



**BOARD OF CONTRACT AND SUPPLY  
CITY OF PROVIDENCE, RHODE ISLAND**

# **REQUEST FOR PROPOSALS**

**Item Description: ROGER WILLIAMS PARK MOUNTED COMMAND SITE IMPROVEMENTS**

**Date to be opened: JANUARY 31, 2022**

**Issuing Department: PARKS DEPARTMENT**

## **QUESTIONS**

- Please direct questions relative to the bidding process, how to fill out forms, and how to submit a bid (Pages 1-8) to Purchasing Agent Patti Jordan.
  - Phone: (401) 680-5264
  - Email: [pjordan@providenceri.gov](mailto:pjordan@providenceri.gov)
    - Please use the subject line “**RFP Question**”
- Please direct questions relative to the Minority and Women’s Business Enterprise Program and the corresponding forms (Pages 9-13) to the MBE/WBE Outreach Director for the City of Providence, Grace Diaz
  - Phone: (401) 680-5766
  - Email: [gdiaz@providenceri.gov](mailto:gdiaz@providenceri.gov)
    - Please use subject line “**MBE WBE Forms**”
- Please direct questions relative to the specifications outlined (beginning on page 14) to the issuing department’s subject matter expert:
  - **Sam Greenwood**
  - **401-680-7299**
  - [sgreenwood@providenceri.gov](mailto:sgreenwood@providenceri.gov)

## **Pre-bid Conference (Non-Mandatory)**

**Wednesday, January 19 at 10am**

**Project Site – Cladrastis Avenue, Providence, RI 02905**



**BOARD OF CONTRACT AND SUPPLY  
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**INSTRUCTIONS FOR SUBMISSION**

Bids may be submitted up to **2:15 P.M.** on the above meeting date at the **Department of the City Clerk, Room 311, City Hall, 25 Dorrance Street, Providence.** At 2:15 P.M. all bids will be publicly opened and read at the Board of Contract Meeting in the City Council Chambers, on the 3<sup>rd</sup> floor of City Hall.

- Bidders must submit **2 copies** of their bid in sealed envelopes or packages labeled with the captioned **Item Description** and the **City Department to which the RFP and bid are related.** (On page 1)
- Communications to the Board of Contract and Supply that are not competitive sealed bids (i.e. product information/samples) should have “**NOT A BID**” written on the envelope or wrapper.
- Only use form versions and templates included in this RFP. If you have an old version of a form do not recycle it for use in this bid.
- The bid envelope and information relative to the bid must be addressed to:

**Board of Contract and Supply  
Department of the City Clerk – City Hall, Room 311  
25 Dorrance Street  
Providence, RI 02903**

**\*\*PLEASE NOTE:** This bid may include details regarding information that you will need to provide (such as proof of licenses) to the issuing department before the formalization of an award.

*This information is NOT requested to be provided in your initial bid by design.*

**All bids submitted to the City Clerk become public record. Failure to follow instructions could result in information considered private being posted to the city’s Open Meetings Portal and made available as a public record. The City has made a conscious effort to avoid the posting of sensitive information on the City’s Open Meetings Portal, by requesting that such sensitive information be submitted to the issuing department only at their request.**



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**BID PACKAGE CHECKLIST**

Digital forms are available in the City of Providence Purchasing Department Office or online at <http://www.providenceri.gov/purchasing/how-to-submit-a-bid/>

The bid package **MUST** include the following, in this order:

- Bid Form 1: Bidder's Blank as the cover page/ 1<sup>st</sup> page (*see page 6 of this document*)
- Bid Form 2: Certification of Bidder as 2<sup>nd</sup> page (*see page 7 of this document*)
- Bid Form 3: Certificate Regarding Public Records (*see page 8 of this document*)
- Forms from the Minority and Women Business Enterprise Program: Based on Bidder Category. *See forms and instructions enclosed (pages 9-13) or on: <https://www.providenceri.gov/purchasing/minority-women-owned-business-mbewbe-procurement-program/>*

**\*Please note: MBE/WBE forms must be completed for EVERY bid submitted and must be inclusive of ALL required signatures. Forms without all required signatures will be considered incomplete.**

- Bidder's Proposal/Packet: Formal response to the specifications outlined in this RFP, including pricing information and details related to the good(s) or service(s) being provided. Please be mindful of formatting responses as requested to ensure clarity.
- Financial Assurance, *if requested* (as indicated on page 5 of this document under "Bid Terms")

**All of the above listed documents are REQUIRED.** (With the exception of financial assurances, which are only required if specified on page 5.)

***\*\*\*Failure to meet specified deadlines, follow specific submission instructions, or enclose all required documents with all applicable signatures will result in disqualification, or in an inability to appropriately evaluate bids.***



**BOARD OF CONTRACT AND SUPPLY**  
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**NOTICE TO VENDORS**

1. The Board of Contract and Supply will make the award to the lowest qualified and responsible bidder.
2. In determining the lowest responsible bidder, cash discounts based on preferable payment terms will not be considered.
3. Where prices are the same, the Board of Contract and Supply reserves the right to award to one bidder, or to split the award.
4. No proposal will be accepted if the bid is made in collusion with any other bidder.
5. Bids may be submitted on an “equal in quality” basis. The City reserves the right to decide equality. Bidders must indicate brand or the make being offered and submit detailed specifications if other than brand requested.
6. A bidder who is an out-of-state corporation shall qualify or register to transact business in this State, in accordance with the Rhode Island Business Corporation Act, RIGL Sec. 7-1.2-1401, et seq.
7. The Board of Contract and Supply reserves the right to reject any and all bids.
8. Competing bids may be viewed in person at the Department of the City Clerk, City Hall, Providence, immediately upon the conclusion of the formal Board of Contract and Supply meeting during which the bids were unsealed/opened. Bids may also be accessed electronically on the internet via the City’s Open Meetings Portal.
9. As the City of Providence is exempt from the payment of Federal Excise Taxes and Rhode Island Sales Tax, prices quoted are not to include these taxes.
10. In case of error in the extension of prices quoted, the unit price will govern.
11. The contractor will **NOT** be permitted to: a) assign or underlet the contract, or b) assign either legally or equitably any monies or any claim thereto without the previous written consent of the City Purchasing Director.
12. Delivery dates must be shown in the bid. If no delivery date is specified, it will be assumed that an immediate delivery from stock will be made.
13. A certificate of insurance will normally be required of a successful vendor.
14. For many contracts involving construction, alteration and/or repair work, State law provisions concerning payment of prevailing wage rates apply (RIGL Sec. 37-13-1 et seq.)
15. No goods should be delivered or work started without a Purchase Order.
16. **Submit 2 copies of the bid to the City Clerk, unless the specification section of this document indicates otherwise.**
17. Bidder must certify that it does not unlawfully discriminate on the basis of race, color, national origin, gender, gender identity or expression, sexual orientation and/or religion in its business and hiring practices and that all of its employees are lawfully employed under all applicable federal, state and local laws, rules and regulations. (See Bid Form 2.)



**BOARD OF CONTRACT AND SUPPLY**  
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**BID TERMS**

1. Financial assurances may be required in order to be a successful bidder for Commodity or Construction and Service contracts. If either of the first two checkboxes below is checked, the specified assurance must accompany a bid, or the bid will not be considered by the Board of Contract and Supply. The third checkbox indicates the lowest responsible bidder will be contacted and required to post a bond to be awarded the contract.
  - a)  A certified check for \$\_\_\_\_\_ must be deposited with the City Clerk as a guarantee that the Contract will be signed and delivered by the bidder.
  - b)  A bid bond in the amount of 5 per centum (%) of the proposed total price, must be deposited with the City Clerk as a guarantee that the contract will be signed and delivered by the bidder; and the amount of such bid bond shall be retained for the use of the City as liquidated damages in case of default.
  - c)  A performance and payment bond with a satisfactory surety company will be posted by the bidder in a sum equal to one hundred per centum (100%) of the awarded contract.
  - d)  No financial assurance is necessary for this item.
2. Awards will be made within **sixty (60) days of bid opening**. All bid prices will be considered firm, unless qualified otherwise. Requests for price increases will not be honored.
3. Failure to deliver within the time quoted or failure to meet specifications may result in default in accordance with the general specifications. It is agreed that deliveries and/or completion are subject to strikes, lockouts, accidents and Acts of God.

**The following entry applies only for COMMODITY BID TERMS:**

4. Payment for partial delivery will not be allowed except when provided for in blanket or term contracts.

**The following entries apply only for CONSTRUCTION AND SERVICE BID TERMS:**

5. Only one shipping charge will be applied in the event of partial deliveries for blanket or term contracts.
6. Prior to commencing performance under the contract, the successful bidder shall attest to compliance with the provisions of the Rhode Island Worker's Compensation Act, RIGL 28-29-1, et seq. If exempt from compliance, the successful bidder shall submit a sworn Affidavit by a corporate officer to that effect, which shall accompany the signed contract.
7. Prior to commencing performance under the contract, the successful bidder shall, submit a certificate of insurance, in a form and in an amount satisfactory to the City.



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**BID FORM 1: Bidders Blank**

1. Bids must meet the attached specifications. Any exceptions or modifications must be noted and fully explained.
2. Bidder's responses must be in ink or typewritten, and all blanks on the bid form should be completed.
3. The price or prices proposed should be stated both in **WRITING** and in **FIGURES**, and any proposal not so stated may be rejected. **Contracts exceeding twelve months must specify annual costs for each year.**
4. Bids **SHOULD BE TOTALED** so that the final cost is clearly stated (unless submitting a unit price bid), however **each item should be priced individually**. Do not group items. Awards may be made on the basis of *total* bid or by *individual items*.
5. All bids **MUST BE SIGNED IN INK.**

**Name of Bidder (Firm or Individual):** \_\_\_\_\_

Contact Name: \_\_\_\_\_

Business Address: \_\_\_\_\_

Business Phone #: \_\_\_\_\_

Contact Email Address: \_\_\_\_\_

Agrees to bid on (Write the "Item Description" here): \_\_\_\_\_

If the bidder's company is based in a state *other than Rhode Island*, list name and contact information for a local agent for service of process that *is located within Rhode Island* \_\_\_\_\_

Delivery Date (if applicable): \_\_\_\_\_

Name of Surety Company (if applicable): \_\_\_\_\_

Total Amount in Writing\*: \_\_\_\_\_

Total Amount in Figures\*: \_\_\_\_\_

*\* If you are submitting a unit price bid, please insert "Unit Price Bid"*

*Use additional pages if necessary for additional bidding details.*

\_\_\_\_\_  
Signature of Representation

\_\_\_\_\_  
Title



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**BID FORM 2: Certification of Bidder**  
(Non-Discrimination/Hiring)

Upon behalf of \_\_\_\_\_ (Firm or Individual Bidding),

I, \_\_\_\_\_ (Name of Person Making Certification),

being its \_\_\_\_\_ (Title or "Self"), hereby certify that:

1. Bidder does not unlawfully discriminate on the basis of race, color, national origin, gender, sexual orientation and/or religion in its business and hiring practices.
2. All of Bidder's employees have been hired in compliance with all applicable federal, state and local laws, rules and regulations.

I affirm by signing below that I am duly authorized on behalf of Bidder, on  
this \_\_\_\_\_ day of \_\_\_\_\_ 20\_\_\_\_.

\_\_\_\_\_  
Signature of Representation

\_\_\_\_\_  
Printed Name



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**BID FORM 3: Certificate Regarding Public Records**

Upon behalf of \_\_\_\_\_ (Firm or Individual Bidding),

I, \_\_\_\_\_ (Name of Person Making Certification),

being its \_\_\_\_\_ (Title or "Self"), hereby certify an

understanding that:

1. All bids submitted in response to Requests for Proposals (RFP's) and Requests for Qualification (RFQ's), documents contained within, and the details outlined on those documents become public record upon receipt by the City Clerk's office and opening at the corresponding Board of Contract and Supply (BOCS) meeting.
2. The Purchasing Department and the issuing department for this RFP/RFQ have made a conscious effort to request that sensitive/personal information be submitted directly to the issuing department and only at request if verification of specific details is critical the evaluation of a vendor's bid.
3. The requested supplemental information may be crucial to evaluating bids. Failure to provide such details may result in disqualification, or an inability to appropriately evaluate bids.
4. If sensitive information that has not been requested is enclosed or if a bidder opts to enclose the defined supplemental information prior to the issuing department's request in the bidding packet submitted to the City Clerk, the City of Providence has no obligation to redact those details and bears no liability associated with the information becoming public record.
5. The City of Providence observes a public and transparent bidding process. Information required in the bidding packet may not be submitted directly to the issuing department at the discretion of the bidder in order to protect other information, such as pricing terms, from becoming public. Bidders who make such an attempt will be disqualified.

I affirm by signing below that I am duly authorized on behalf of Bidder, on

this \_\_\_\_\_ day of \_\_\_\_\_ 20\_\_\_\_\_.

\_\_\_\_\_  
Signature of Representation

\_\_\_\_\_  
Printed Name





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**WBE/MBE Form Instructions**

The City of Providence actively seeks Minority and Women business enterprises to participate in bids to meet the City's procurement needs. Pursuant to the City of Providence Code of Ordinances, Chapter 21, Article II, Sec. 21-52 (Minority and Women's Business Enterprise) and Rhode Island General Laws (as amended), Chapter 31-14, et seq. (Minority Business Enterprise), Minority Business Enterprise (MBE) and Women's Business Enterprise (WBE) participation goals apply to contracts.

The goal for Minority Business Enterprise (MBE) participation is **10%** of the total bid value.

The goal for Women's Business Enterprise (WBE) participation is **10%** of the total bid value.

The goal for combined MBE/WBE participation is **20%** of the total bid value.

Only businesses certified with the State of Rhode Island as minority and/or women business enterprises are counted towards the City's goals. Eligible minority or women-owned businesses are encouraged to seek certification from the State of Rhode Island Minority Business Enterprise Compliance Office at: <http://odeo.ri.gov/offices/mbeco/>

**Note:** MBE certification with the State of Rhode Island on the basis of Portuguese heritage is not currently recognized by the City of Providence's MBE program.

