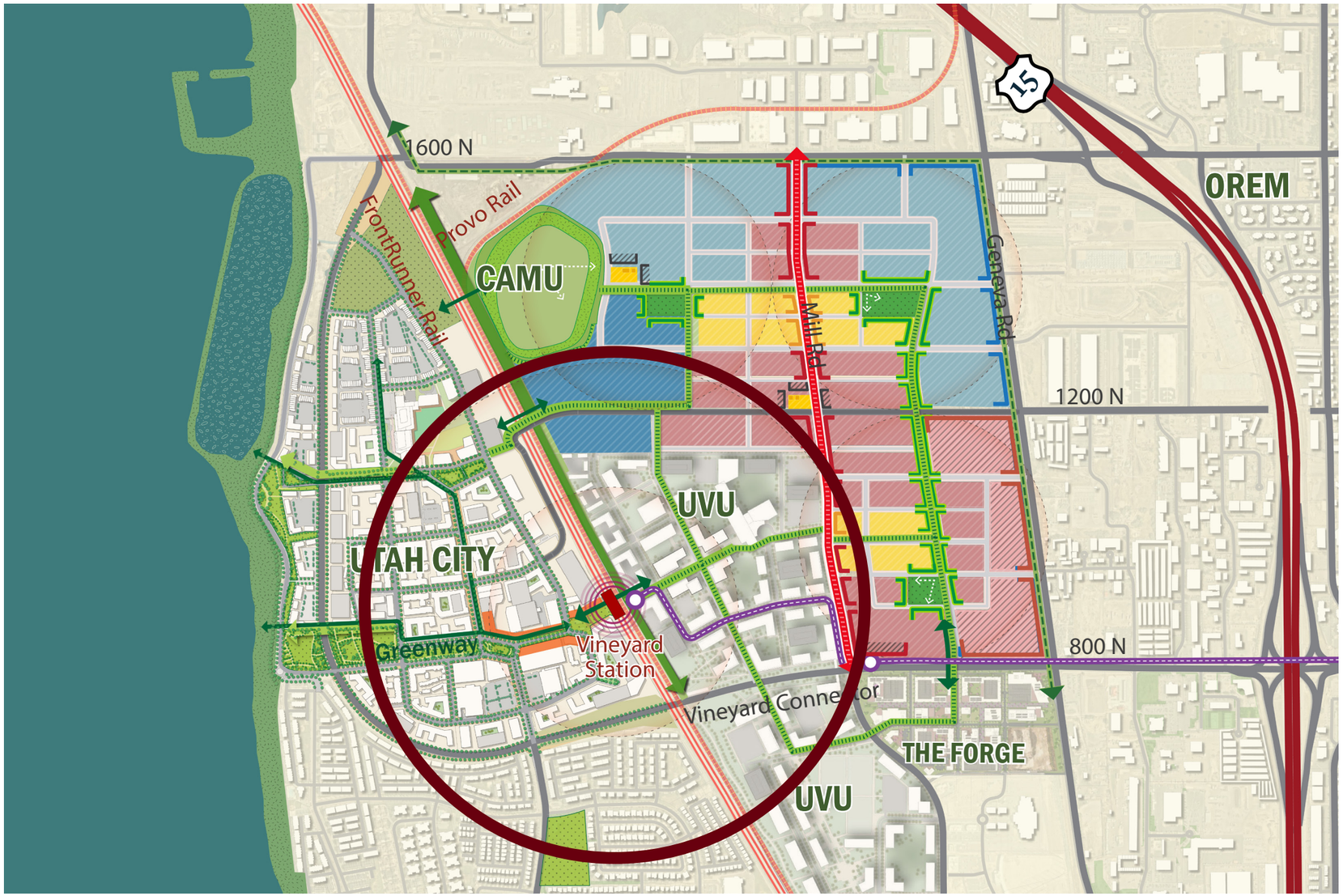
The primary street network is defined by two major extensions: 1200 North, which runs east to west across the site and connects over the FrontRunner tracks into Utah City; and Mill Road, which extends north from 800 North through the site to 1600 North. These two roads intersect at the center of the planning area.

A Regional Commercial Node is envisioned at the intersection of Vineyard Connector and Geneva Road that provides high visibility and convenient access to I-15. Additional, retail/mixed-use nodes are also envisioned integrated into each quadrant, but the exact locations and sizes will be determined at the time of more detailed site planning. The greatest quantity of mixed-use should occur proximate to the Vineyard Station.

The area is further structured around a network of parks and green corridors that connect through the site and link to surrounding areas.

The land use strategy focuses higher-density and pedestrian-oriented development closest to the Vineyard Station to create an active, vibrant core. Lower-density uses, such as industrial and large-scale commercial development, are planned for the northern and eastern parts of the site. These edge areas are intended to align with similar adjacent uses.

Residential uses are permitted throughout the site; however, their exact locations will be determined during detailed site planning in coordination with environmental suitability. The alignment of streets, the size and type of open spaces, and the placement of specific land uses remain flexible and will be refined as planning progresses.

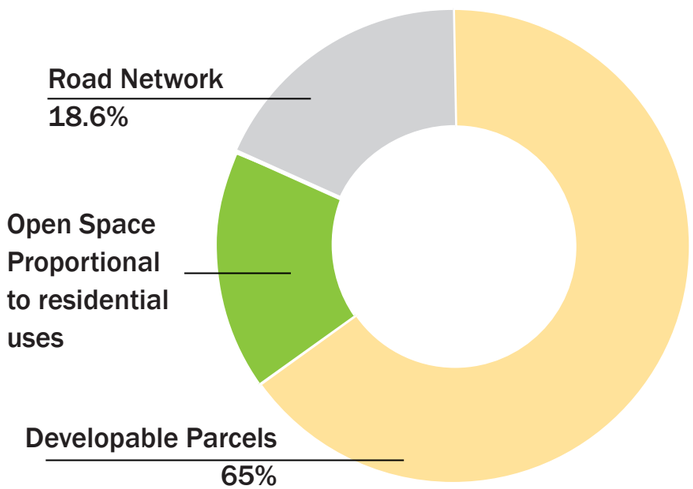


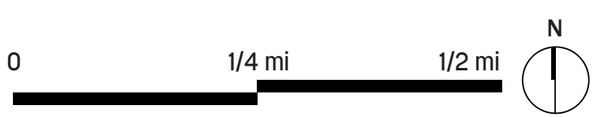
This map is conceptual and for illustrative purposes only. Land use, layouts, and features shown are subject to change and are not legally binding.

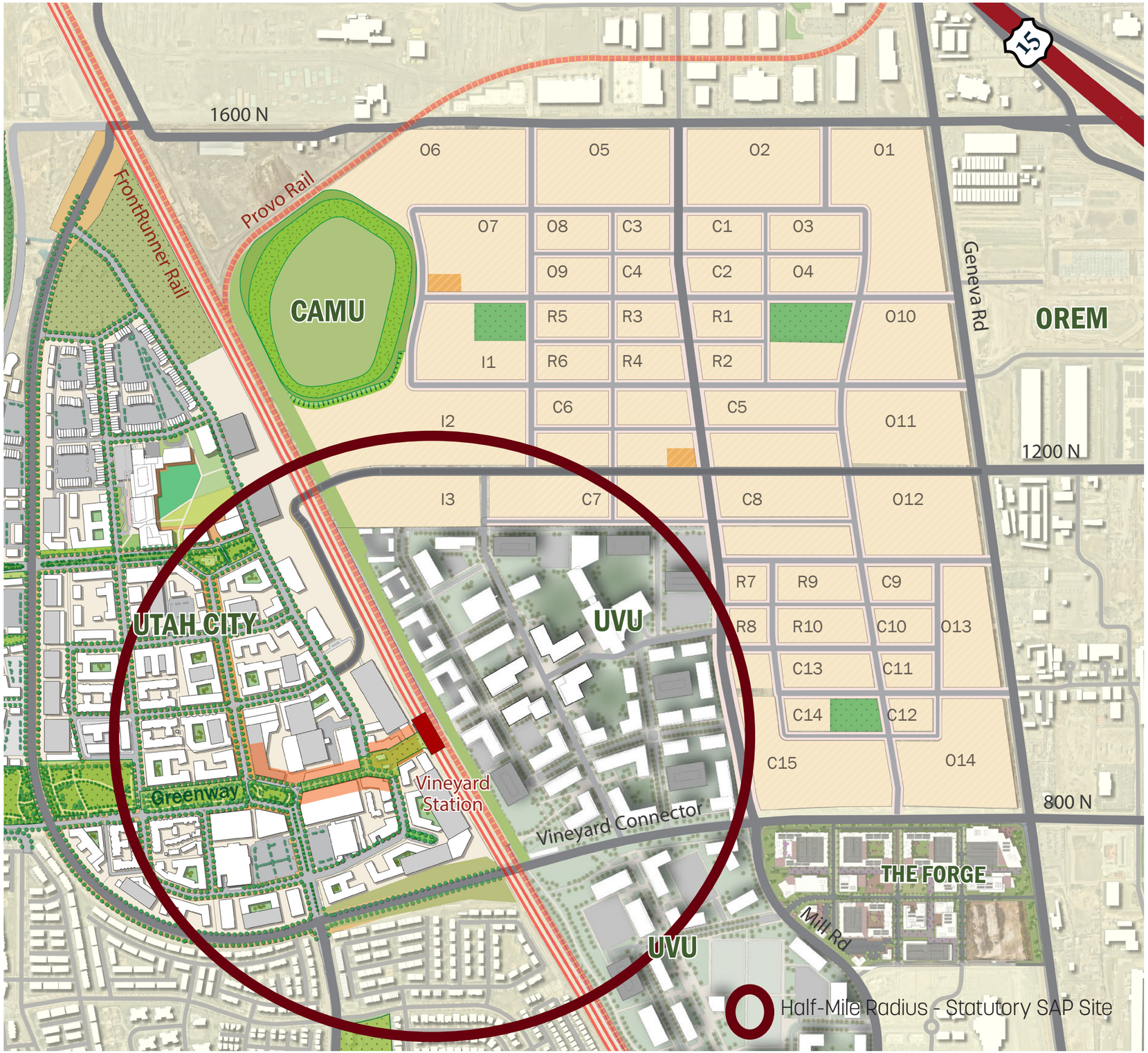
Parcel Plan

The development framework plan for the Vineyard FrontRunner Station Area Plan lands sits within the structure defined by the primary circulation and park/open spaces networks. Fixed conditions, such as the CAMU site, the path of the rail lines that cross through or abut the area, and the long-term plans for development on adjacent sites will influence the experience, quality, and accessibility of the future places within the Station Area Plan lands.