**Bid Requirements:**

**All Bidders:** All bidders must complete and submit the **MBE/WBE Participation Affidavit** indicating whether or not they are a state-certified MBE/WBE and acknowledging the City's participation goals. Submission of this form is required with **every bid**. Your bid will not be accepted without an affidavit.

**Bidders who will be subcontracting:** Bidders who will be subcontracting must submit the **Subcontractor Disclosure Form** as part of their bid submission. All subcontractors, regardless of MBE/WBE status, must be listed on this form. Business NAICS codes can be found at <https://www.naics.com/search/>. Awarded bidders are required to submit **Subcontractor Utilization and Payment Reports** with each invoice.

**Waiver Requests:**

If the percentage of the total amount of the bid being awarded to MBE or WBE vendors is less than 20% (Box F on the Subcontractor Disclosure Form) and the prime contractor is not a Rhode Island State-certified MBE or WBE, the Bidder must complete the **MBE/WBE Waiver Request Form** for review. Waivers will be considered on a case by case basis.

No waiver will be granted unless the waiver request includes documentation that demonstrates that the Bidder has made good faith efforts to achieve the City's stated participation goals. Waivers must be reviewed and signed by the City of Providence's MBE/WBE Outreach Director, Grace Diaz, or her designee. Department Directors cannot recommend a bidder for award if this form is applicable and absent. If the bid does not meet the participation goals of the City of Providence and a waiver is not filed with the signature of the MBE/WBE Outreach Director or her designee, the bid will not be accepted.

**Verifying MBE/WBE Certification**

It is the responsibility of the bidder to confirm that every MBE/WBE named in a proposal and included in a contract is certified by the Rhode Island Minority Business Enterprise Compliance office. The current MBE/WBE directory is available at the State of RI MBE Office, One Capitol Hill, 2nd Floor, Providence, RI, or online at <http://odeo.ri.gov/offices/mbeco/mbe-wbe.php>. You can also call (401) 574-8670 to verify certification, expiration dates, and services that the MBE/WBE is certified to provide. Note: MBE certification with the State of Rhode Island on the basis of Portuguese heritage is not currently recognized by the City of Providence's MBE program.



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**Form Instructions:**

Access all bid forms from <http://www.providenceri.gov/oeo/> or <http://www.providenceri.gov/purchasing/minority-women-owned-business-mbewbe-procurement-program/>. **Download** the forms as blank PDFs. Once saved on your computer, fill them out using the Adobe program. The fillable PDFs must be completed in Adobe in order to be saved properly. Google Chrome and similar platforms do not allow for the forms to be saved as filled PDFs. Therefore, please download the blank forms to your computer, then fill them out and save.

**Assistance with Form Requirements**

Examples of completed forms can be found on the City of Providence website at <http://www.providenceri.gov/oeo/> or <http://www.providenceri.gov/purchasing/minority-women-owned-business-mbewbe-procurement-program/>.

**Contract Requirements:**

Prime contractors engaging subcontractors must submit the *Subcontractor Utilization and Payment Report* to the City Department's Fiscal Agent with every invoice and with request for final payment. This form is not submitted as a part of the initial bid package.

For contracts with duration of less than 3 months, this form must be submitted along with the contractor's request for final payment. The form must include all subcontractors utilized on the contract, both MBE/WBE and non- MBE/WBE, the total amount paid to each subcontractor for the given period and to date. During the term of the contract, any unjustified failure to comply with the MBE/WBE participation requirements is a material breach of contract.

**Questions?**

For more information or for assistance with MBE/WBE Forms, contact the City of Providence MBE/WBE Outreach Director, Grace Diaz, at [mbe-wbe@providenceri.com](mailto:mbe-wbe@providenceri.com) or (401) 680-5766.



**BOARD OF CONTRACT AND SUPPLY  
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**MBE/WBE PARTICIPATION AFFIDAVIT**

Item Discussion (as seen on RFP):

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Prime Bidder: \_\_\_\_\_

Prime Bidder (Company) Phone Number: \_\_\_\_\_

Which one of the following describes your business' status in terms of Minority and/or Woman-Owned Business Enterprise certification with the State of Rhode Island?     MBE     WBE     Neither MBE nor WBE

**By initialing the following sections and signing the bottom of this document in my capacity as the contractor or an authorized representative of contractor, I make this Affidavit:**

It is the policy of the City of Providence that minority business enterprises (MBEs) and women business enterprises (WBEs) should have the maximum opportunity to participate in procurements and projects as prime contractors and vendors. Pursuant to Sec. 21-52 of the Providence Code of Ordinances and Chapter 31-14 *et seq.* of the Rhode Island General Laws (as amended), MBE and WBE participation goals apply to contracts.

The goal for Minority Business Enterprise (MBE) participation is 10% of the total bid value.  
The goal for Women's Business Enterprise (WBE) participation is 10% of the total bid value.  
The goal for combined MBE/WBE participation is 20% of the total bid value.

**I acknowledge the City of Providence's goals of supporting MBE/WBE certified businesses.** Initial \_\_\_\_\_

If awarded the contract, I understand that my company must submit to the Minority and Women's Business Coordinator at the City of Providence (MBE/WBE Office), copies of all executed agreements with the subcontractor(s) being utilized to achieve the participation goals and other requirements of the RI General Laws. **I understand that these documents must be submitted prior to the issuance of a notice to proceed.** Initial \_\_\_\_\_

**I understand that, if awarded the contract, my firm must submit to the MBE/WBE Office canceled checks and reports required by the MBE/WBE Office on a quarterly basis verifying payments to the subcontractors(s) utilized on the contract.**  
Initial \_\_\_\_\_

If I am awarded this contract and find that I am unable to utilize the subcontractor(s) identified in my Statement of Intent, I understand that I must substitute another certified MBE and WBE firm(s) to meet the participation goals. **I understand that I may not make a substitution until I have obtained the written approval of the MBE/WBE Office.**  
Initial \_\_\_\_\_

**If awarded this contract, I understand that authorized representatives of the City of Providence may examine the books, records and files of my firm from time to time, to the extent that such material is relevant to a determination of whether my firm is complying with the City's MBE/WBE participation requirements.**  
Initial \_\_\_\_\_

**I do solemnly declare and affirm under the penalty of perjury that the contents of the foregoing Affidavit are true and correct to the best of my knowledge, information and belief.**

\_\_\_\_\_  
Signature of Bidder

\_\_\_\_\_  
Printed Name

\_\_\_\_\_  
Company Name

\_\_\_\_\_  
Date



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**SUBCONTRACTOR DISCLOSURE FORM**

**Fill out this form only if you WILL SUBCONTRACT with other parties. If you will not subcontract any portion of the proposed bid, do not fill out this form.**

Prime Bidder: \_\_\_\_\_ Primary NAICS \_\_\_\_\_

Code: \_\_\_\_\_

Item Description (as seen on RFP): \_\_\_\_\_

**Please list all Subcontractors below.** Include the total dollar value that you propose to share with each subcontractor and the dollar amount to be subcontracted. Please check off MBE and WBE where applicable. The directory of all state-certified MBE/WBE firms is located at [www.mbe.ri.gov](http://www.mbe.ri.gov). Business NAICS codes can be found at <https://www.naics.com/search/>

Proposed Subcontractor	MBE	WBE	Primary NAICS Code	Date of Mobilization	\$ Value of Subcontract
					\$
					\$
					\$
					\$
					\$
					\$
<b>A. MBE SUBCONTRACTED AMOUNT:</b>					\$
<b>B. WBE SUBCONTRACTED AMOUNT:</b>					\$
<b>C. NON-MBE WBE SUBCONTRACTED AMOUNT:</b>					\$
<b>D. DOLLAR AMOUNT OF WORK DONE BY THE PRIME CONTRACTOR:</b>					\$
<b>E. TOTAL AMOUNT OF BID (SUM OF A, B, C, &amp; D):</b>					\$
<b>F. PERCENTAGE OF BID SUBCONTRACTED TO MBEs AND WBEs. (Divide the sum of A and B by E and multiply result by 100).</b>					%

Please read and initial the following statement acknowledging you understand. If the percentage of the total amount of the bid being awarded to MBE or WBE vendors is less than 20% (Box F) and the prime contractor is NOT a Rhode Island State-certified MBE or WBE, you must fill out the MBE/WBE WAIVER REQUEST FORM for consideration by City of Providence MBE/WBE Outreach Director. Initial \_\_\_\_\_

\_\_\_\_\_  
Signature of Bidder

\_\_\_\_\_  
Printed Name



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**MBE/WBE Waiver Request Form**

**Fill out this form only if you are subcontracting and did not meet the 20% MBE/WBE participation goal. State-certified MBE or WBE Prime Bidders are NOT REQUIRED to fill out this form.**

Submit this form to the City of Providence MBE/WBE Outreach Director, Grace Diaz, at [mbe-wbe@providenceri.gov](mailto:mbe-wbe@providenceri.gov), for review **prior to bid submission**. This waiver applies only to the current bid which you are submitting to the City of Providence and does not apply to other bids your company may submit in the future.

Prime Bidder: \_\_\_\_\_

Company Trade: \_\_\_\_\_

Item Discussion (as seen on RFP):  
\_\_\_\_\_

To receive a waiver, you must list the certified MBE and/or WBE companies you contacted, the name of the primary individual with whom you interacted, and the reason the MBE/WBE company could not participate on this project.

MBE/WBE Company Name	Individual's Name	Company Trade	Why did you choose not to work with this company?

I acknowledge the City of Providence's goal of a combined MBE/WBE participation is 20% of the total bid value. I am requesting a waiver of \_\_\_\_\_ % MBE/WBE (20% minus the value of **Box F** on the Subcontractor Disclosure Form). If an opportunity is identified to subcontract any task associated with the fulfillment of this contract, a good faith effort will be made to select MBE/WBE certified businesses as partners.

\_\_\_\_\_  
Signature of Prime Contractor

\_\_\_\_\_  
Printed Name

\_\_\_\_\_  
Date Signed

\_\_\_\_\_  
Signature of City of Providence  
MBE/WBE Outreach Director

\_\_\_\_\_  
Printed Name of City of Providence  
MBE/WBE Outreach Director

\_\_\_\_\_  
Date Signed



**BOARD OF CONTRACT AND SUPPLY**  
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**SUPPLEMENTAL INFORMATION**

If the issuing department for this RFP determines that your firm's bid is best suited to accommodate their need, you will be asked to provide proof of the following prior to formalizing an award.

An inability to provide the outlined items at the request of the department may lead to the disqualification of your bid.

*This information is **NOT** requested to be provided in your initial bid that you will submit to the City Clerk's office by the "date to be opened" noted on page 1. This list only serves as a list of items that your firm should be ready to provide on request.*

**All bids submitted to the City Clerk become public record.** Failure to follow instructions could result in information considered private being posted to the city's Open Meetings Portal and made available as a public record.

**You must be able to provide:**

- Business Tax ID will be requested after an award is approved by the Board of Contract and Supply.
- **Proof of Insurance**



**BOARD OF CONTRACT AND SUPPLY  
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**BID FORM 3: Supplemental Bid Form**

To whom it may concern:

1. The undersigned, having familiarized (himself) (themselves) (itself) with the **Roger Williams Park Mounted Command Site Improvements** bid affecting the cost of work, and with the Contract Documents (which includes the Invitation for Bids, Instructions to Bidders, Form of Bid Bond, Form of Agreements, form of Non-Collusive Affidavit, Addenda (if any), Drawings, Technical Specification, Form of Surety Bond(s); as prepared by the Providence Parks Department, and on file in the office of the City Clerk 3<sup>rd</sup> Floor, City Hall, Providence, RI 02903, hereby proposes to furnish all supervision, technical personnel, labor, materials, machinery, tools, equipment and services including utility and transportation services, and to perform such other required work for the **Roger Williams Park Mounted Command Site Improvements** and such other required and incidental work, complete, all in accordance with the above listed documents and for the unit prices for work in-place for the following items and quantities.

2. In submitting this Bid, the bidder understands that the right is reserved by The Providence Parks Department to reject any and all Bids, If written notice of acceptance of this Bid is mailed, telegraphed or delivered to the undersigned within (90) days after the opening thereof, or at any time thereafter before this Bid is withdrawn, the undersigned agrees to execute and deliver an Agreement in the prescribed form and furnish the required bond within (10) days after the Agreement is presented to him/her for signature.

Herewith in accordance with the instructions to Bidders.

3. Attached hereto is an affidavit in proof that the undersigned has not colluded with any person in respect to this. Bid or any bids for the Contractor for which this Bid is submitted. Also attached is a Statement of Bidder's Qualifications.

4. Application unit prices are contained in the Agreement (established as the result of either a Unit Price Bid or a Supplemental Schedule of Unit Prices), the City of Providence may order the Contractor to proceed with desired changes in the work, the value of such changes to be determined by the measured quantities involved and the application unit prices specified in the Contract.

5. The City of Providence reserves the right to determine the lowest responsible Bidder based on past experience with the City and/or recommendations by City and/or state agencies with an interest in this procurement. The City reserves the right to award the project to the appropriate bidder in the best interest of the City of Providence.

**CERTIFICATION OF NON-SEGREGATED FACILITIES**

The Bidder certifies that he/she does not maintain or provide for his/her employees any segregated facilities at any of his establishments, and that he/she does not permit his/her employees to perform their services at any location, under his/her control, where segregation facilities are maintained. The Bidder agrees that a breach of this certification will be a violation of the Equal Opportunity Clause in any contract resulting from acceptance of this Bid. As used in this certification, term "segregation facilities" means any waiting rooms, work rooms, rest rooms and wash rooms, restaurants and other eating areas, time clocks, locker rooms and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation and housing facilities provided for employee which are segregated by explicit directive or are in fact segregated on basis of race, color, religion, or national origin, because of habit, local custom, or otherwise. The Bidder agrees that (except where he/she has obtained identical certification from proposed subcontractors for specific time periods) he/she will obtain identical certification from proposed subcontractor prior to the award of subcontracts exceeding \$10,000.00 which are not exempt from provisions of the Equal Opportunity Clause, and that he /she will retain such certifications in his/her files.