Generally, larger development sites that can accommodate regional commercial development, light industrial uses, or corporate campuses are located at the periphery of the site, responding to the infrastructure assets and neighboring sites featuring similar developments. Smaller scale, urban, and mixed use sites are located along the area's major crossroads and within the center of the site.







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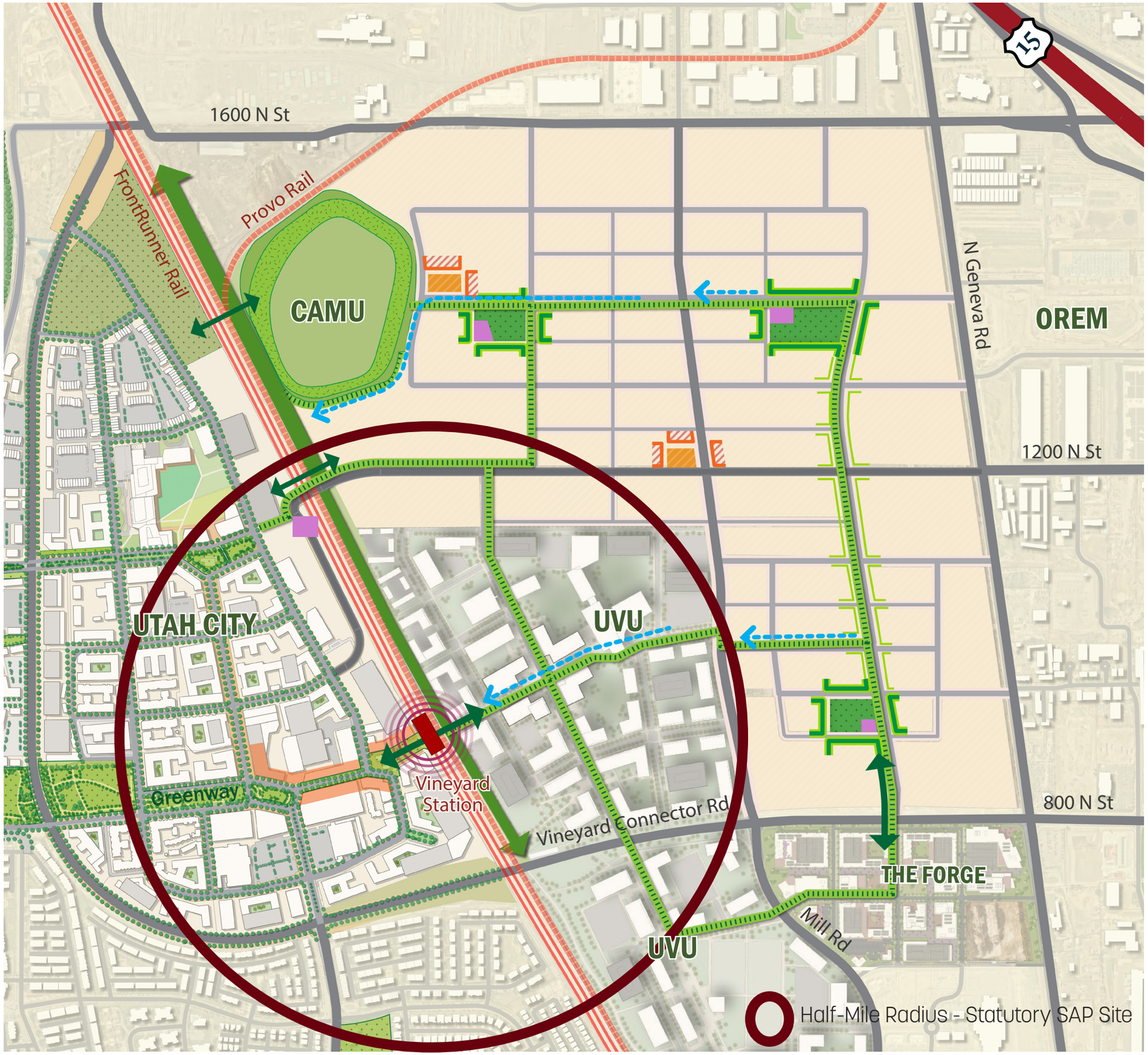
Open Space Network

The planned open space network consists of park spaces, public plazas, and open space corridors that traverse the site and provide green connections within the area and out to its neighbors. The framework allows for a diversity of open and recreation spaces to emerge at key locations within the site. The CAMU, which comprises a contaminated site that has been capped, is reserved as a naturalized open space, creating opportunities for recreation and premium frontages along its edges. Smaller parks and plaza spaces are strategically sited at key intersections to provide easy access to emerging urban development.

The entirety of the site is served by green pedestrian connector corridors that reach from site edge to site edge, from north to south and east to west. These 20-foot wide corridors are intended to accommodate a diverse range of uses, including multi-use paths, formal recreation (e.g., fields, courts, equipment) and passive open spaces for casual recreation and moments of repose.



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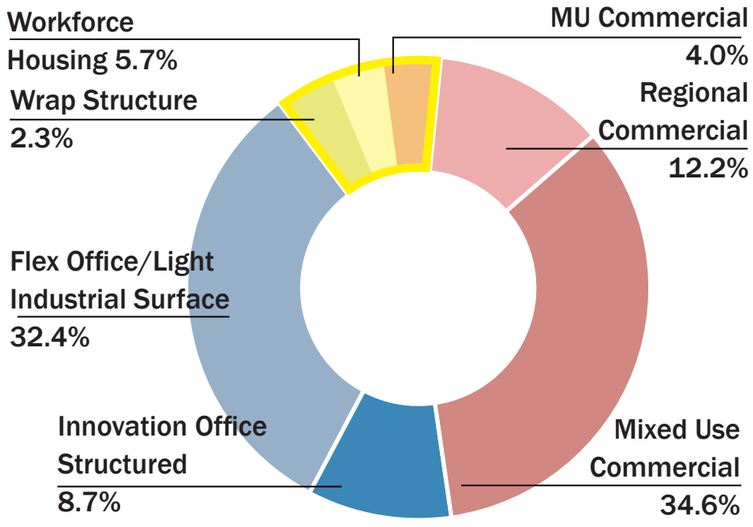
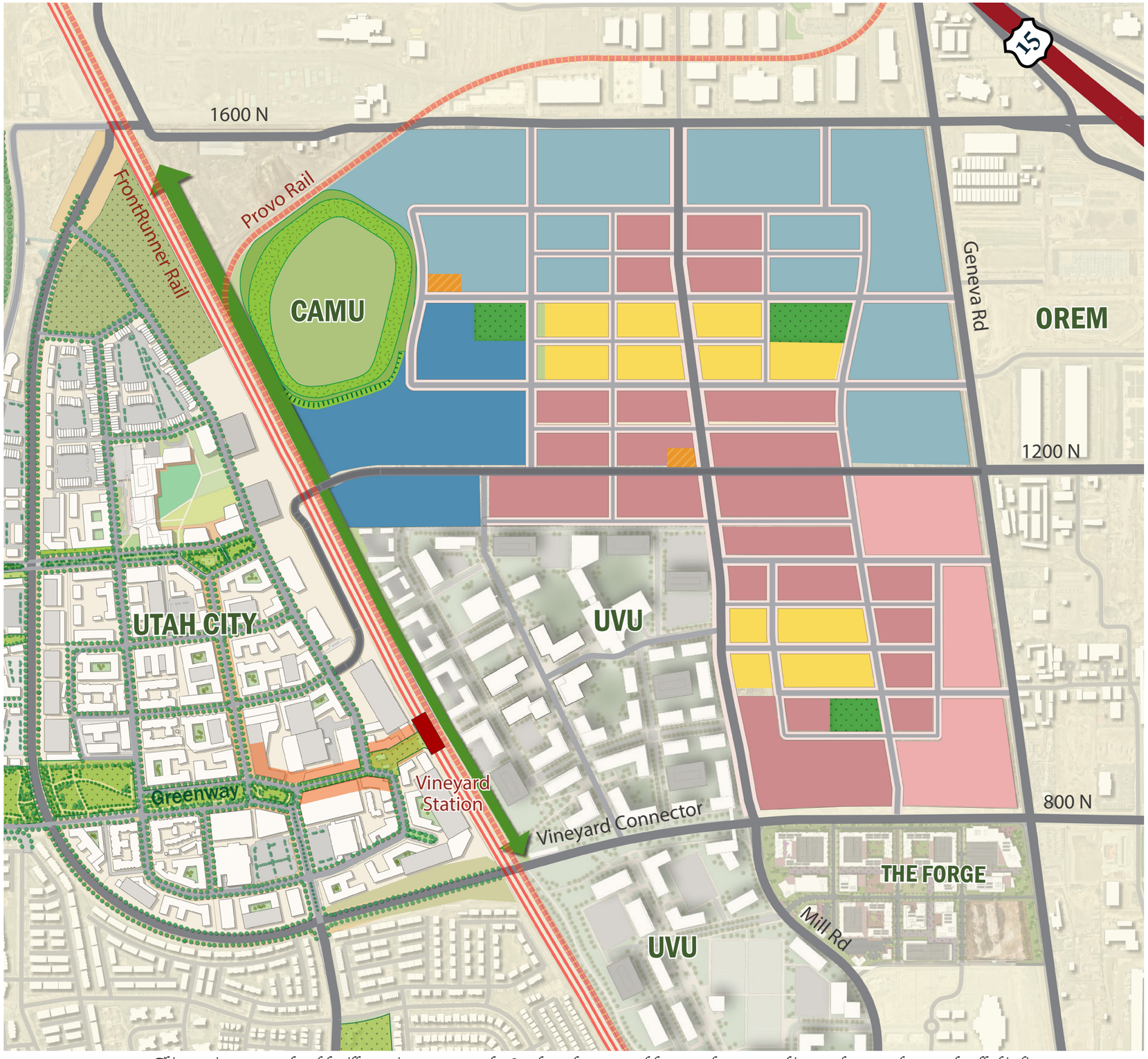
Land Use Concept Plan

The vision for the future of the Station Area Plan lands is for a mixed-use community centered on employment. Given the site's context and past as a place of heavy industry, contamination issues still impact potential future uses, including the potential for ground floor residential uses. In consideration of those realities, along with the many residential projects underway and planned for the immediate area, the vision for the Station Area Plan lands centers on commercial uses, with nearly 90% of the total site area designated for this kind of development.





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Phasing Plan

As Vineyard continues to grow rapidly, this plan is designed to support flexible, phased development. Property owners may begin implementing projects on any site, as long as they align with the overall land use vision and framework outlined in the plan.

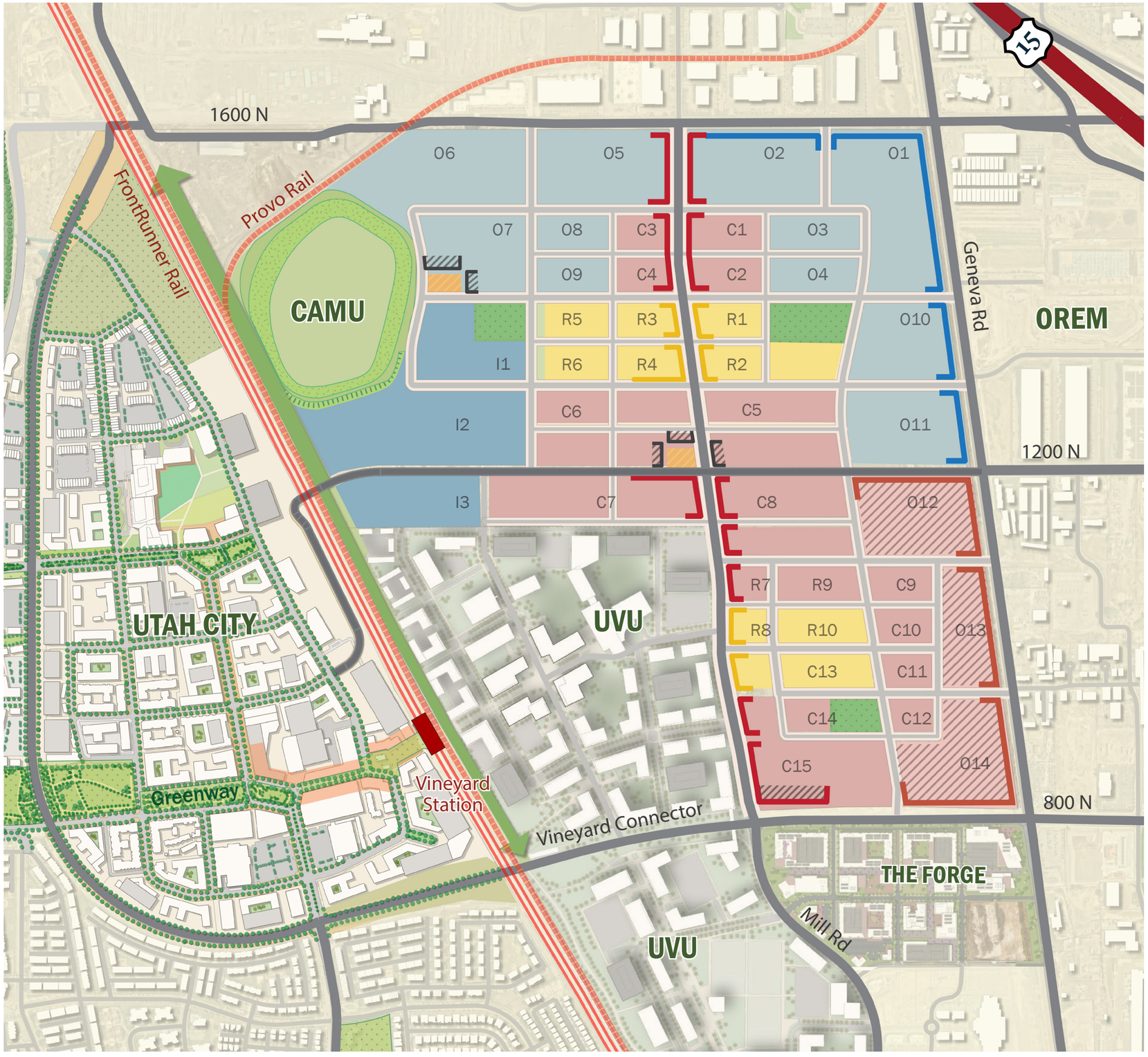
A key step in unlocking development throughout the area will be constructing major infrastructure–specifically, extending Mill Road to the north and 1200 North to the west. These extensions will improve access and make it possible to develop interior parts of the site, including areas planned for higher activity and key public spaces along Mill Road.

While the plan allows for a variety of development types over time, it recommends that certain high-visibility sites–especially those along Mill Road and 1200 North–be prioritized for phases that include ground-floor retail, public plazas, parks, and green corridors. Reserving these locations for later phases ensures they are built out in a way that supports vibrant, walkable public spaces and long-term community benefit.

Active Ground Floor Edges

- Plazas
- WF Housing to be considered after environmental study
- Mixed Use Commercial
- Regional Commercial
- Flex Office/Light Industrial

0 1/4 mi 1/2 mi N



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Apartment Homes

The vision for the Station Area Plan includes a mix of land uses, with higher-density, urban-style development focused in the center of the site and along key corridors like Mill Road and 1200 North. A key component of this vision is multifamily housing, including mid-rise apartments and condominiums.

These buildings offer much-needed housing options for individuals and families, providing convenient access to nearby parks, jobs, retail, and public transit. To support an active and welcoming streetscape, residential developments should feature ground floors with transparent, publicly visible uses such as lobbies, fitness centers, or shared amenities. In designated "active zones"–including Mill Road, the central portion of 1200 North, and areas adjacent to major parks and plazas–ground floors should prioritize retail and other street-activating uses.

Parking for residents will be provided within each development site, ensuring that new housing supports both walkability and functionality without detracting from the pedestrian experience.

Commercial Mixed Use

The areas designated as Commercial Mixed-Use within the Station Area Plan are intended to be the most vibrant and active parts of the district. These zones are prioritized for ground-floor activation and should feature a dynamic mix of retail, dining, entertainment, services, and publicly accessible spaces within private developments.

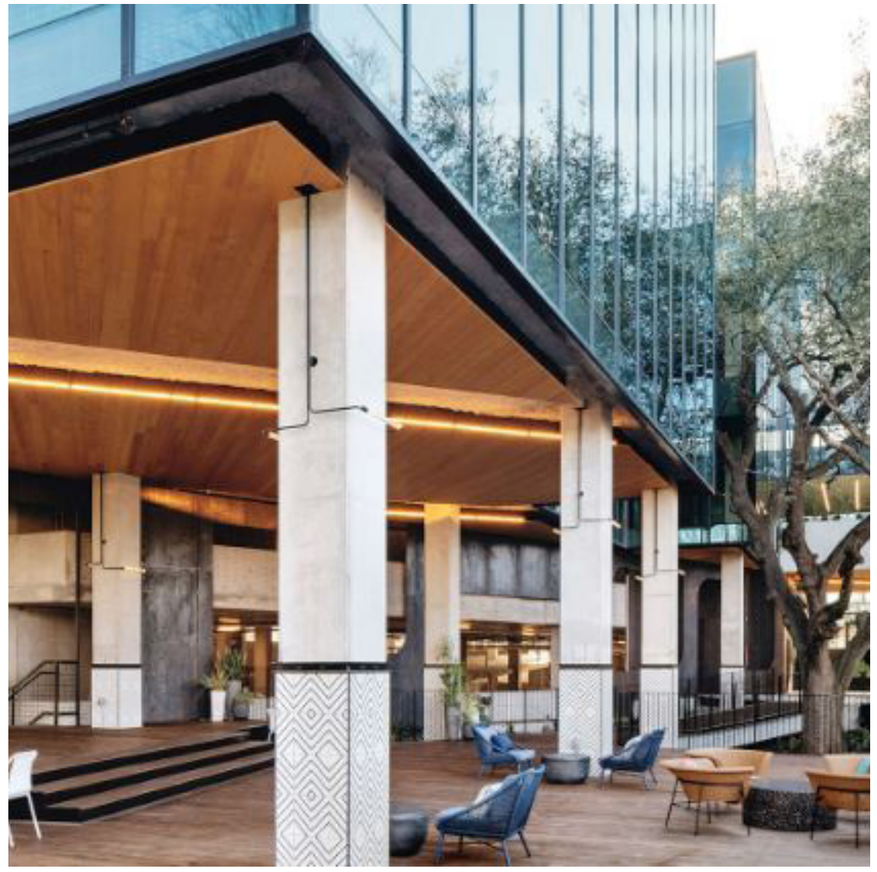
To support a lively pedestrian environment, streets in these areas should be designed for slower vehicle speeds and prioritize safety, comfort, and accessibility for people walking and biking. The public realm should include flexible and inviting spaces–such as plazas, wide sidewalks, and shaded seating areas–that encourage gathering, lingering, and spill-out activity from nearby shops, restaurants, and vendors.