**NOTE: The penalty for making false statements in offers is prescribed in 18 U.S.C. & 1001.**

**DATE \_\_\_\_\_, 20\_\_**



**BOARD OF CONTRACT AND SUPPLY**  
CITY OF PROVIDENCE, RHODE ISLAND

Name of Bidder and Official Address:  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Name of Authorized Representative (Contact):  
\_\_\_\_\_  
By \_\_\_\_\_  
(Signature)  
Title \_\_\_\_\_

E-Mail: \_\_\_\_\_

Phone: \_\_\_\_\_

Bidder shall indicate, in space provided,  
the earliest possible Project Start-up Date: \_\_\_\_\_, 20 \_\_\_\_

**ADDENDA:** The undersigned acknowledges receipt of the following Addenda, if any, and has included the provisions thereof in this Bid (If Any):

<u>Addendum No.</u>	<u>Date</u>	<u>Addendum No.</u>	<u>Date</u>
_____	_____, 20 ____	_____	_____, 20 ____
_____	_____, 20 ____	_____	_____, 20 ____

**Sub-Contractors (If Any):**

**Name:** \_\_\_\_\_ **Scope of Work:** \_\_\_\_\_ **MBE / WBE**  
**Name:** \_\_\_\_\_ **Scope of Work:** \_\_\_\_\_ **MBE / WBE**  
**Name:** \_\_\_\_\_ **Scope of Work:** \_\_\_\_\_ **MBE / WBE**





**BOARD OF CONTRACT AND SUPPLY  
CITY OF PROVIDENCE, RHODE ISLAND**

**SUPPLEMENTAL BID FORM**

**ROGER WILLIAMS PARK MOUNTED COMMAND SITE IMPROVEMENTS**

**BASE BID:** Mounted Command is Providence Police Department’s equestrian facility located within Roger Williams Park. The focus of this project is to reconfigure, improve the aging facility, and create a sustainable environment in which the City’s horses can thrive. The primary project components are as follows: Circulation and paving improvements, fencing replacement (HDPE post & rail and wire security), sand surfaced paddocks, pasture soil and forage crop enhancement, grading and stormwater management, and a public meet and greet area (add alternate).

**In addition to stating the Total Base Bid as a Lump Sum, the bidder shall state Unit Prices for related work listed under each bid item which represents the work items included in the Total Base Bid. The Unit Prices are quoted for computing adjustments to the Base Bid prior to Contract award, as well as during the course of construction, based upon extra work ordered by the City or for work countermanded, reduced or omitted by the City in order to stay within the Project budget. Base Bid Items and Unit prices are to be completed prices, to be added or deducted on the basis of quantities of work involved, for each item in place in the unit indicated.**

**BASE BID:** The Base Bid scope of work for this project shall include, but not be limited to the following:

- Save & Protect Existing Planting
- Remove & Dispose Invasive Species
- Sawcut, Remove & Dispose Bituminous Pavement & Curb to Limits Shown
- Remove & Stockpile Cobblestones
- Remove & Dispose all Ex. Wood & Rail Fence
- Remove & Dispose Ex. 6’ H Black Vinyl Chain Link Fence to Limits Shown
- Remove, Stockpile & Reinstall Ex. Electric Fencing and Solar Charges
- Remove & Dispose Ex. Pasture Horse Shelter
- Remove, Stockpile & Reinstall Ex. Water Troughs
- Cap Ex. Water Lines to Troughs
- Strip Loam & Excavate Existing Paddocks to Limits Shown
- Rough & Fine Grading of the Site as Noted on the Grading Plan
- Furnish & Install Stormwater Treatment Features
- Furnish and Install Quick Coupling Valves
- Furnish & Install New Water Distribution Vault and Water Supply Lines
- Furnish & Install New Freeze-Proof Waterers
- Furnish & Install Porous Pavers
- Furnish & Install Stone Dust surfacing
- Furnish & Install Paddock Sand Surface
- Furnish & Install Swing Gates
- Furnish & Install 3-Rail HDPE Paddock Fence
- Furnish & Install 4-Rail HDPE Paddock Fence
- Furnish & Install 6’ H Welded Wire Fence
- Furnish & Install Weathered Boulders to Retain Slope
- Furnish & Install new Trees & Shrubs per Planting Plan
- De-Compact & Amend Soil in Place in Proposed Pastures
- Install Amended Loam from Stockpile & Hydroseed w/ Appropriate Seed Mix per Planting Plan

**All Work Included in this Project Shall be Completed for the lump sum of:**

\_\_\_\_\_ Dollars  
(\$ \_\_\_\_\_), TOTAL BASE BID

**BIDDER:** \_\_\_\_\_



**BOARD OF CONTRACT AND SUPPLY  
CITY OF PROVIDENCE, RHODE ISLAND**

**OWNER'S ALLOWANCE:**

\_\_\_\_\_ Ten Thousand dollars \_\_\_\_\_ Dollars

(\$ \_\_\_\_\_ 10,000 \_\_\_\_\_), ALLOWANCE

**BASE BID WITH ALLOWANCE:**

\_\_\_\_\_ Dollars

(\$ \_\_\_\_\_), TOTAL BASE BID

**ADD ALTERNATES:** The following to be priced as Lump Sum and included in the project at the discretion of the Providence Parks Dept

**1. Add Alt # 1 – Furnish & Install 6'H Welded Wire Fence from Cladrastis Ave to Vehicular Gate**

\_\_\_\_\_ LS \$ \_\_\_\_\_  
*price in writing*

**2. Add Alt # 2 – Furnish & Install Public Greeting Area**

\_\_\_\_\_ LS \$ \_\_\_\_\_  
*price in writing*

**3. Add Alt # 3 – Furnish & Install Steel-Framed Gate(s) w/ HDPE Boards**

\_\_\_\_\_ LS \$ \_\_\_\_\_  
*price in writing*

**UNIT PRICES:**

*This list is not intended to include all items required to complete the base bid scope of work but can and shall be used to adjust the contract prior to or after award – in the best interest of the City of Providence*

**1. Remove & Dispose Existing Asphalt**

\_\_\_\_\_ SF \$ \_\_\_\_\_  
*price in writing*

**2. Remove & Dispose Ex. Curb**

\_\_\_\_\_ LF \$ \_\_\_\_\_  
*price in writing*

**BIDDER:** \_\_\_\_\_



**BOARD OF CONTRACT AND SUPPLY**  
CITY OF PROVIDENCE, RHODE ISLAND

**3. Remove & Stockpile Granite Cobblestone**

\_\_\_\_\_ SF \$ \_\_\_\_\_  
*price in writing*

**4. Remove & Dispose Wooden Fence**

\_\_\_\_\_ LF \$ \_\_\_\_\_  
*price in writing*

**5. Remove & Dispose 6' H Chain Link Fence & Posts**

\_\_\_\_\_ LF \$ \_\_\_\_\_  
*price in writing*

**6. Furnish & Install Tree Protection Fence**

\_\_\_\_\_ LF \$ \_\_\_\_\_  
*price in writing*

**7. Furnish & Install Stone Filled Silt Sock**

\_\_\_\_\_ LF \$ \_\_\_\_\_  
*price in writing*

**8. Rough Grading of Site**

\_\_\_\_\_ CY \$ \_\_\_\_\_  
*price in writing*

**9. Fine Grading of Site**

\_\_\_\_\_ SY \$ \_\_\_\_\_  
*price in writing*

**10. Furnish & Install 1 1/4" Water Supply Line Complete**

\_\_\_\_\_ LF \$ \_\_\_\_\_  
*price in writing*

**11. Furnish & Install Water Distribution Pit/Hub**

\_\_\_\_\_ LS \$ \_\_\_\_\_  
*price in writing*

**12. Furnish & Install Granite Curb for Stormwater Planter**

\_\_\_\_\_ LF \$ \_\_\_\_\_  
*price in writing*

**13. Furnish & Install 4" Stone Dust Path on 6" Gravel Base**

\_\_\_\_\_ SF \$ \_\_\_\_\_  
*price in writing*

**BIDDER:** \_\_\_\_\_



**BOARD OF CONTRACT AND SUPPLY**  
CITY OF PROVIDENCE, RHODE ISLAND

**14. Furnish & Install Porous Pavers on 6” Gravel Base**

\_\_\_\_\_ SF \$ \_\_\_\_\_  
*price in writing*

**15. Furnish & Install 4” Paddock Surface (Equestrian Sand Mix) on 6” Gravel Base**

\_\_\_\_\_ SF \$ \_\_\_\_\_  
*price in writing*

**16. Furnish & Install 32-48” Weathered Boulders for Retaining Slope**

\_\_\_\_\_ EA \$ \_\_\_\_\_  
*price in writing*

**17. Furnish & Install 3-Rail Paddock Fence**

\_\_\_\_\_ LF \$ \_\_\_\_\_  
*price in writing*

**18. Furnish & Install 4-Rail Paddock Fence**

\_\_\_\_\_ LF \$ \_\_\_\_\_  
*price in writing*

**19. Furnish & Install 6’H Welded Wire Fence**

\_\_\_\_\_ LF \$ \_\_\_\_\_  
*price in writing*

**20. Furnish & Install *Acer saccharum* ‘Green Mountain’ – 3-3.5” Cal**

\_\_\_\_\_ EA \$ \_\_\_\_\_  
*price in writing*

**21. Furnish & Install *Carya ovata* – 3-3.5” Cal**

\_\_\_\_\_ EA \$ \_\_\_\_\_  
*price in writing*

**22. Furnish & Install *Liriodendron tulipifera* ‘Little Volunteer’ – 3-3.5” Cal**

\_\_\_\_\_ EA \$ \_\_\_\_\_  
*price in writing*

**23. Furnish & Install *Nyssa sylvatica* ‘Wildfire’ – 2-2.5” Cal**

\_\_\_\_\_ EA \$ \_\_\_\_\_  
*price in writing*

**BIDDER:** \_\_\_\_\_



**BOARD OF CONTRACT AND SUPPLY**  
CITY OF PROVIDENCE, RHODE ISLAND

24. Furnish & Install *Tilia cordata* 'Greenspire' – 3-3.5" Cal

\_\_\_\_\_ EA \$ \_\_\_\_\_  
*price in writing*

25. Furnish & Install *Ulmus americana* 'Princeton' – 3-3.5" Cal

\_\_\_\_\_ EA \$ \_\_\_\_\_  
*price in writing*

26. Furnish & Install *Clethra alnifolia* 'Hummingbird' – 18-24" Cont.

\_\_\_\_\_ EA \$ \_\_\_\_\_  
*price in writing*

27. Furnish & Install *Cornus sericea* 'Cardinal' – 30-36" Cont.

\_\_\_\_\_ EA \$ \_\_\_\_\_  
*price in writing*

28. Furnish & Install *Ilex glabra* 'Compacta' – 30-36" Cont.

\_\_\_\_\_ EA \$ \_\_\_\_\_  
*price in writing*

29. Furnish & Install *Hamamelis virginiana* – 4-5' B&B

\_\_\_\_\_ EA \$ \_\_\_\_\_  
*price in writing*

30. Furnish & Install *Myrica pensylvanica* – 30-36" B&B

\_\_\_\_\_ EA \$ \_\_\_\_\_  
*price in writing*

31. Furnish & Install *Rhus aromatica* 'Gro Low' – #2 Cont.

\_\_\_\_\_ EA \$ \_\_\_\_\_  
*price in writing*

32. Furnish & Install *Spiraea albiflora* – #3 Cont.

\_\_\_\_\_ EA \$ \_\_\_\_\_  
*price in writing*

33. Perform Deep-Tine Aeration to De-compact Pasture Areas

\_\_\_\_\_ SF \$ \_\_\_\_\_  
*price in writing*

34. Furnish & Install 6" Loam and Hydroseed Meadow Mix

\_\_\_\_\_ SF \$ \_\_\_\_\_  
*price in writing*

**BIDDER:** \_\_\_\_\_



**BOARD OF CONTRACT AND SUPPLY**  
CITY OF PROVIDENCE, RHODE ISLAND

**35. Furnish & Install 6" Loam and Hydroseed Pasture Mix**

\_\_\_\_\_ SF \$ \_\_\_\_\_  
*price in writing*

**36. Furnish & Install 6" Loam & Fine Grade and Hydroseed all Disturbed Areas of Lawn**

\_\_\_\_\_ SF \$ \_\_\_\_\_  
*price in writing*

**37. Furnish & Install Erosion Control Blanket for all Areas of 3:1 Slope or Greater**

\_\_\_\_\_ SF \$ \_\_\_\_\_  
*price in writing*

**38. Furnish & Install 3" Bituminous Concrete Walk w/ 8" Gravel Base**

\_\_\_\_\_ SF \$ \_\_\_\_\_  
*price in writing*

**39. Furnish & Install Freeze-Proof Waterers**

\_\_\_\_\_ EA \$ \_\_\_\_\_  
*price in writing*

*Please note that the list above is not intended to include all items required to complete the base bid scope of work but can and shall be used to adjust the contract prior to or after award – in the best interest of the City of Providence.*

**BIDDER:** \_\_\_\_\_



**BOARD OF CONTRACT AND SUPPLY  
CITY OF PROVIDENCE, RHODE ISLAND**

**BID DOCUMENTS:**

The complete set of Bid Documents consists of the Bid Form, Technical Specifications, Minority Participation Forms, and the following Drawings:

**DRAWINGS (12 SHEETS TOTAL):**

- C-01 COVER
- C-02 LEGEND, NOTES, & DETAILS
- C-03 SESC & GRADING PLAN
- L1.0 SITE PREPARATION PLAN
- L2.0-2.1 LAYOUT & MATERIALS PLANS
- L3.0-3.1 PLANTING PLANS
- L4.0 ENLARGMENTS
- L5.0-5.2 LANDSCAPE DETAILS
- EX-1 PARTIAL TOPOGRAPHIC SURVEY PLAN

**TECHNICAL SPECIFICATION:**

- 010000 General Requirements
- 015639 Temporary Tree and Plant Protection
- 024119 Selective Demolition
- 055000 Metal Fabrication
- 119219 Stock Waterers
- 312213 Rough Grading
- 312316.13 Trenching
- 312500 Erosion and Sedimentation Controls
- 321216 Asphalt Paving
- 321320 Stone Dust Walk
- 321400 Unit Paving
- 321413.19 Porous Precast Concrete Unit Paving
- 321823.63 Equestrian Surfacing
- 323116.10 Ornamental Welded Wire Fences & Gates
- 323132 Composite Fences & Gates
- 323253 Stone Retaining Walls
- 329113 Soil Preparation
- 329119 Landscape Grading
- 329200 Turf and Grasses
- 329300 Plants
- 331413 Public Water Utility Distribution Piping
- 334200 Stormwater Conveyance



**BOARD OF CONTRACT AND SUPPLY**  
**CITY OF PROVIDENCE, RHODE ISLAND**  
**ADDITIONAL INFORMATION REQUIRED WITH BID:**

- Qualifications to Perform Work – See Form Below for Information Required
- Minority Participation Forms – 10% MBE / 10 % WBE Goal on this Project
- Addenda (If Any) - Must Be Acknowledged on Bid Form
- Product Information for Items Submitted as ‘Or Equal’ to Specified Materials

**PROVISIONS OF THIS PROJECT:**

- Upon the Issuance of the Award from the Board of Contract – the City shall issue a Contract to be executed by the City and the vendor incorporating the bid specifications. All Provisions of the Specifications are binding.
- Any Permits Required by the City of Providence and/or State of Rhode Island Shall be Obtained by the Vendor – Permit Fees by the City of Providence Shall be Waived – the State ADA Fee Must be Paid
- The Davis Bacon Act Applies (HUD Projects) – Prevailing Wages Must Be Paid for On Site Hours – On-Site Interviews will be Conducted During the Project – Employees Shall be Advised of the Prevailing Wage Rates Prior to Mobilization on Site
- Certified payrolls Must be Submitted with Pay Requests Including Monthly Utilizations Form
- Performance and Payment Bonds (If Required) Must be Submitted within 10 Days of Award or Bid Bond Will be Forfeited
- An Insurance Certificate Shall be Submitted to the City Within 10 Days of Award
- A Copy of the Vendors Contractor’s License Must be Submitted within 10 Days of Award
- All On-Site Personnel Shall be Licensed (If Required) and Shall have Proof of All Licenses Required by the State of Rhode Island to Perform the Work Required
- Pay Requests Must be Submitted on Approved AIA Billing Documents (City will Provide if Needed)
- All Subcontractors Shall be Listed on the Bid Form – All Insurance & Payroll Requirements Apply
  - General Contractor Shall be the Insurance Certificate Holder and the City Shall be Named as ‘Additionally Insured’ with Respect to Liability Insurance
- A Submittal Log Must be Submitted within 10 Days of Award

**CLOSE OUT DOCUMENTS:**

- Prior to Final Payment the Vendor Shall Provide the Following:
  - Copies of Permits Signed off and Approved (If Any)
  - Operating Manuals and Warranties Shall Be Transferred and/or Delivered
  - Full and Completed As-Built Drawings Shall be Submitted for Approval
  - Training Shall be Provided to City Personnel (If Required)
  - Certification by Manufactures Representative (If Required)





**BOARD OF CONTRACT AND SUPPLY  
CITY OF PROVIDENCE, RHODE ISLAND**

**QUALIFICATIONS:**

Qualifications will be evaluated on the basis of similar project experience for:

- a. Completion of at least 3 similar projects within the past five years.
- b. Size and dollar value of similar completed projects.
- c. Contractor's performance with similar projects. (references will be checked)
- d. Relevant experience of individuals assigned to the project.

Questions regarding this bid package shall be submitted via e-mail to **Patti Jordan** at [pjordan@providenceri.gov](mailto:pjordan@providenceri.gov) and/or **Sam Greenwood** at [sgreenwood@providenceri.gov](mailto:sgreenwood@providenceri.gov) no later than five (5) working days before the bid opening date. Questions and responses will be sent to all bidders.

Sam Greenwood is the project contact and can be reached at 401-680-3339.

**TECHNICAL SPECIFICATIONS**



**BOARD OF CONTRACT AND SUPPLY**  
CITY OF PROVIDENCE, RHODE ISLAND

**This project qualifies for prevailing wages per the Prevailing Wages Statute or the Davis Bacon Act (HUD). Certified payrolls will need to be submitted to the owner for all hours worked on site for this project. The Wage Decision for this project shall be as recorded on the Bid Date and is available on the RI Department of Labor website.**

"General Decision Number: RI20210001 12/10/2021

Superseded General Decision Number: RI20200001

State: Rhode Island

Construction Types: Building, Heavy (Heavy and Marine) and Highway

Counties: Rhode Island Statewide.

BUILDING CONSTRUCTION PROJECTS (does not include residential construction consisting of single family homes and apartments up to and including 4 stories) HEAVY, HIGHWAY AND MARINE CONSTRUCTION PROJECTS

Note: Under Executive Order (EO) 13658, an hourly minimum wage of \$10.95 for calendar year 2021 applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2015. If this contract is covered by the EO, the contractor must pay all workers in any classification listed on this wage determination at least \$10.95 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract in calendar year 2021. If this contract is covered by the EO and a classification considered necessary for performance of work on the contract does not appear on this wage determination, the contractor must pay workers in that classification at least the wage rate determined through the conformance process set forth in 29 CFR 5.5(a)(1)(ii) (or the EO minimum wage rate, if it is higher than the conformed wage rate). The EO minimum wage rate will be adjusted annually. Please note that this EO applies to the above-mentioned types of contracts entered into by the federal government that are subject to the Davis-Bacon Act itself, but it does not apply to contracts subject only to the Davis-Bacon Related Acts, including those set forth at 29 CFR 5.1(a)(2)-(60). Additional information on contractor requirements and worker protections under the EO is available at [www.dol.gov/whd/govcontracts](http://www.dol.gov/whd/govcontracts).

Modification Number	Publication Date
0	01/01/2021
1	01/22/2021
2	03/05/2021
3	04/09/2021
4	04/23/2021
5	06/18/2021
6	07/30/2021
7	09/10/2021
8	09/17/2021
9	10/15/2021
10	11/05/2021
11	12/10/2021

ASBE0006-006 12/01/2019

Rates Fringes

HAZARDOUS MATERIAL HANDLER  
(Includes preparation,  
wetting, stripping, removal

scrapping, vacuuming, bagging  
 & disposing of all insulation  
 materials, whether they  
 contain asbestos or not, from  
 mechanical systems).....\$ 36.60                    22.40

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 ASBE0006-008 09/01/2021

Rates                    Fringes

Asbestos Worker/Insulator  
 Includes application of  
 all insulating materials,  
 protective coverings,  
 coatings & finishes to all  
 types of mechanical systems.\$ 45.00                    32.89

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 BOIL0029-001 01/01/2021

Rates                    Fringes

BOILERMAKER.....\$ 45.87                    29.02

-----  
 BRRIO003-001 06/01/2020

Rates                    Fringes

Bricklayer, Stonemason,  
 Pointer, Caulker & Cleaner.....\$ 42.55                    28.02

-----  
 BRRIO003-002 03/01/2020

Rates                    Fringes

Marble Setter, Terrazzo  
 Worker & Tile Setter.....\$ 40.78                    28.92

-----  
 BRRIO003-003 03/01/2020

Rates                    Fringes

Marble, Tile & Terrazzo  
 Finisher.....\$ 34.10                    27.88

-----  
 CARP0330-001 01/01/2021

Rates                    Fringes

CARPENTER (Includes Soft  
 Floor Layer).....\$ 39.72                    28.66  
 Diver Tender.....\$ 40.72                    28.66  
 DIVER.....\$ 51.47                    28.66  
 Piledriver.....\$ 39.72                    28.66  
 WELDER.....\$ 40.72                    28.66

FOOTNOTES:

When not diving or tending the diver, the diver and diver  
 tender shall receive the piledriver rate. Diver tenders  
 shall receive \$1.00 per hour above the pile driver rate  
 when tending the diver.

Work on free-standing stacks, concrete silos & public utility  
 electrical power houses, which are over 35 ft. in height  
 when constructed: \$.50 per hour additional.

Work on exterior concrete shear wall gang forms, 45 ft. or more above ground elevation or on setback: \$.50 per hour additional.

The designated piledriver, known as the ""monkey"": \$1.00 per hour additional.

-----  
CARP1121-002 01/06/2020

	Rates	Fringes
MILLWRIGHT.....	\$ 39.07	29.15

-----  
ELEC0099-002 06/02/2021

	Rates	Fringes
ELECTRICIAN.....	\$ 43.61	54.71%
Teledata System Installer.....	\$ 32.71	12.57%+14.93

FOOTNOTES:

Work of a hazardous nature, or where the work height is 30 ft. or more from the floor, except when working OSHA-approved lifts: 20% per hour additional.

Work in tunnels below ground level in combined sewer outfall: 20% per hour additional.

-----  
ELEV0039-001 01/01/2021

	Rates	Fringes
ELEVATOR MECHANIC.....	\$ 55.03	35.825+A+B

FOOTNOTES:

A. PAID HOLIDAYS: New Years Day; Memorial Day; Independence Day; Labor Day; Veterans' Day; Thanksgiving Day; the Friday after Thanksgiving Day; and Christmas Day.

B. Employer contributes 8% basic hourly rate for 5 years or more of service of 6% basic hourly rate for 6 months to 5 years of service as vacation pay credit.

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\* ENGI0057-001 12/01/2021

	Rates	Fringes
Operating Engineer: (power plants, sewer treatment plants, pumping stations, tunnels, caissons, piers, docks, bridges, wind turbines, subterranean & other marine and heavy construction work)		
GROUP 1.....	\$ 43.55	28.25+a
GROUP 2.....	\$ 41.55	28.25+a
GROUP 3.....	\$ 37.17	28.25+a
GROUP 4.....	\$ 34.32	28.25+a

GROUP 5.....	\$ 40.60	28.25+a
GROUP 6.....	\$ 31.40	28.25+a
GROUP 7.....	\$ 25.40	28.25+a
GROUP 8.....	\$ 37.25	28.25+a
GROUP 9.....	\$ 41.17	28.25+a

a. BOOM LENGTHS, INCLUDING JIBS:

- 150 feet and over + \$ 2.00
- 180 feet and over + \$ 3.00
- 210 feet and over + \$ 4.00
- 240 feet and over + \$ 5.00
- 270 feet and over + \$ 7.00
- 300 feet and over + \$ 8.00
- 350 feet and over + \$ 9.00
- 400 feet and over + \$10.00

a. PAID HOLIDAYS:

New Year's Day, President's Day, Memorial Day, July Fourth, Victory Day, Labor Day, Columbus Day, Veterans Day, Thanksgiving Day, Christmas Day. a: Any employee who works 3 days in the week in which a holiday falls shall be paid for the holiday.

a. FOOTNOTES:

Hazmat work: \$2.00 per hour additional.  
Tunnel/Shaft work: \$5.00 per hour additional.

POWER EQUIPMENT OPERATORS CLASSIFICATIONS

GROUP 1: Cranes, lighters, boom trucks and derricks

GROUP 2: Digging machine, Ross Carrier, locomotive, hoist, elevator, bidwell-type machine, shot & water blasting machine, paver, spreader, graders, front end loader (3 yds. and over), vibratory hammer & vacuum truck, roadheaders, forklifts, economobile type equipment, tunnel boring machines, concrete pump and on site concrete plants.

GROUP 3: Oilers on cranes.

GROUP 4: Oiler on crawler backhoe.

GROUP 5: Bulldozer, bobcats, skid steer loader, tractor, scraper, combination loader backhoe, roller, front end loader (less than 3 yds.), street and mobile-powered sweeper (3-yd. capacity), 8-ft. sweeper minimum 65 HP).

GROUP 6: Well-point installation crew.

GROUP 7: Utility Engineers and Signal Persons

GROUP 8: Heater, concrete mixer, stone crusher, welding machine, generator and light plant, gas and electric driven pump and air compressor.

GROUP 9: Boat & tug operator.

-----  
ENGI0057-002 11/01/2021

Rates                      Fringes

Power Equipment Operator

(highway construction projects; water and sewerline projects which are incidental to highway construction projects; and bridge projects that do not span water)

GROUP 1.....	\$ 36.70	28.25+a
GROUP 2.....	\$ 31.40	28.25+a
GROUP 3.....	\$ 25.40	28.25+a
GROUP 4.....	\$ 31.98	28.25+a
GROUP 5.....	\$ 35.68	28.25+a
GROUP 6.....	\$ 35.30	28.25+a
GROUP 7.....	\$ 30.95	28.25+a
GROUP 8.....	\$ 32.33	28.25+a
GROUP 9.....	\$ 34.28	28.25+a

a. FOOTNOTE: a. Any employee who works three days in the week in which a holiday falls shall be paid for the holiday.

a. PAID HOLIDAYS: New Year's Day, President's Day, Memorial Day, July Fourth, Victory Day, Labor Day, Columbus Day, Veterans Day, Thanksgiving Day & Christmas Day.