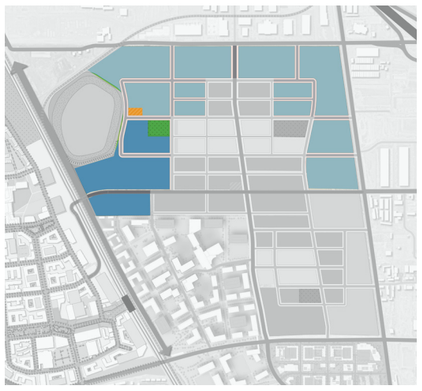
These commercial mixed-use areas will serve as key destinations within the district, supporting a walkable, community-oriented atmosphere.

Innovation & Office Uses

The areas designated for Innovation and Office uses in the framework plan are intended to accommodate a range of employment types, including professional offices, medical facilities, creative industries, and other job-generating uses. Concentrating employment in these areas will bring a high density of workers to the district, helping to support nearby Commercial Mixed-Use zones with steady demand for retail, dining, entertainment, and amenities.

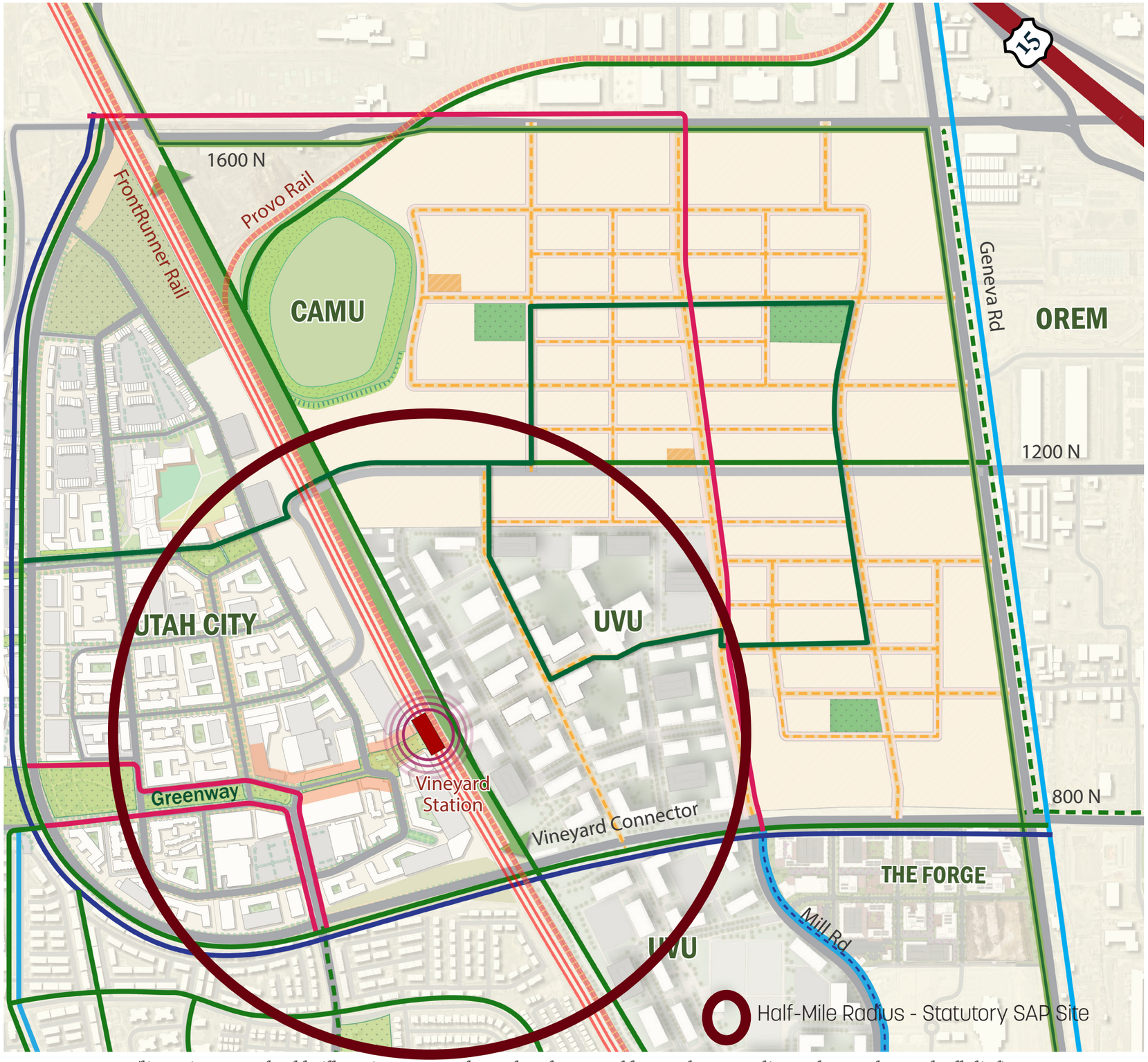
This synergy between employment and surrounding amenities contributes to a vibrant, balanced environment–one that supports employee well-being, encourages innovation, and fosters a dynamic, thriving workplace culture.





Active Transportation

The vision for the Station Area Plan lands includes a robust urban network of streets, pedestrian and mutli-use paths, bicycle infrastructure, and new and enhanced transit connections. The area is intended to make walking and biking to nearby destinations and transit hubs a safe, comfortable, and enjoyable experience for residents, students, and workers in the area. The network of routes on site creates new connections to the Vineyard FrontRunner station and to growth areas, such as Utah City to the west and the UVU satellite campus and Forge development to the south.



Enhanced Pedestrian Connections

Proposed Bike Lane

Bike Lane

Proposed Buffered Bike Lane

Shared Use Path

Proposed Shared Use Path

Proposed Separated Bike Path

0 1/4 mi 1/2 mi N

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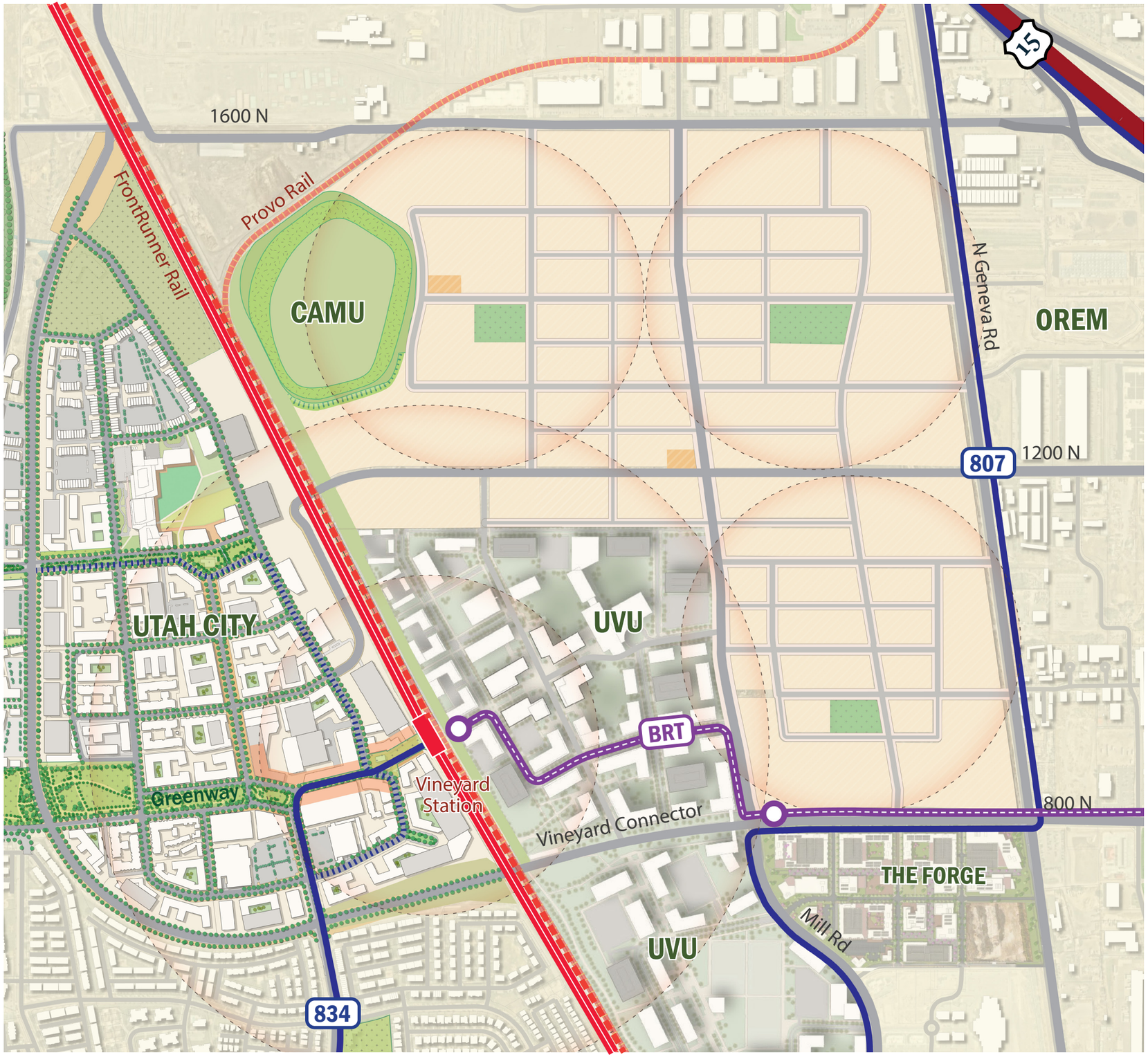
Transit Network

The Station Area Plan encompasses approximately 430 acres, nearly all of which fall within a one-mile radius of the Vineyard FrontRunner commuter rail station. This station provides regional rail access via the FrontRunner line. While the Provo Rail Line and a second regional rail line run along the western and eastern edges of the site, respectively, neither currently includes a station stop near the area.