POWER EQUIPMENT OPERATOR CLASSIFICATIONS

GROUP 1: Digging machine, crane, piledriver, lighter, locomotive, derrick, hoist, boom truck, John Henry's, directional drilling machine, cold planer, reclaimer, paver, spreader, grader, front end loader (3 yds. and over), vacuum truck, test boring machine operator, veemere saw, water blaster, hydro-demolition robot, forklift, economobile, Ross Carrier, concrete pump operator and boats

GROUP 2: Well point installation crew

GROUP 3: Utility engineers and signal persons

GROUP 4: Oiler on cranes

GROUP 5: Combination loader backhoe, front end loader (less than 3 yds.), forklift, bulldozers & scrapers and boats

GROUP 6: Roller, skid steer loaders, street sweeper

GROUP 7: Gas and electric drive heater, concrete mixer, light plant, welding machine, pump & compressor

GROUP 8: Stone crusher

GROUP 9: Mechanic & welder

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\* ENGI0057-003 12/01/2021

BUILDING CONSTRUCTION

	Rates	Fringes
Power Equipment Operator		
GROUP 1.....	\$ 42.82	28.25+a
GROUP 2.....	\$ 40.82	28.25+a
GROUP 3.....	\$ 40.60	28.25+a
GROUP 4.....	\$ 36.60	28.25+a
GROUP 5.....	\$ 33.75	28.25+a
GROUP 6.....	\$ 39.90	28.25+a

GROUP 7.....	\$ 39.47	28.25+a
GROUP 8.....	\$ 36.79	28.25+a

a. BOOM LENGTHS, INCLUDING JIBS:

- 150 ft. and over: + \$ 2.00
- 180 ft. and over: + \$ 3.00
- 210 ft. and over: + \$ 4.00
- 240 ft. and over: + \$ 5.00
- 270 ft. and over: + \$ 7.00
- 300 ft. and over: + \$ 8.00
- 350 ft. and over: + \$ 9.00
- 400 ft. and over: + \$10.00

a. PAID HOLIDAYS: New Year's Day, President's Day, Memorial Day, July Fourth, Victory Day, Labor Day, Columbus Day, Veterans Day, Thanksgiving Day & Christmas Day. a: Any employee who works 3 days in the week in which a holiday falls shall be paid for the holiday.

- a. FOOTNOTE: Hazmat work: \$2.00 per hour additional.  
Tunnel/Shaft work: \$5.00 per hour additional.

POWER EQUIPMENT OPERATORS CLASSIFICATIONS

GROUP 1: Cranes, lighters, boom trucks and derricks.

GROUP 2: Digging machine, Ross carrier, locomotive, hoist, elevator, bidwell-type machine, shot & water blasting machine, paver, spreader, front end loader (3 yds. and over), vibratory hammer and vacuum truck

GROUP 3: Telehandler equipment, forklift, concrete pump & on-site concrete plant

GROUP 4: Fireman & oiler on cranes

GROUP 5: Oiler on crawler backhoe

GROUP 6: Bulldozer, skid steer loaders, bobcats, tractor, grader, scraper, combination loader backhoe, roller, front end loader (less than 3 yds.), street and mobile powered sweeper (3 yds. capacity), 8-ft. sweeper (minimum 65 hp)

GROUP 7: Well point installation crew

GROUP 8: Heater, concrete mixer, stone crusher, welding machine, generator for light plant, gas and electric driven pump & air compressor

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IRON0037-001 09/16/2021

	Rates	Fringes
IRONWORKER.....	\$ 38.21	30.58

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LABO0271-001 05/30/2021

BUILDING CONSTRUCTION

	Rates	Fringes
LABORER		



GROUP 1.....	\$ 33.55	26.15
GROUP 2.....	\$ 33.80	26.15
GROUP 3.....	\$ 34.30	26.15
GROUP 4.....	\$ 34.55	26.15
GROUP 5.....	\$ 35.55	26.15

LABORERS CLASSIFICATIONS

GROUP 1: Laborer, Carpenter Tender, Mason Tender, Cement Finisher Tender, Scaffold Erector, Wrecking Laborer, Asbestos Removal [Non-Mechanical Systems]

GROUP 2: Asphalt Raker, Adzemen, Pipe Trench Bracer, Demolition Burner, Chain Saw Operator, Fence & Guard Rail Erector, Setter of Metal Forms for Roadways, Mortar Mixer, Pipelayer, Riprap & Dry Stonewall Builder, Highway Stone Spreader, Pneumatic Tool Operator, Wagon Drill Operator, Tree Trimmer, Barco-Type Jumping Tamper, Mechanical Grinder Operator

GROUP 3: Pre-Cast Floor & Roof Plank Erectors

GROUP 4: Air Track Operator, Hydraulic & Similar Self-Powered Drill, Block Paver, Rammer, Curb Setter, Powderman & Blaster

GROUP 5: Toxic Waste Remover

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LAB00271-002 05/30/2021

HEAVY AND HIGHWAY CONSTRUCTION

	Rates	Fringes
LABORER		
COMPRESSED AIR		
Group 1.....	\$ 53.45	24.15
Group 2.....	\$ 50.98	24.15
Group 3.....	\$ 40.50	24.15
FREE AIR		
Group 1.....	\$ 44.05	24.15
Group 2.....	\$ 43.05	24.15
Group 3.....	\$ 40.50	24.15
LABORER		
Group 1.....	\$ 33.55	24.15
Group 2.....	\$ 33.80	24.15
Group 3.....	\$ 34.55	24.15
Group 4.....	\$ 27.05	24.15
Group 5.....	\$ 35.55	24.15
OPEN AIR CAISSON, UNDERPINNING WORK AND BORING CREW		
Bottom Man.....	\$ 39.55	24.15
Top Man & Laborer.....	\$ 38.60	24.15
TEST BORING		
Driller.....	\$ 40.00	24.15
Laborer.....	\$ 38.60	24.15

LABORER CLASSIFICATIONS

GROUP 1: Laborer; Carpenter tender; Cement finisher tender; Wrecking laborer; Asbestos removers [non-mechanical systems]; Plant laborer; Driller in quarries

GROUP 2: Adzeperson; Asphalt raker; Barcotype jumping

tamper; Chain saw operators; Concrete and power buggy operator; Concrete saw operator; Demolition burner; Fence and guard rail erector; Highway stone spreader; Laser beam operator; Mechanical grinder operator; Mason tender; Mortar mixer; Pneumatic tool operator; Riprap and dry stonewall builder; Scaffold erector; Setter of metal forms for roadways; Wagon drill operator; Wood chipper operator; Pipelayer; Pipe trench bracer

GROUP 3: Air track drill operator; Hydraulic and similar powered drills; Brick paver; Block paver; Rammer and curb setter; Powderperson and blaster

GROUP 4: Flagger & signaler

GROUP 5: Toxic waste remover

LABORER - COMPRESSED AIR CLASSIFICATIONS

GROUP 1: Mucking machine operator, tunnel laborer, brake person, track person, miner, grout person, lock tender, gauge tender, miner: motor person & all others in compressed air

GROUP 2: Change house attendant, powder watchperson, top person on iron

GROUP 3: Hazardous waste work within the ""HOT"" zone

LABORER - FREE AIR CLASSIFICATIONS

GROUP 1: Grout person - pumps, brake person, track person, form mover & stripper (wood & steel), shaft laborer, laborer topside, outside motorperson, miner, conveyor operator, miner welder, heading motorperson, erecting operator, mucking machine operator, nozzle person, rodperson, safety miner, shaft & tunnel, steel & rodperson, mole nipper, concrete worker, form erector (wood, steel and all accessories), cement finisher (this type of work only), top signal person, bottom person (when heading is 50' from shaft), burner, shield operator and TBM operator

GROUP 2: Change house attendant, powder watchperson

GROUP 3: Hazardous waste work within the ""HOT"" zone

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PAIN0011-005 06/01/2021

	Rates	Fringes
PAINTER		
Brush and Roller.....	\$ 36.42	22.90
Epoxy, Tanks, Towers, Swing Stage & Structural Steel.....	\$ 38.42	22.90
Spray, Sand & Water Blasting.....	\$ 39.42	22.90
Taper.....	\$ 37.17	22.90
Wall Coverer.....	\$ 36.92	22.90

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PAIN0011-006 06/01/2021

Rates                      Fringes

GLAZIER.....\$ 39.98 22.90

FOOTNOTES:

SWING STAGE: \$1.00 per hour additional.

PAID HOLIDAYS: Labor Day & Christmas Day.

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PAIN0011-011 06/01/2021

Rates Fringes

Painter (Bridge Work).....\$ 54.00 22.90

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PAIN0035-008 06/01/2011

Rates Fringes

Sign Painter.....\$ 24.79 13.72

-----  
PLAS0040-001 06/03/2019

BUILDING CONSTRUCTION

Rates Fringes

CEMENT MASON/CONCRETE FINISHER...\$ 36.00 27.15

FOOTNOTE: Cement Mason: Work on free swinging scaffolds under 3 planks width and which is 20 or more feet above ground and any offset structure: \$.30 per hour additional.

-----  
PLAS0040-002 07/01/2019

HEAVY AND HIGHWAY CONSTRUCTION

Rates Fringes

CEMENT MASON/CONCRETE FINISHER...\$ 32.85 22.20

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PLAS0040-003 07/01/2019

Rates Fringes

PLASTERER.....\$ 37.55 27.50

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PLUM0051-002 08/30/2021

Rates Fringes

Plumbers and Pipefitters.....\$ 46.49 31.40

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\* ROOF0033-004 12/01/2021

Rates Fringes

ROOFER.....\$ 40.40 29.06

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SFRI0669-001 04/01/2021

Rates Fringes

SPRINKLER FITTER.....\$ 47.55 26.60

-----  
SHEE0017-002 12/01/2020

Rates Fringes

Sheet Metal Worker.....\$ 38.58 36.73

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TEAM0251-001 05/01/2019

HEAVY AND HIGHWAY CONSTRUCTION

Rates Fringes

TRUCK DRIVER

GROUP 1.....	\$ 27.96	26.8525+A+B+C
GROUP 2.....	\$ 27.61	26.8525+A+B+C
GROUP 3.....	\$ 27.66	26.8525+A+B+C
GROUP 4.....	\$ 27.71	26.8525+A+B+C
GROUP 5.....	\$ 27.81	26.8525+A+B+C
GROUP 6.....	\$ 28.21	26.8525+A+B+C
GROUP 7.....	\$ 28.41	26.8525+A+B+C
GROUP 8.....	\$ 27.91	26.8525+A+B+C
GROUP 9.....	\$ 28.16	26.8525+A+B+C
GROUP 10.....	\$ 27.96	26.8525+A+B+C

FOOTNOTES:

A. Paid Holidays: New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day and Christmas Day, plus Presidents' Day, Columbus Day, Veteran's Day & V-J Day, providing the employee has worked at least one day in the calendar week in which the holiday falls.

B. Employee who has been on the payroll for 1 year or more but less than 5 years and has worked 150 Days during the last year of employment shall receive 1 week's paid vacation; 5 to 10 years - 2 weeks' paid vacation; 10 or more years - 3 week's paid vacation.

C. Employees on the seniority list shall be paid a one hundred dollar (\$100.00) bonus for every four hundred (400) hours worked, up to a maximum of five hundred dollars (\$500.00)

All drivers working on a defined hazard material job site shall be paid a premium of \$2.00 per hour over applicable rate.

TRUCK DRIVER CLASSIFICATIONS

GROUP 1: Pick-up trucks, station wagons, & panel trucks

GROUP 2: Two-axle on low beds

GROUP 3: Two-axle dump truck

GROUP 4: Three-axle dump truck

GROUP 5: Four- and five-axle equipment

GROUP 6: Low-bed or boom trailer.

GROUP 7: Trailers when used on a double hook up (pulling 2 trailers)

GROUP 8: Special earth-moving equipment, under 35 tons

GROUP 9: Special earth-moving equipment, 35 tons or over

GROUP 10: Tractor trailer

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WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

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Note: Executive Order (EO) 13706, Establishing Paid Sick Leave for Federal Contractors applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2017. If this contract is covered by the EO, the contractor must provide employees with 1 hour of paid sick leave for every 30 hours they work, up to 56 hours of paid sick leave each year. Employees must be permitted to use paid sick leave for their own illness, injury or other health-related needs, including preventive care; to assist a family member (or person who is like family to the employee) who is ill, injured, or has other health-related needs, including preventive care; or for reasons resulting from, or to assist a family member (or person who is like family to the employee) who is a victim of, domestic violence, sexual assault, or stalking. Additional information on contractor requirements and worker protections under the EO is available at [www.dol.gov/whd/govcontracts](http://www.dol.gov/whd/govcontracts).

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (ii)).

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The body of each wage determination lists the classification and wage rates that have been found to be prevailing for the cited type(s) of construction in the area covered by the wage determination. The classifications are listed in alphabetical order of ""identifiers"" that indicate whether the particular rate is a union rate (current union negotiated rate for local), a survey rate (weighted average rate) or a union average rate (weighted union average rate).

Union Rate Identifiers

A four letter classification abbreviation identifier enclosed in dotted lines beginning with characters other than ""SU"" or ""UAVG"" denotes that the union classification and rate were prevailing for that classification in the survey. Example: PLUM0198-005 07/01/2014. PLUM is an abbreviation identifier of the union which prevailed in the survey for this classification, which in this example would be Plumbers. 0198 indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. 07/01/2014 is the effective date of the most current negotiated rate, which in this example is July 1, 2014.

Union prevailing wage rates are updated to reflect all rate changes in the collective bargaining agreement (CBA) governing this classification and rate.

#### Survey Rate Identifiers

Classifications listed under the ""SU"" identifier indicate that no one rate prevailed for this classification in the survey and the published rate is derived by computing a weighted average rate based on all the rates reported in the survey for that classification. As this weighted average rate includes all rates reported in the survey, it may include both union and non-union rates. Example: SULA2012-007 5/13/2014. SU indicates the rates are survey rates based on a weighted average calculation of rates and are not majority rates. LA indicates the State of Louisiana. 2012 is the year of survey on which these classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. 5/13/2014 indicates the survey completion date for the classifications and rates under that identifier.

Survey wage rates are not updated and remain in effect until a new survey is conducted.

#### Union Average Rate Identifiers

Classification(s) listed under the UAVG identifier indicate that no single majority rate prevailed for those classifications; however, 100% of the data reported for the classifications was union data. EXAMPLE: UAVG-OH-0010 08/29/2014. UAVG indicates that the rate is a weighted union average rate. OH indicates the state. The next number, 0010 in the example, is an internal number used in producing the wage determination. 08/29/2014 indicates the survey completion date for the classifications and rates under that identifier.

A UAVG rate will be updated once a year, usually in January of each year, to reflect a weighted average of the current negotiated/CBA rate of the union locals from which the rate is based.