In addition to rail, the site is currently served–and planned for expanded service–by regional "rubber-tire" bus transit. Existing Utah Transit Authority (UTA) bus routes operate along Geneva Road, 800 North, and Mill Road, which form the eastern and southern edges of the Station Area. Future transit improvements include a proposed Bus Rapid Transit (BRT) line along 800 North, connecting to the Vineyard FrontRunner station, and a new local Vineyard Center bus route to serve the Utah City development west of the Station Area.



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Street Network

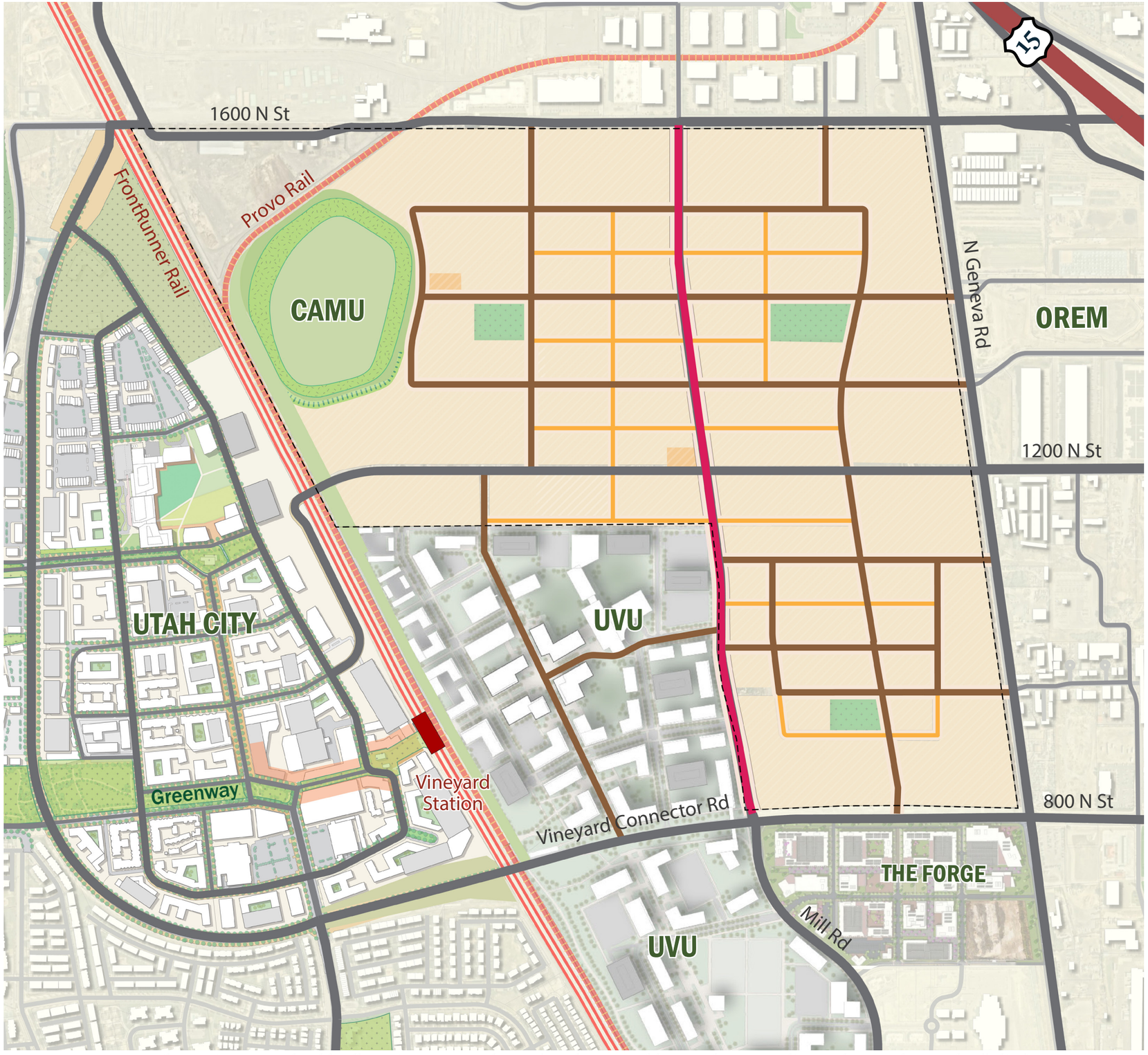
The framework plan for the Station Area outlines a dense, urban street network spanning the site's 430 acres. The area is bordered by major arterial roads–1600 North to the north, Geneva Road to the east, and 800 North to the south. Currently, 1200 North terminates at Geneva Road on the eastern edge of the site. However, both this plan and other adjacent development plans propose extending 1200 North westward through the Station Area, across the FrontRunner rail line, and into the developing Utah City neighborhood, eventually connecting with the Vineyard Connector.

Mill Road is the second primary roadway within the framework, with plans to extend it northward through the site to intersect with 1600 North. In addition to these main corridors, the plan establishes the expected spacing and alignment of secondary and local streets based on the character and intensity of the land uses envisioned in each subarea.

Beyond the primary access points at 1200 North and Mill Road, the framework identifies up to seven additional potential access points along 1600 North, Geneva Road, and 800 North. Some of these intersections may be restricted to right-in/right-out access, depending on future traffic operations and design constraints.

- Provo Rail
- Existing Highway 15
- Existing Arterial Roads
- Mill Road
- Proposed Secondary Roads
- Proposed Local Roads

0 — 1/4 mi — 1/2 mi — N

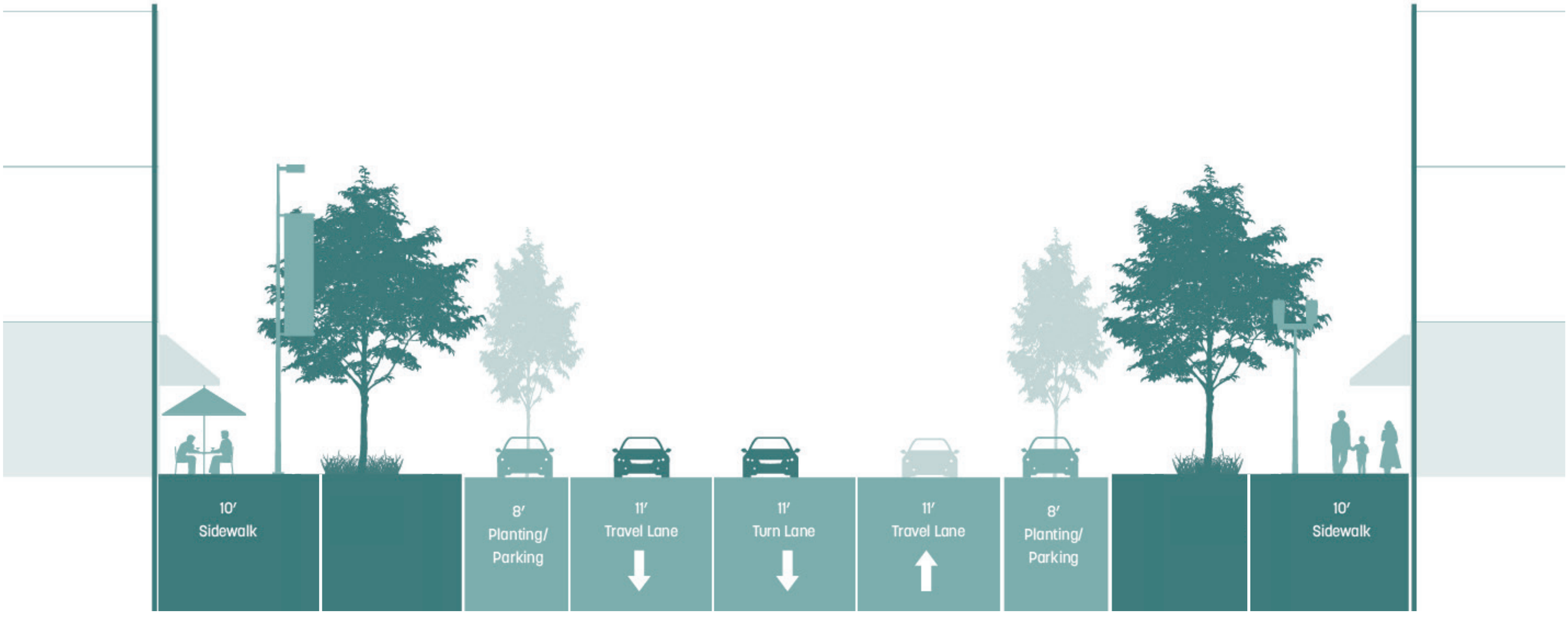


This map is conceptual and for illustrative purposes only. Land use, layouts, and features shown are subject to change and are not legally binding.