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#### WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

- \* an existing published wage determination
- \* a survey underlying a wage determination
- \* a Wage and Hour Division letter setting forth a position on a wage determination matter
- \* a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour Regional Office for the area in which the survey was conducted because those Regional Offices have responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

Branch of Construction Wage Determinations  
Wage and Hour Division  
U.S. Department of Labor  
200 Constitution Avenue, N.W.  
Washington, DC 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

Wage and Hour Administrator  
U.S. Department of Labor  
200 Constitution Avenue, N.W.  
Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board  
U.S. Department of Labor  
200 Constitution Avenue, N.W.  
Washington, DC 20210

4.) All decisions by the Administrative Review Board are final.

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END OF GENERAL DECISION"

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## SECTION 010000 - GENERAL REQUIREMENTS

### PART 1 - GENERAL

1.1 All work done under this Contract shall also be in conformance with the Drawings and these Supplemental Technical Specifications.

#### A. SCOPE OF WORK

1. The general summary of work to be done under this contract consists of, but shall not be limited, to the following as shown in the Contract Documents:

#### B. WORK COVERED BY CONTRACT DOCUMENTS

C. The Contractor shall execute the scope of work indicated on Plans and Specifications to enhance the use and operations of the site as shown within the project limits.

D. Work shall be as specifically indicated, shown or described in the Drawings, Technical Specifications, and other Contract Documents.

#### E. PROJECT INFORMATION

##### 1. OWNER

- a. City of Providence Parks Department Roger Williams Park Dalrymple Boathouse, 1000 Elmwood Avenue, Providence, RI 02907, Telephone: 401.680.7200
- b. Superintendent of Parks: Wendy Nilsson

##### 2. OWNER'S REPRESENTATIVE

- a. Sam Greenwood, RLA, Providence Parks Department - 401.680.7299

### 1.2 PROJECT LOCATION

A. Roger Williams Park Mounted Command - Cladrastis Ave - Providence, RI 02905

### PART 2 - PRODUCTS

#### 2.1 CONTRACTOR USE OF PREMISES

A. The Contractor's use of premises shall be within the limits shown on the Drawings and as defined in the Standard Form of Agreement, for the performance of the Work.

1. The Contractor shall maintain vehicular access and utility service to the abutting properties at all times throughout the course of the construction.
2. The Contractor shall assume full responsibility for security of all materials and equipment on the site, including those of the subcontractors.



3. If directed by the Owner's Representative, the Contractor shall relocate or move any stored items that interfere with operations of the Owner.
4. The Contractor may elect to obtain (at no cost to the Owner) additional storage or work areas off-site if needed to perform the work.

## 2.2 OWNER OCCUPANCY REQUIREMENTS

- A. The Owner (City) anticipates that site inclusive of all on-site amenities beyond the Limit of Work will remain open throughout the course of construction.
- B. Contractor shall provide the Owner's Representative with a written plan describing the sequences and durations anticipated for the execution of the Work.

## 2.3 MOBILIZATION, SITE PREPARATION, & DEMOLITION

- A. THE WORK SPECIFIED IN THIS SECTION INCLUDES:
  1. Mobilization of all personnel and equipment;
  2. Preparing the construction site for construction operations;
  3. Materials to be removed and legally disposed of off site.
  4. When applicable, verifying and utilizing survey control points as shown on the Drawings
  5. Protecting existing site features to remain, such as fences, trees, shrubs and grassed areas outside the limit of work.
  6. Protecting underground and overhead utilities and other existing facilities from damage.
  7. Where applicable, provisions for site access and of traffic control.
  8. At cessation of site improvement operations: Site clean-up
  9. De-mobilization of all personnel and equipment.

## 2.4 CONSTRUCTION STAGING/STOCKPILE AREAS

- A. Staging areas within the Park is permitted as shown on the Plans with the prior consent of and coordination with the Owner.
- B. Restoration of the site to pre-existing condition shall be the sole responsibility of the Contractor.

## 2.5 MATERIALS AND EQUIPMENT:

- A. Materials to be Removed and Stockpiled.
  1. Materials directed to be removed and stockpiled shall be removed, transported to and stacked in a location directed by the Owner's Representative. All materials shall be neatly stacked as directed.
  2. If the Owner's Representative determines that any part of the materials identified to be stockpiled are unsuitable for re use on the site or by the Owner elsewhere, such materials shall be evaluated for legal disposal by Owner's Representative and Contractor.



- B. Signs: Conform to requirements of Temporary Facilities and Controls.
- C. Temporary Site Protection: Temporary chain-link fence, if so desired shall be furnished, installed and maintained at no additional cost to the Owner. At the completion of all work at the site, the Contractor shall remove all temporary fencing and restore the site to its original condition at no additional cost to the Owner.

## 2.6 TEMPORARY CONSTRUCTION FACILITIES AND UTILITIES

- A. Make arrangements with the Owner's Representative for storage of materials and equipment in designated locations at the construction site. If staged on site, materials shall be secured from vandalism and or theft.
- B. Plastic construction fence or snow fencing if installed shall be maintained in good condition. Provide barricades, barrels, fencing and/or other barriers around excavations and trenches as required for safety. Upon completion, temporary fencing shall be removed and the affected area restored existing condition.

## 2.7 SITE MAINTENANCE

- A. Control dust from Contractor operations in accordance with specified dust control measures.
- B. Maintain the Site during construction in a manner that will not obstruct use on neighborhood streets. Proceed with the work in an orderly manner, maintaining the construction site free of debris and unnecessary equipment or materials.
- C. Legally dispose of all debris, rubbish, hazardous materials, oil, and grease in accordance with local ordinances.
- D. Maintain safety and security of the construction site and any stockpiled or staged materials or equipment if left on site.

## 2.8 TRAFFIC CONTROL

- A. For all of his operations, the Contractor shall provide appropriate traffic control in accordance with, TEMPORARY FACILITIES AND CONTROLS. The purposes of the traffic control are 1) to ensure that operations in the project area are performed in a safe and orderly manner, and 2) to minimize the impact of truck and equipment traffic and noise on adjacent homes near the project area. The Contractor shall be responsible for obtaining any and all required permits and approvals.
- B. Police Details, if required by the City, shall be paid directly to and coordinated with Providence Public Safety by the Owner.



## 2.9 DEMOBILIZATION

- A. Contractor shall be responsible for site security and safety at all times. Upon substantial completion of the work, Contractor shall remove all excess materials, equipment, construction debris, temporary facilities and construction measures (fencing, signs, barriers, etc.) from the project area, and shall leave the site in suitable condition for full occupancy and use by the Owner. The sedimentation and erosion controls installed as part of the Work may not necessarily be removed at this time (see below).
- B. The Owner's Representative shall be the sole judge of whether the site has been suitably cleaned.
- C. Upon suitable stabilization of all disturbed "erodible" areas (e.g. acceptable level of grass growth in loamed and seeded areas, mulch applied and stable in planting areas, etc.), contractor shall remove and legally dispose of all sedimentation and erosion control measures (silt fence, hay bales, catch basin inserts, etc.). See Section 024119 Selective Demolition and 329200 Turf and Grasses for directives and procedures.

## PART 3 - EXECUTION

### 3.1 GENERAL REQUIREMENTS

- A. The construction site entrance shall be as indicated on the plans. The Owner will provide access to any locked gate. Any tracked debris from the site present on adjacent roadways shall be removed and the roads swept daily to remove any excess mud, dirt, or rock originating from the site. Trucks hauling material shall be covered and equipped with gates that prevent material from falling out. If present, catch basins within 100 feet of site entry and exit locations shall be protected with inlet sediment control devices and maintained for the duration of the work.
- B. Identify, clearly mark and protect all survey monuments, temporary bench marks as well as any adjacent contractors' work and facilities (if applicable). Repair or replacement shall be at Contractor's sole expense if damaged by Contractor.
- C. Protect existing culverts, sewers, and all other utilities including gas, telecommunications, electricity, and water. Repair or replace at Contractor's sole expense if damaged by Contractor.
- D. Utilize or install drum or sawhorse barricades or backfill all open excavations, holes, trenches, and depressions occurring at construction sites or occurring as part of this work.

### 3.2 CHANGE ORDER PROCEDURE

#### A. DESCRIPTION

- 1. The Contractor shall comply with this procedure in the process of giving notification of change and preparing and submitting a proposal for adjustment due to a desired, perceived, or actual change in the work. Changes in the work, or period of performance of the work, may be directed in writing by the Owner's Representative or may be



requested by the Contractor. In either case, payment for work accomplished under a modification may not be made until a formal contract modification, incorporating the change into the contract, has been issued and executed. Therefore, it is incumbent upon the Contractor to comply fully with this procedure and to expedite the resolution of changes.

### 3.3 CHANGE SUBMITTALS

- A. When requested, the Contractor shall submit the following to the Owner's Representative in accordance with the Submittals procedures described in these specifications:
  - 1. Proposal cover letter on Contractor's letterhead;
  - 2. Detailed price proposal;
  - 3. Drawings or other explanatory data; and
  - 4. Time extension statement with justification if any time extension is requested.

### 3.4 COMPLIANCE

- A. The Contractor shall take such measures as needed to assure familiarity and compliance by its staff with these procedures. If change proposals are incomplete, unclear, or ambiguous or are not supported by adequate documentation, the data will be returned and the Contractor shall resubmit or supplement the proposal as requested by the Owner's Representative. Delay resulting from the Contractor's noncompliance with this procedure shall not in itself constitute the basis for an extension in the time of performance under the contract.

### 3.5 PROCESSING CHANGES INITIATED BY THE OWNER'S REPRESENTATIVE

- A. The Owner's Representative will initiate changes only in writing. The Owner will sign any Request for Proposal (RFP). This will establish an Extra Work Order (EWO) number, by which the change will be identified until such time as it may be incorporated into the contract by formal Change Order (CO).
- B. The Contractor may or may not be authorized to proceed with the changed work pending resolution of changes in the contract price or time of performance. If the work described in the RFP becomes critical to the timely performance of the Contractor's work, a written request for a Notice to Proceed must be forwarded to the Owner immediately. The Owner will issue any Notice to Proceed. This unilateral modification to the contract may be subject to further negotiation regarding price and time for completion.
- C. Payment for changed work, covered by an authorized modification, will not be made until a notice to proceed covering the changed work has been executed.
- D. The Contractor shall prepare and submit its proposal for change to include at a minimum:
  - 1. A cover letter referencing the EWO number and citing the attachments, if any, which constitute the Contractor's total proposal.



2. A detailed price proposal showing labor, construction equipment, and material quantities and prices at the lowest practical level of each element of the work.
3. Any drawings, sketches, catalog cuts, samples, certifications, or other data required to be submitted by the Owner's Representative that is required to fully document
4. A statement of the proposed change in the time of completion of the contract, together with all required justification for such a change.
5. A statement to the effect that there is "no change in price and/or time of completion of the work under this contract as a result of this proposed change", if that is the case.

- E. The Owner may accept the Contractor's proposal without negotiation. Alternatively, upon receipt of a proposal which is satisfactory in form, the Owner's Representative may require negotiation with the Contractor to arrive at a fair and equitable change in the contract price and time of completion. Upon agreement, a contract modification will be issued by the Owner for Contractor's execution.

### 3.6 PROCESSING CHANGES INITIATED BY THE CONTRACTOR

- A. Should the Contractor feel that a change to the work under the contract, or to the contract itself, is necessary or desirable, it shall propose such a change to the Owner's Representative. This proposed change shall include a clear and concise description of the proposed change, along with that information cited in above.
- B. Within a reasonable time, the Owner's Representative will review the Contractor's proposal and determine if the proposed change is in the Owner's best interest. If so, Contractor will be advised of this and a an EWO number will be assigned to Contractor's proposal.

### 3.7 EXECUTING CHANGED WORK

- A. The Contractor is cautioned not to proceed with the work described in a proposed change until it is authorized to do so in writing by the Owner's Representative.

### 3.8 TERMINATIONS AND DELAYS

- A. Termination of Contract: If the Contractor or any of his/her subcontractors refuses or fails to prosecute the work with such diligence as will insure its completion within the time specified in these Contract Documents, or as modified, as provided for in these Contract Drawings, or violates any other Provisions of this Contract, the Local Public Agency, Local Public Agency, City, by written notice to the Contractor, may terminate the Contractor's right to proceed with the Work. Upon such termination, the City of Providence may take over the work and prosecute the same to completion, by contract or otherwise, and the Contractor and his/her sureties shall be liable to the City of Providence for any additional cost incurred by the City of Providence in its completion of the work and they shall also be liable to the City of Providence for liquidated damages for any delay in the completion of the work as provided below. work and they shall also be liable to the City of Providence for liquidated damages for any delay work. in the completion of the work as provided below. work. If the Contractor's right to proceed is so terminated, the Local Public Agency Local Public Agency City may take possession of and utilize in completing the work such materials, tools, equipment, and plants as may be on the site



of the work and necessary thereof. Project work must commence 30 days after award of Contract or as mutually agreed upon by the Contractor and the Owner. The Contractor is required to submit a Work Schedule including all items included in the scope of work. The Work Schedule shall mirror the Schedule of Values which should be in chronological order. Both items are identified in the standard Pre-Bid and Pre-Construction Meeting Minutes as required. The work shall be continuous and the Contractor shall staff the project appropriately to meet the agreed upon work schedule. De- Mobilization from the project, prior to completion, must be agreed upon in writing by the Owner.

### 3.9 INSPECTION OF WORK

#### A. DESCRIPTION

1. Work included in this Section consists of periodic observation of construction of the project. The Contractor's work shall be monitored periodically by the Owner's Representative
2. The Owner's Representative presence on site or construction observation work is inspectional in nature and will not include supervision or direction of the actual work of the contractor.
3. In no event will the Owner's Representative be responsible or liable for the contractor's use or administration of personnel, machinery, staging, or other temporary or precautionary construction, safety precautions or procedures, or for compliance by the contractor with the provisions, terms, or specifications of the contract. Observation services provided by the Owner's Representative are solely for the benefit of the Owner.
4. The Contractor shall keep the Owner's Representative informed concerning the work status and projected work schedule through regular communications.
5. The Contractor shall not cover any work related to the required field visits until one of the following occurs:
  - a. The Contractor is authorized by the Owner's Representative to proceed after the field visit.
  - b. The field visit is re-scheduled by the Owner's Representative to a later construction event
  - c. The field visit is waived in writing by the Owner's Representative
6. The Contractor shall request a Final Inspection seven calendar days in advance of the planned completion date. After review of the Notice of Completion, the Owner's Representative may reject the Notice for cause or schedule the Final Inspection. The Owner's Representative will perform its Final Inspection on all phases of the work and develop a comprehensive punch list, which will be provided to the Contractor.
7. The Final Inspection will be scheduled when the punch list items discovered during the Final Inspection have been corrected. If discovered, the Owner's Representative may add new items to the punch list at this inspection.
8. The Contractor is advised that the Owner's Representative will not accept the work until the Owner's Representative determines Substantial Completion has been achieved. Therefore, to minimize its risk, the Contractor should schedule its work to be substantially complete in time to allow the Final Inspection and punch list work to occur in advance of the Project Close Out Date. Due to the construction time period and the anticipated weather conditions, substantially complete will be defined as the completion of construction for all item and the temporary stabilization of all disturbed areas,





excluding planting and final seeding. Planting and final seeding is to occur during the time periods specified..

9. Nothing in this Section shall be construed to limit the Owner's Representative right to inspect the work at any time.

### 3.10 CONSTRUCTION SCHEDULES

#### A. DESCRIPTION

1. Work included in this Section consists of preparation, submittal, and updating of the project.

### 3.11 CONSTRUCTION SCHEDULE

#### A. Submit the following to the Owner's Representative in accordance with the Submittals Section. Submittals are for the record or approval as indicated.

1. The proposed construction schedule shall be submitted for approval within five (5) calendar days after receipt of Notice to Proceed.
2. Submit contract Weekly Summary Reports to the Owner's Representative for the record at weekly site meeting at request by the Owner.
3. Submit construction progress schedule including a two week look ahead as back up to progress invoices.

#### B. The construction schedule shall show all work activities for completion of the work to be performed under this contract and will reflect Contractor's general sequential approach to the work. The construction schedule will be in a bar chart format. The minimum level of detail (number of activities) shall include the activities described in the Schedule of Values and the Scope of the Work. The construction schedule shall demonstrate completion of all work within the period of performance of the contract in a reasonable and achievable manner.

### 3.12 PERIODIC SCHEDULE UPDATES

#### A. The Contractor shall support monthly payment requests with an approved construction schedule marked to indicate progress. Submit updated schedule as necessary.

#### B. When in the opinion of the Owner's Representative changes in the work occur that significantly affect the schedule, the Contractor shall submit a revised construction schedule for approval. The revised construction schedule shall be submitted within 10 calendar days after it is requested by the Owner's Representative. The current approved construction schedule shall be used as a baseline for progress reporting.

#### C. Acts of God: Claims for additional compensation for 'Acts of God' will be reviewed by the Owner. It is the Contractor's responsibility to secure the work site daily and failure to provide adequate provisions to do so may result in repairs to the site at the Contractor's expense. Documented 'Acts of God' such as the state issuing a 'State of Emergency' may result in the



Owner's authorization to proceed repair funded by the Owner. No work shall proceed without written authorization by the Owner.

### 3.13 SUBMITTAL PROCEDURES

#### A. DESCRIPTION

1. This Specification Section covers the preparation and submission of all work plans, drawings, samples, manufacturer's literature and brochures, installation instructions, and operation and maintenance manuals as specified herein and in the various sections of these Specifications.
2. A Submittal Schedule shall be submitted for approval within five (5) calendar days after receipt of Notice to Proceed.

### 3.14 DRAWINGS

- A. The term "drawings" as used herein includes 'Shop Drawings' as required for fabrication, erection and installation, layout, and setting of proposed improvements; lists or schedules of materials and catalogues and brochures; performance and test data; and all other drawings and descriptive data pertaining to materials and methods of construction as may be required to show that the materials, equipment, or systems and the positions thereof conform to the requirements of the Contract Documents.
- B. Where specified and if so directed by the Owner's Representative provide shop drawings that are accompanied by design computations.
- C. Sheet sizes of drawings shall not exceed 24 in. by 36 in. The title block on all drawings shall bear the name of the Owner, the name of the project, and the project location.
- D. The Contractor's drawings shall be submitted electronically in PDF format to the Owner's Representative for review and approval.
- E. The Contractor shall maintain a complete set of construction drawings at the jobsite, clearly marked to reflect as-built conditions. Upon completion of the work, the Contractor shall submit these Record Drawings to the Owner's Representative.
- F. The Owner's Representative will review drawings and schedules only for conformance with the design of the Project and for compliance with the Contract Documents and Contract Drawings. The Contractor shall make any and all updates and corrections required by the Owner's Representative
- G. Drawings shall be reviewed and returned within ten (10) working days of receipt of drawings at jobsite. Drawings and all supporting data, catalogs, or similar information shall be prepared by the Contractor or his suppliers and subcontractors but shall be submitted as instruments of the Contractor.
- H. The Owner's Representative review of drawings will be of a general nature and shall not relieve the Contractor from responsibility for errors and omissions of any sort, for deviations from



Drawings or Specifications, or for conflict with the work of others that may result from such deviations. The Owner's Representative review of drawings will not relieve the Contractor of responsibility to complete the work in accordance with the requirements of the Contract Documents.

- I. After Notice of Award, the Contractor shall submit a Submittal Schedule to the Owner's Representative. The Contractor's schedule shall be brought up to date from time to time to show the latest changes, omissions, and additions. The Schedule will be based on the Contractor's Construction Schedule and will show when the Contractor will submit the drawings and when he/she expects them to be returned so that construction activities shown on the Construction Schedule are not interrupted. There will be a minimum of three weeks between these two activities. Specific methods and routines for handling drawing reviews shall be established in advance within the general framework of the Contract Documents.
- J. Work for which the Contractor's submittals are required shall not be started until the submittals have been reviewed and accepted in writing by the Owner's Representative. Any revision by the Contractor of a previously accepted submittal must be accepted in writing by the Owner's Representative before implementation.

### 3.15 SAMPLES

- A. The Contractor shall, at his or her expense, furnish the Owner's Representative with samples of the various materials as specified in these Specification and Drawings. Samples shall be delivered to the office of the Owner's Representative at the Contractor's expense.

### 3.16 PRODUCT DATA

- A. The Contractor shall submit to the Owner's Representative all required Material Safety Data Sheets (MSDS) and all Product Data Sheets and any other relevant product information for all items identified in the Technical Specifications and Drawings. All data shall be furnished by the Contractor in accordance with the approved schedule.

#### B. SUBMITTAL LOG

1. Contractor to provided the following information:
  - a. An I.D. number for each item
  - b. Specification Section, Paragraph Number and Line Item Number (ie. 321313 / 1.3 / A)
  - c. Item Name
  - d. Description of the Item
  - e. Date Submitted
  - f. Status: Approved / Approved As Noted / Rejected
  - g. Sub-Contractor (If any) providing the material
  - h. Comments



3.17 QUALITY CONTROL DESCRIPTION

- A. This Section provides the requirements for Contract quality control (QC) pertaining to the Work, including:
  - 1. QC of products and workmanship;
  - 2. Manufacturer's instructions; and
  - 3. Manufacturer's certificates and field services.

3.18 WORKMANSHIP

- A. The Contractor shall comply with industry standards of the region, except when more restrictive tolerances or specified requirements indicate more rigid standards or more precise workmanship.
- B. The Contractor shall provide suitably-qualified personnel to produce work of specified quality.
- C. The Contractor shall secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, and racking.
- D. The Contractor shall provide materials to match approved samples.

3.19 MANUFACTURER'S INSTRUCTIONS

- A. The Contractor shall require compliance with instructions in full detail, including each step in sequence. Should instructions conflict with the Contract Documents, the Contractor shall request clarification from the Owner's Representative before proceeding.

3.20 MANUFACTURER'S CERTIFICATES

- A. When required in individual Specifications sections, the Contractor shall submit manufacturer's certificates, in duplicate, certifying that products meet or exceed specified requirements.

3.21 TESTING LABORATORY SERVICES (NIC)

- A. Not Utilized in this Contract
- B. (Modify as Required)

3.22 MANUFACTURER'S FIELD SERVICES

- A. When required by the manufacturer or Owner's Representative, the Contractor shall have the manufacturer provide a qualified representative to observe field conditions, conditions of surfaces and installation, and quality of workmanship as applicable and to make written report of observations and recommendations to the Owner's Representative



3.23 AUTHORITY OF OWNER'S REPRESENTATIVE

- A. The Owner's Representative will decide all questions that may arise as to the quality and acceptability of materials furnished. All questions that may arise as to the interpretation of the Contract Drawing and Specifications shall be determined by the Owner's Representative.
- B. The Owner and Owner's Representative shall not be responsible for the Contractor's means, methods, techniques, sequences, or procedures of construction or the safety precautions and programs incident thereto, and the Owner's Representative will not be responsible for the Contractor's failure to perform the work in accordance with the Contract Documents.
- C. The Owner's Representative will not be responsible for the acts or omissions of the Contractor or any subcontractors, of the agents or employees of any Contractor or subcontractor, or of any other persons at the site or otherwise performing any of the work.

3.24 COORDINATION OF DRAWINGS AND SPECIFICATIONS

- A. The Contractor shall take no advantage of any apparent error or omission in the Contract Drawings or Specifications. In the event the Contractor discovers such a discrepancy, error or omission, he shall immediately notify the Owner's Representative. After review and consultation with the Owner's Representative the Owner's Representative will issue clarifications, provide interpretations and make such corrections as may be deemed necessary for the Contractor to proceed with fulfilling the intent of the Contract Drawings and Specifications.
- B. When general reference is made on the Contract Drawings or within the Specifications to any cited Standard Specifications, it shall refer to the current edition of such Specifications or the latest revision thereof or interim Specifications adopted and in effect on the date of Effective Date of Agreement. In the event of a conflict between the Contract Drawings and the specifications, the Owner's Representative shall be notified to provide a clarification to the Contractor.

3.25 COOPERATION WITH UTILITIES

- A. The Contractor will notify all utility companies, all pipeline owners, or other parties affected and endeavor to have all necessary adjustments of the public or private utility fixtures, pipelines, and other appurtenances within or adjacent to the limits of construction made as soon as practical.
- B. Water lines, gas lines, wire lines, service connections, water and gas meter boxes, water and gas valve boxes, light standards, cableways, signals, and all other utility appurtenances within the limits of the proposed construction which are to be crossed, relocated or adjusted are to be moved by the Contractor or its designated agents, except as otherwise noted on the Contract Drawings. In the case of utility lines, the Contractor shall coordinate with the respective utilities for their removal and relocation.
- C. Attention is directed to the possible existence of underground facilities not known to the Owner's Representative or in a location different from that which is shown on the Contract



Drawings. The Contractor shall take steps to ascertain the exact location of all underground facilities prior to doing work that may damage such facilities or interfere with their service.

3.26 INDEPENDENT TESTING AND INSPECTION (NIC)

- A. Not Applicable under this Contract

3.27 REQUIREMENTS

- A. The requirements for sampling and testing or inspection are specified in the Specifications and Drawings. The Contractor shall maintain a complete and up-to-date file of all quality control documentation at the jobsite.

3.28 MATERIAL AND EQUIPMENT

A. DESCRIPTION

- 1. This Specification Section includes the requirements for the transportation, handling, storage, and protection of materials and equipment as specified herein and in the various Sections of these Specifications. This Section also addresses the procedure for Contractor-proposed product substitutions.

3.29 MANUFACTURER REQUIREMENTS

- A. In general, the Contractor shall receive, handle, and store materials and equipment in accordance with manufacturer's recommendations and in a manner which will protect such items from damage or deterioration.
- B. GENERAL
- C. Products include the material, equipment, and systems used on this Project. Comply with the Specifications, Drawings and referenced standards as minimum requirements.

3.30 TRANSPORTATION AND HANDLING

- A. The Contractor shall receive, handle, and store materials and equipment supplied by him/her in a manner that will protect such items from damage or deterioration in accordance with procedures provided by product manufacturers and the Owner.
- B. Promptly inspect the shipments to assure that the products comply with requirements, the quantities are correct, and the products are undamaged.



### 3.31 STORAGE AND PROTECTION

- A. Materials and equipment shall be stored off the ground on blocking or pallets and shall be covered for protection from vandalism and weather damage.
- B. Materials and equipment shall be stored, tested, and cleaned prior to use, in accordance with the Specification and all specific manufacturers' requirements. Damaged or nonconforming items shall be removed immediately to a separated storage area for expeditious removal from site.
- C. The Contractor shall provide a secure outside storage area in the vicinity of the site.

### 3.32 SUBSTITUTIONS

- A. Substitutions will be considered only when a product becomes unavailable due to no fault of the Contractor or when deemed appropriate by the Owner's Representative
- B. Document each request with complete data substantiating the compliance of the proposed substitution with the Contract Documents.
- C. The requested substitution proposed constitutes a representation that the Contractor:
  - 1. Has investigated the proposed product and determined that it meets or exceeds, in all respects, the specified product.
  - 2. Will provide the same warranty for substitution as for the specified product.
  - 3. Will coordinate installation and make other changes which may be required for the Work to be complete in all respects.
  - 4. Waives claims for additional costs which may subsequently become apparent.
- D. Substitutions will be considered when they are indicated or implied on shop drawings or product data submittals without separate written request, or when acceptance will require substantial revision of the Contract Documents.
- E. The Owner's Representative will determine acceptability of the proposed substitution, and will notify the Contractor of acceptance or rejection in writing within a reasonable time. Only one request for the substitution will be considered for each product. When substitution is not accepted, the Contractor shall provide the specified product.

### 3.33 REJECTED MATERIALS AND DEFECTIVE WORK

- A. Materials furnished by the Contractor and rejected by the Owner's Representative as unsuitable or not in conformity with the specifications shall forthwith be removed from the job-site and work area by the Contractor, and shall not be made use of elsewhere in the work.
- B. Any errors, defects, or omissions in the execution of work or in the materials furnished by the Contractor, even though they may have been passed or overlooked or have appeared after the completion of the work, discovered at any time before the final payment is made hereunder, shall be forthwith rectified and made good by and at the expense of the Contractor and in a manner satisfactory to the Owner or Owner's Representative.