Mill Road (97' ROW)

The extension of Mill Road northward into the site is meant to serve as the new district's "Main Street", connecting a dense collection of mixed-use developments with active ground floors and comfortable pedestrian environments along and within the street. The section below depicts the proposed organization of Mill Road and the recommended dimensions for each component, including the sidewalk, planting zone, parking lanes, and travel lanes.

As a street that encourages active ground floors, the sidewalks are large to accommodate high levels of foot traffic and allow for spill-out activity from retailers and dining. Parking is provided on both sides of the street to enable easy transient parking for customers. Dedicated bicycle lanes are recommended and included in sections for other streets within the proposed Station Area Plan mobility network, where traffic levels are expected to be lower.



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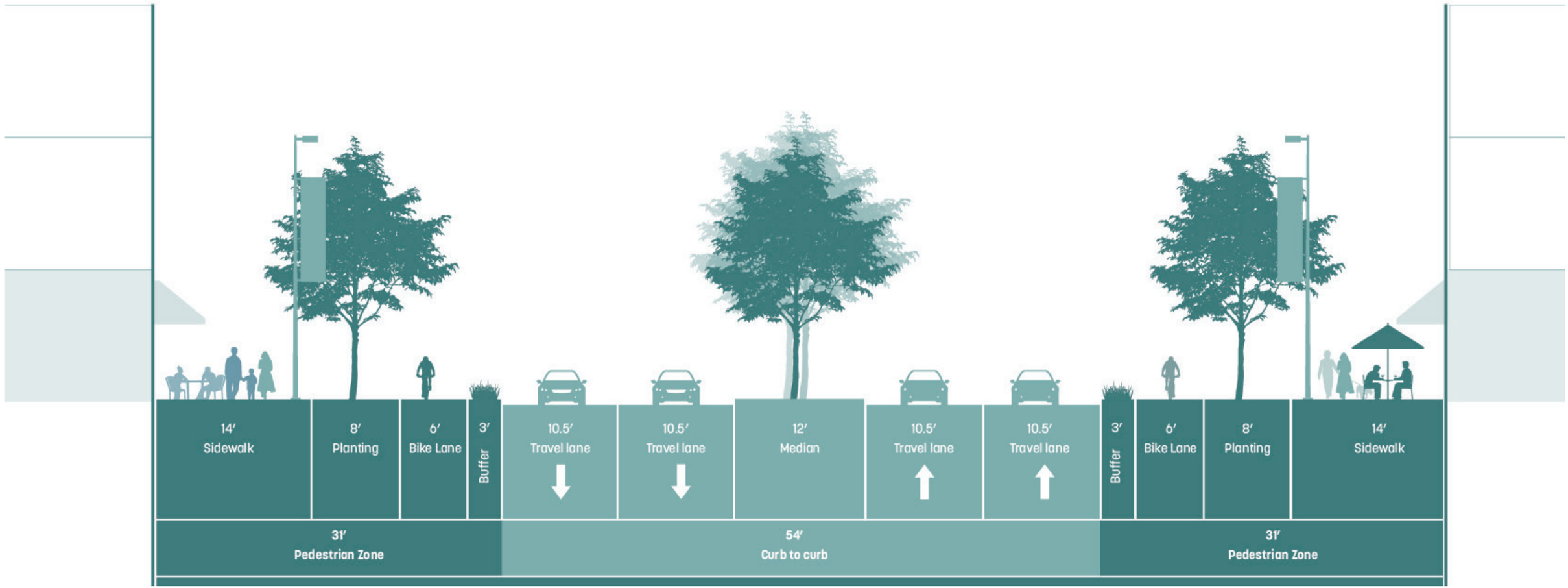
1200 N Street (116' ROW)

The extension of 1200 N westward into the Vineyard Station Area Plans creates the second primary connection to and through the site. The proposed section for this extension maintains the 116-foot right-of-way dimension of 1200 N east of the site. This proposed section includes two travel lanes in either direction with a twelve foot median separating the directions of traffic. Flanking the drive lanes on both sides are comfortable pedestrian, planting, and bike zones. This zone includes 31 feet on both sides, with a 14-foot sidewalk and spill-out zone for retail and food and beverage establishments, an eight-foot planting zone, a six-foot bike lane, and a three-foot planted buffer zone between the bike lane and the drive lane. This wide and comfortable urban streetscape provides a supportive environment for multi-modal mobility and walkability on this key connection through the district, to the Vineyard FrontRunner station, and over the rail corridor to Utah City.



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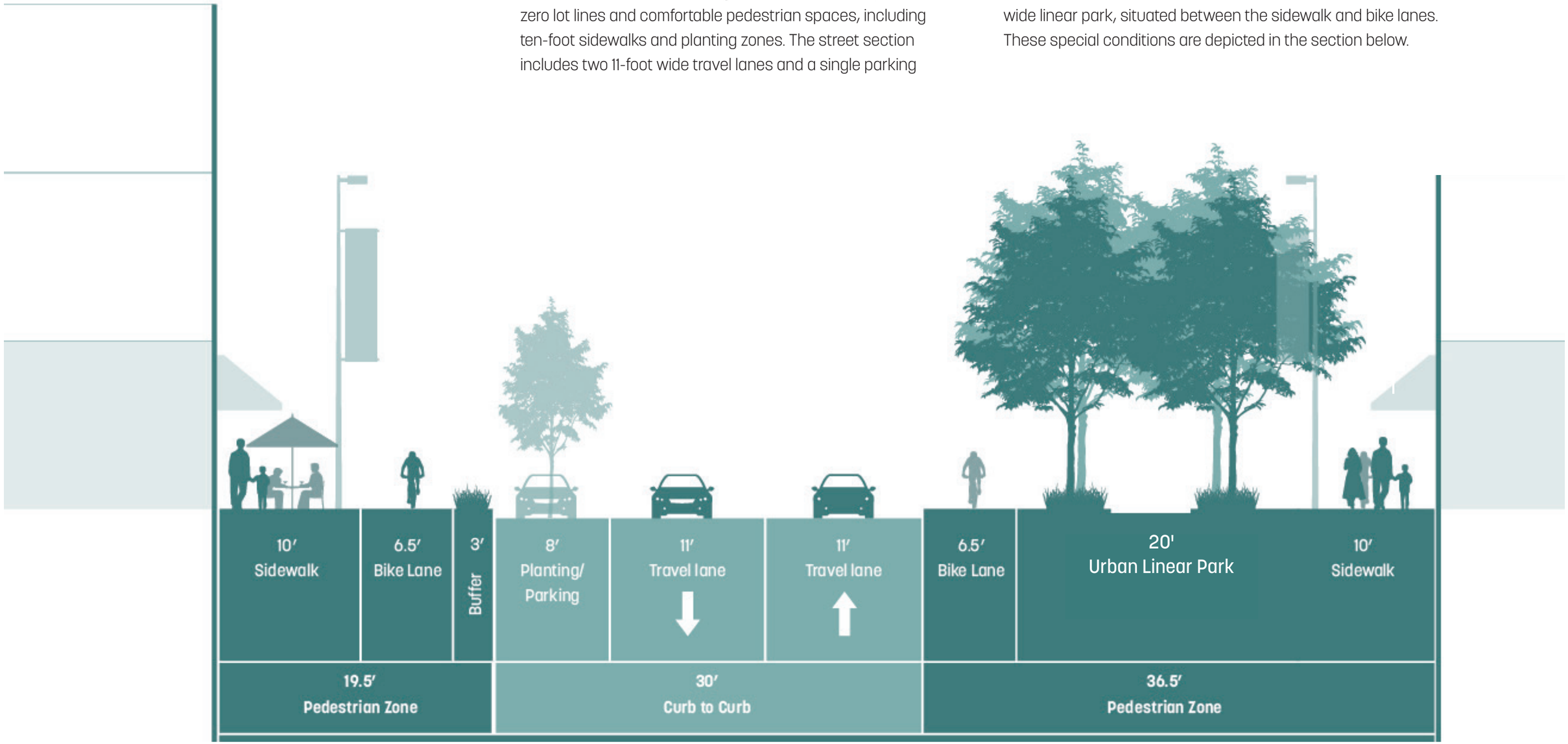
Connector Street (86' ROW)

The connector street type is a secondary street typology within the Station Area Plan lands. These streets connect to the primary arterials within the district, as well as several of the area's perimeter roads, including 1600 N, Geneva Road, and 800 N. These streets are designed for urban development with zero lot lines and comfortable pedestrian spaces, including ten-foot sidewalks and planting zones. The street section includes two 11-foot wide travel lanes and a single parking lane. Along some collector streets sections within the Station Area Plan lands, six and a half foot bike lanes are sited outside the sidewalk and planting zones, providing bi-directional separated bike access throughout the area. Select segments of connector streets also include elements of the area's 20-foot wide linear park, situated between the sidewalk and bike lanes. These special conditions are depicted in the section below.



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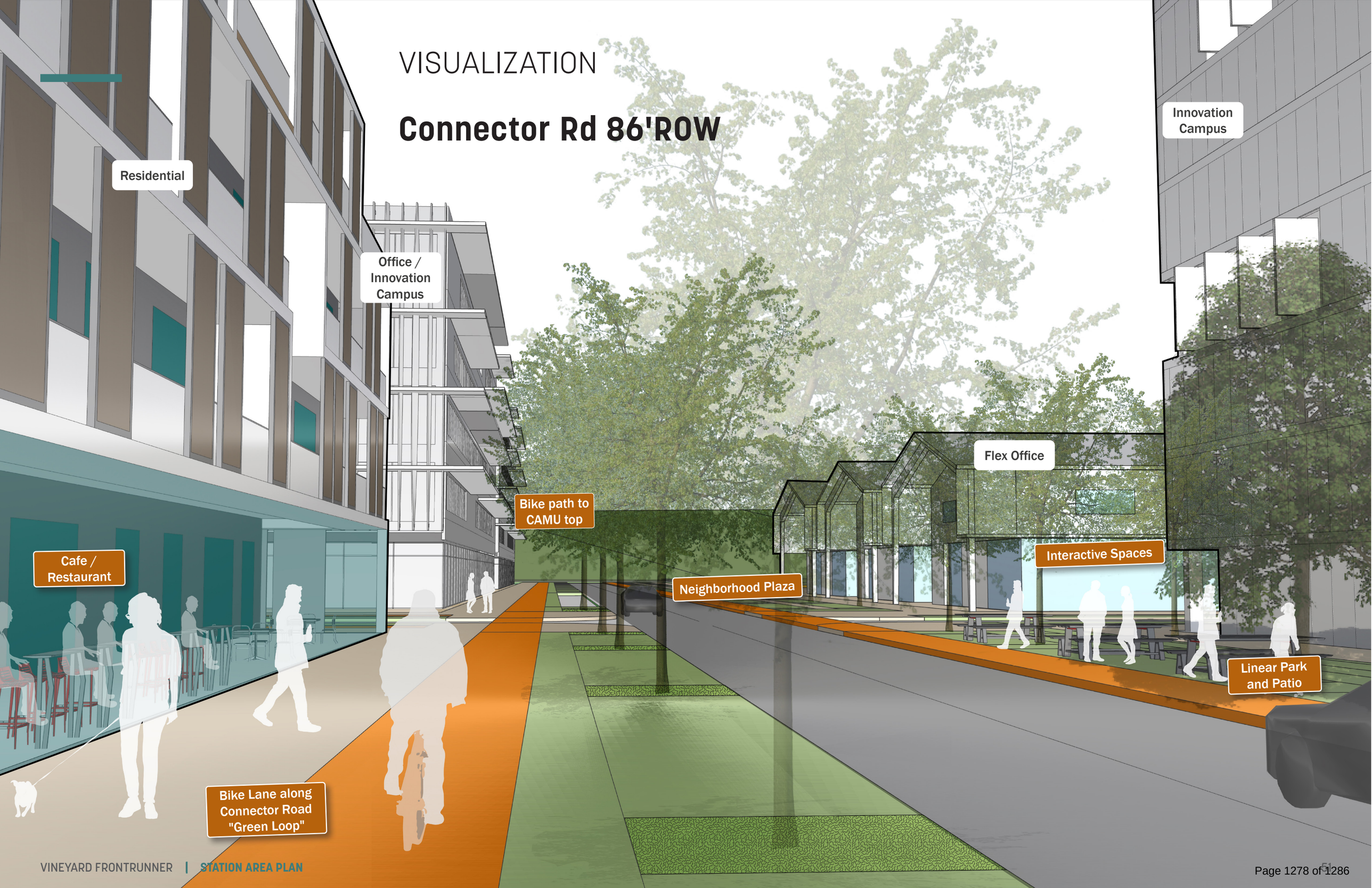
VISUALIZATION

Connector Rd 86'ROW



VISUALIZATION

Mill Road Extension

Labs / Research

Wrap Residential

Retail Frontage

On-Street Parking

Retail Frontage

Station Area Central Square

Bus Stop

Office / Commercial

Mill Rd

Office / Commercial

Cafe

Restaurant

Urban Park Planting Strip

1200 N

05

Implementation & Action Plan

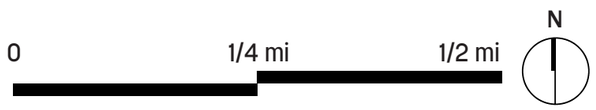
5-Year Action Plan

The actions outlined in this plan are designed to support the implementation of the vision for the Vineyard Station Area. They focus primarily on the immediate and near term–roughly the next five years–and emphasize steps that local officials and their partners can take to help guide private development within the area. Each action includes recommended responsible parties and identifies potential funding sources to support implementation.

Recommended Action	Responsible Party(ies)	Potential Funding Sources
Conduct Detailed Environmental & Landuse Study Plan focuses on half-mile. Detailed environmental study of the full East Geneva Area i.e., within the 1-mile broader scope being considered.	Flagborough Development (i.e., Utah City developers), Utah Valley University, Martin Snow Properties and other adjacent owners	No dedicated funding required.
Establish Right-of-Way Overlays Establish right-of-way overlays on proposed 1200 N extension and Mill Road extensions through the Station Area Plan lands.	Vineyard City Community Development Department, Planning Commission, and City Council.	No dedicated funding required.
Economic Development Economic development studies and scenarios may consider the appropriateness of residential landuse for work force within the commercial core.	Vineyard City Community Development Department, Planning Commission, City Council, and property owners	No dedicated funding required.
Update Zoning Amend zoning districts to align with the Station Area Plan's land use framework, incorporating results from environmental studies and economic development analysis to guide appropriate uses and densities. Use street sections and plan visuals to establish public realm and design standards.	Vineyard City Community Development Department, Planning Commission, and City Council.	No dedicated funding required.
Coordinate Infrastructure Planning Work with neighboring property owners to align planned infrastructure and elements of the public realm outside the Station Area Plan, including streets, walkways, greenways, and utilities with the planned alignments of these elements within the Station Area Plan lands.	Flagborough Development (i.e., Utah City developers), Utah Valley University, Martin Snow Properties and other adjacent owners	No dedicated funding required.
Coordinate Broad Plan Adoption Coordinate with property owners within the Station Area Plan lands to adopt the Vineyard FrontRunner Station Area Plan, including major infrastructure routes, planned land uses, planned development densities and typologies, and the area-wide open space network.	Vineyard City Community Development Department, Flagborough Development, Martin Snow Properties and other property owners	No dedicated funding required.

5-Year Action Plan

Recommended Action	Responsible Party(ies)	Potential Funding Sources
Prioritize City Infrastructure Projects Coordinate City departments to revisit and prioritize planned infrastructure projects around the Station Area Plan lands. Identify points of connection to the Station Area Plan lands and commence planning for trunk line extensions into the property along arterial roads. The City will coordidate transit facility projects identified in the SAP, city transportation master plan and regionally approved landuse and transportation plan.	Vineyard City, UDOT, UTA and MAG.	Federal and state grants, utility district, development impact fees
Establish Design Standards Using the recommendations of this plan as a starting place, establish design standards and/or guidelines for adoption within or alongside the City zoning code to inform and control future development within the Station Area Plan lands and fulfill the urban design objectives of this vision.	Vineyard City Community Development, Engineering and Public Works Departments.	No dedicated funding required.
Coordinate Housing Policy Explore opportunities to ensure the inclusion of affordable housing in those areas of the Station Area Plan lands that permit housing.	Vineyard City	No dedicated funding required.
Continue, Support, and Monitor Remediation Efforts Work with private landowners within the Station Area and applicable governmental jurisdictions to continue environmental remediation efforts on site and prepare the land for redevelopment in alignment with the vision outlined in this plan.	Vineyard City and property owners	Private funds, federal and state funds and grants



Proposed Landuse Plan

Today, most of the Station Area is zoned FOI (Flex Office/Industrial) and RC (Regional Commercial), with a very small portion in the northwest corner designated M (Manufacturing). These designations reflect the site's industrial legacy and favor large commercial or employment uses. While appropriate for the former steel mill property, they do not align with the City's goal of creating a walkable, mixed-use, transit-oriented district.

The Station Area Plan recommends transitioning the site to a combination of Flex Commercial and Mixed-Use Commercial districts. These updated zoning categories are designed to:

1. Encourage a balanced mix of housing, shops, offices, and civic spaces.
2. Support flexible development options that can adapt to market needs and environmental conditions as cleanup progresses.
3. Promote walkability and transit access through an urban street grid and active ground-floor uses.

By moving away from heavy commercial and industrial zoning, Vineyard will unlock opportunities for a more diverse economy, new housing choices, and a vibrant public realm. The flexibility of the proposed zoning means development can adjust over time while still contributing to the overall vision. This makes it possible for the area to evolve parcel by parcel as land becomes ready for reuse, without sacrificing long-term goals.

The proposed zoning is forward-looking. It sets the foundation for a Station Area that is people-friendly, adaptable, and attractive for investment–helping Vineyard turn a former industrial site into a connected community hub.

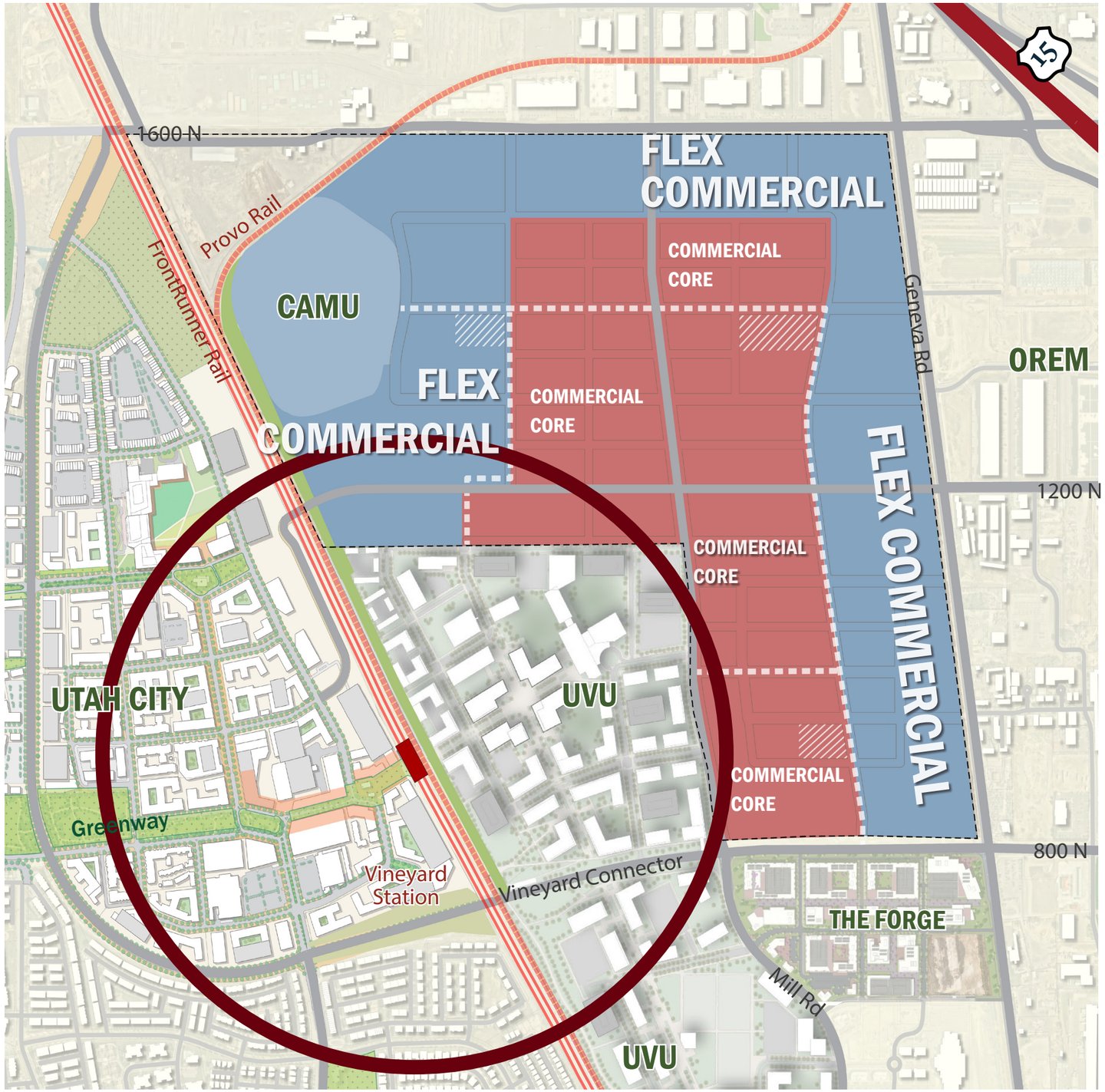
Zoning Districts

- VSA-COMMERCIAL CORE
- VSA-FLEX

Park Overlay Zone

- District Park
- Pedestrian Connector

0 1/4 mi 1/2 mi N



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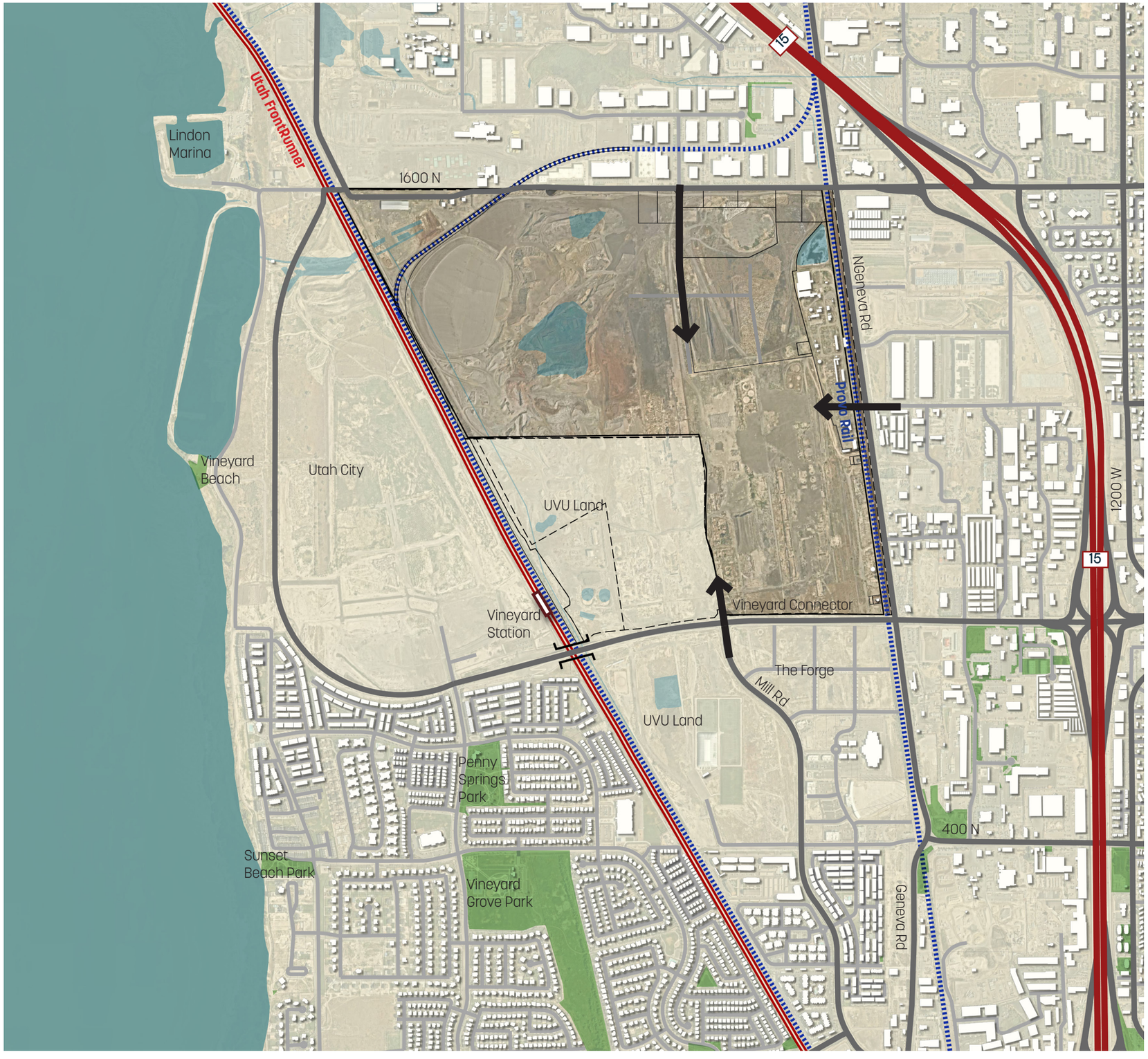
Utility Infrastructure

Utility infrastructure servicing future development at the Station Area Plan site is expected to connect to perimeter roads and existing utility lines via the major connections of the 1200 N Street extension and Mill Road.



Acknowledgment

This Station Area Plan report is envisioned as a dynamic document that will continue to evolve in response to changing conditions and circumstances. As such, it is anticipated that over the life of the Station Area Plan herein will be refined, waived, or amended to incorporate new conditions, special opportunities, and/or circumstances.

This plan will guide future work for this area and will identify specific steps for implementation in the first five years of the project. The plan will provide a coordinated vision for transportation, land uses, and open space for the approximate 430 acre site, and will provide a final report to be presented to the SAP Policy Committee, the planning commission, and the city council for approval.

VINEYARD STAY CONNECTED

MAG

SASAKI

ZIONS PUBLIC FINANCE

FEHR PEERS

Station Area Plan (SAP) Policy Committee
Resolution No. 2025-10

CERTIFICATION OF THE VINEYARDFRONTRUNNER STATION AREA PLAN AS COMPLIANT WITH THE REQUIREMENTS OF HB 462 UTAH HOUSING AFFORDABILITY AMENDMENTS (2022)

WHEREAS, the House Bill 462 Utah Housing Affordability Amendments (2022) requires cities with a fixed-guideway transit station to complete a station area plan; and

WHEREAS, SAPs for all existing stations must, with limited exceptions, be completed and certified by December 31, 2025; and

WHEREAS, the VineyardFrontRunner Station Area Plan was completed and approved-as-to-form by the Vineyard City Council on October 8, 2025; and

WHEREAS, the Mountainland Association of Governments (MAG) and Utah Transit Authority (UTA) evaluated the SAP against the requirements of HB 462 (2022) and recommended the plan for certification; and

WHEREAS, the SAP Policy Committee, upon review of the Vineyard FrontRunner Station Area Plan, voted unanimously on November 19, 2025, to certify the plan as compliant.

NOW, THEREFORE, BE IT RESOLVED, that the SAP Policy Committee hereby certifies the VineyardFrontRunner Station Area Plan as compliant with essential requirements of HB 462 (2022).

RESOLVED AND ORDERED this nineteenth day of November, 2025, **BY THE SAP POLICY COMMITTEE**.

Bill Wright

Mayor Bill Wright, Chair, SAP Policy Committee

ATTEST:

By: Dan Wayne

Dan Wayne, Community Planning Manager, MAG