- C. The Contractor shall reimburse the Owner for any expense, losses or damages incurred in consequence of any defect error, omission or act of the Contractor or his employees, as determined by the Owner's Representative, occurring previous to the final payment.

### 3.34 PROJECT CLOSEOUT

#### A. DESCRIPTION

1. This Section specifies administrative and procedural requirements for the project closeout including, but not limited to:
  - a. Project record document (As-Built drawings) submittal. Maintain a clean, undamaged set of blue or black line white-prints of Contract Drawings and Shop Drawings. Mark the set to show the actual installation where the installation varies substantially from the Work as originally shown. Mark whichever drawing is most capable of showing conditions fully and accurately; where Shop Drawings are used, record a cross-reference at the corresponding location on the Contract Drawings. Give particular attention to concealed elements that would be difficult to measure and record at a later date.
  - b. Organize record drawing sheets into manageable sets, bind with durable paper cover sheets, and print suitable titles, dates and other identification on the cover of each set. Upon completion of work, submit record drawings to the Owner's Representative.
2. Record Specifications
  - a. Maintain one complete copy of the Project Manual, including addenda. Mark these documents to show substantial variations in actual Work performed in comparison with the Specifications and modifications. Give particular attention to substitutions, selection of options and similar information on elements that are concealed or cannot otherwise be readily discerned later by direct observation. Note related record drawing information and Product Data. Upon completion of the Work, submit record Specifications.
3. Test Results
  - a. Not Applicable this project
4. REMOVAL OF PROTECTION
  - a. Remove temporary protection and facilities installed for protection of the Work during construction. Fencing and erosion and sediment control measures and best management practices can be removed after permanent measures have been established.

### 3.35 WARRANTIES

#### A. DESCRIPTION

1. This Section specifies general administration and procedural requirements for warranties and bonds required by the Contract Documents, including manufacturers' standard warranties on products and special warranties.
  - a. Refer to the General Conditions for terms of the Contractor's special warranty of workmanship and materials;
  - b. General closeout requirements are included in Section "Project Closeout"; and





- c. Specific requirements for warranties for the Work and products and installations that are specified to be warranted are included in the specifications and Drawings.
2. Disclaimers and Limitations
  - a. Manufacturer's disclaimers and limitations on product warranties do not relieve the Contractor of the warranty on the Work that incorporates the products, nor does it relieve suppliers, manufacturers, and subcontractors required to countersign special warranties with the Contractor.

## B. DEFINITIONS

1. Standard Warranties
  - a. Standard product warranties are pre-printed written warranties published by individual manufacturers for particular products and are specifically endorsed by the manufacturer to the Owner.
2. Special Warranties
  - a. Special warranties are written required by or incorporated in the Contract Documents, either to extend time limits provided by standard warranties or to provide greater rights for the Owner.

## C. WARRANTY REQUIREMENTS

1. Related Damages and Losses
  - a. When correcting warranted Work that has failed, remove and replace other Work that has been damaged as a result of such failure or that must be removed and replaced to provide access for corrections of warranted Work.
2. Reinstatement of Warranty
  - a. When Work covered by a warranty has failed and been corrected by replacement or rebuilding, reinstate the warranty by written endorsement. The reinstated warranty shall be equal to the original warranty with an equitable adjustment for depreciation.
3. Replacement Cost
  - a. Upon determination that Work covered by a warranty has failed, replace or rebuild the Work to an acceptable condition complying with requirements of Contract Documents. The Contractor is responsible for the cost of replacing or rebuilding defective Work regardless of whether the Owner's Representative has benefited from use of the Work through a portion of its anticipated useful service life.
4. Owner's Recourse
  - a. Written warranties made to the Owner are in addition to implied warranties, and shall not limit the duties, obligations, rights and remedies otherwise available under the law, nor shall warranty periods be interpreted as limitations on time in which the Owner can enforce such other duties, obligations, rights and remedies.
5. Rejection of Warranties
  - a. The Owner's Representative reserves the right to reject warranties and to limit selections to products with warranties not in conflict with requirements of the Contract Documents. The Owner's Representative reserves the right to refuse to accept Work for the Project where a special warranty, certification, or similar commitment is required on such Work or part of the Work, until evidence is presented that entities required to counter sign such commitments are willing to do so.



- b. All warranties shall be submitted to the Owner in accordance with conditions of the Contract and the Submittals.

D. WARRANTY PERIOD

1. All warranties required by the Contract documents shall commence on the date of Final Acceptance.
2. Warranty period is one (1) year from date of Final Acceptance unless otherwise specified.

END OF SECTION 010000



## SECTION 015639 - TEMPORARY TREE AND PLANT PROTECTION

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Requirements, apply to this Section.

#### 1.2 SUMMARY

- A. Section includes general protection and pruning of existing trees and plants that are affected by execution of the Work, whether temporary or permanent construction.
- B. Related Requirements:
  - 1. Section 311000 "Site Clearing" for removing existing trees and shrubs.

#### 1.3 DEFINITIONS

- A. (DBH): Diameter breast height; diameter of a trunk as measured by the average of the smallest and largest diameters at a height 54 inches above the ground line for trees with caliper of 8 inches or greater as measured at a height of 12 inches above the ground.
- B. Plant-Protection Zone: Area surrounding individual trees, shrubs, or other vegetation to be protected during construction and indicated on Drawings.
- C. Tree-Protection Zone: Area surrounding individual trees or groups of trees to be protected during construction and indicated on Drawings .
- D. Vegetation: Trees, shrubs, groundcovers, grass, and other plants.

#### 1.4 PRE- CONSTRUCTION MEETINGS

- A. Pre-construction Conference: Conduct conference at Project site .
  - 1. Review methods and procedures related to temporary tree and plant protection including, but not limited to, the following:
    - a. Tree-service firm's personnel, and equipment needed to make progress and avoid delays.
    - b. Arborist's responsibilities.
    - c. Coordination of Work and equipment movement with the locations of protection zones.
    - d. Trenching by hand or with air spade within protection zones.
    - e. Field quality control and maintenance.



- f. Coordination by Parks Department City Forester and Forestry crews.

## 1.5 ACTION SUBMITTALS

- A. Contractor shall arrange site visit with City Forester prior to mobilization to determine the scope of pruning by the Parks Department Forestry Division or Contractor as indicated on the drawings.

## 1.6 QUALITY ASSURANCE

- A. Arborist Qualifications: Licensed arborist in jurisdiction where Project is located .

## 1.7 FIELD CONDITIONS

- A. The following practices are prohibited within protection zones:
  - 1. Storage of construction materials, debris, or excavated material.
  - 2. Moving or parking vehicles or equipment.
  - 3. Foot traffic.
  - 4. Erection of sheds or structures.
  - 5. Impoundment of water.
  - 6. Excavation or other digging unless otherwise indicated.
  - 7. Attachment of signs to or wrapping materials around trees or plants unless otherwise indicated.
- B. Prohibit heat sources, flames, ignition sources, and smoking within or near protection zones and organic mulch.

## PART 2 - PRODUCTS

### 2.1 MATERIALS

- A. Backfill Soil: Stockpiled soil mixed with planting soil of suitable moisture content and granular texture for placing around tree; free of stones, roots, plants, sod, clods, clay lumps, pockets of coarse sand, concrete slurry, concrete layers or chunks, cement, plaster, building debris, and other extraneous materials harmful to plant growth.
  - 1. Mixture: Well-blended mix of two parts stockpiled soil to one part planting soil .
- B. Protection-Zone Fencing: Fencing fixed in position and meeting the following requirements:
  - 1. Plastic Protection-Zone Fencing: Plastic construction fencing constructed of high-density extruded and stretched polyethylene fabric with 2-inch maximum opening in pattern and weighing a minimum of 0.4 lb/ft.; remaining flexible from minus 60 to plus 200 deg F; inert to most chemicals and acids; minimum tensile yield strength of 2000 psi and ultimate tensile strength of 2680 psi; secured with plastic bands or galvanized-steel or



stainless-steel wire ties; and supported by tubular or T-shape galvanized-steel posts spaced not more than 96 inches apart.

- a. Height: 72 inches .
- b. Color: High-visibility orange, nonfading.

### PART 3 - EXECUTION

#### 3.1 PREPARATION

- A. Protect tree root systems from damage caused by runoff or spillage of noxious materials while mixing, placing, or storing construction materials. Protect root systems from ponding, eroding, or excessive wetting caused by dewatering operations.

#### 3.2 PROTECTION ZONES

- A. Protection-Zone Fencing: Install protection-zone fencing along edges of protection zones before materials or equipment are brought on the site and construction operations begin in a manner that will prevent people from easily entering protected areas except by entrance gates. Construct fencing so as not to obstruct safe passage or visibility at vehicle intersections where fencing is located adjacent to pedestrian walkways or in close proximity to street intersections, drives, or other vehicular circulation.
- B. Protection-Zone Signage: Install protection-zone signage in visibly prominent locations in a manner approved by Owner's Representative. Install one sign on protection-zone fencing. Sign to read "Tree Protection Zone - Do not Disturb". Sign to be printed on 24"x 36" white panel with black lettering at a minimum of 3" height lettering .
- C. Maintain protection zones free of trash.
- D. Maintain protection-zone fencing in good condition as acceptable by Owner's Representative and remove when construction operations are complete and equipment has been removed from the site.
  1. Do not remove protection-zone fencing, even temporarily, to allow deliveries or equipment access through the protection zone.
  2. Temporary access is permitted subject to preapproval in writing by Owner's Representative if a root buffer effective against soil compaction is constructed as directed by Owner's Representative. Maintain root buffer so long as access is permitted.

#### 3.3 EXCAVATION

- A. General: Excavate at edge of protection zones and for trenches indicated within protection zones according to requirements in Section 312000 "Earth Moving" unless otherwise indicated.
- B. Redirect roots in backfill areas where possible. If encountering large, main lateral roots, expose roots beyond excavation limits as required to bend and redirect them without breaking. If



encountered immediately adjacent to location of new construction and redirection is not practical, cut roots approximately 3 inches back from new construction and as required for root pruning.

- C. Do not allow exposed roots to dry out before placing permanent backfill. Provide temporary earth cover and wrap with dampened burlap. Water and maintain in a moist condition. Temporarily support and protect roots from damage until they are permanently relocated and covered with soil or as directed by Owner's Representative.

### 3.4 ROOT PRUNING

- A. Prune tree roots that are affected by temporary and permanent construction. Prune roots as follows:
  - 1. Cut roots manually by digging a trench and cutting exposed roots with sharp pruning instruments; do not break, tear, chop, or slant the cuts. Do not use a backhoe or other equipment that rips, tears, or pulls roots.
  - 2. No roots larger than two (2) inches in diameter may be cut without permission of the City Forester. Cuts must be made with hand-pruner, handsaws, or chainsaws.
  - 3. Temporarily support and protect roots from damage until they are permanently redirected and covered with soil.
  - 4. Cover exposed roots with burlap and water regularly.
  - 5. Backfill as soon as possible according to requirements in Section 312000 "Earth Moving."
- B. Root Pruning within Protection Zone: Clear and excavate by hand or with air spade to the depth of the required excavation to minimize damage to tree root systems. If excavating by hand, use narrow-tine spading forks to comb soil to expose roots. Cleanly cut roots as close to excavation as possible.

### 3.5 REGRADING

- A. Lowering Grade: Where new finish grade is indicated below existing grade around trees, slope grade beyond the protection zone. Maintain existing grades within the protection zone.
- B. Lowering Grade within Protection Zone: Where new finish grade is indicated below existing grade around trees, slope grade away from trees as recommended by Owner's Representative unless otherwise indicated.
  - 1. Root Pruning: Prune tree roots exposed by lowering the grade. Do not cut main lateral roots or taproots; cut only smaller roots. Cut roots as required for root pruning.
- C. Minor Fill within Protection Zone: Where existing grade is 2 inches or less below elevation of finish grade, fill with backfill soil. Place backfill soil in a single uncompacted layer and hand grade to required finish elevations.



### 3.6 REPAIR AND REPLACEMENT

- A. General: Repair or replace trees, shrubs, and other vegetation indicated to remain or to be relocated that are damaged by construction operations, in a manner approved by Owner's Representative.
  - 1. Submit details of proposed pruning and repairs.
  - 2. Perform repairs of damaged trunks, branches, and roots within 24 hours according to arborist's written instructions.
  - 3. Replace trees and other plants that cannot be repaired and restored to full-growth status, as determined by Owner's Representative. Replacement trees to be equal to the total diameter of mature tree by multiple equal diameter specimens.
  
- B. Trees: Remove and replace trees tha damaged during construction operations that Owner's Representative determines are incapable of restoring to normal growth pattern.
  - 1. Small Trees: Provide new trees of same size and species as those being replaced for each tree that measures 4" or smaller in caliper size.
  - 2. Large Trees: Provide multiple trees of 3-3.5" caliper size to equal total diameter of tree being replaced. .
    - a. Species: As determined by Owner's Representative.
  - 3. Plant and maintain new trees as specified in Section 329300 "Plants."
  
- C. Soil Aeration: Where directed by Owner's Representative, aerate surface soil compacted during construction. Aerate to loosen soil 10 feet beyond drip line and no closer than 36" to tree trunk with air spade.

### 3.7 DISPOSAL OF SURPLUS AND WASTE MATERIALS

- A. Disposal: Remove excess excavated material, displaced trees, trash, and debris and legally dispose of them off Owner's property.

END OF SECTION 015639



## SECTION 024119 - SELECTIVE DEMOLITION

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Requirements, apply to this Section.

#### 1.2 SUMMARY

- A. Section Includes:

1. Demolition and removal of selected portions of building or structure.
2. Demolition and removal of selected site elements.
3. Salvage of existing items to be reused or recycled.

- B. Related Requirements:

1. Section 015639 "Temporary Tree and Plant Protection" for temporary protection of existing trees and plants that are affected by selective demolition.
2. Section 311000 "Site Clearing" for site clearing and removal of above- and below-grade improvements not part of selective demolition.

#### 1.3 DEFINITIONS

- A. Remove: Detach items from existing construction and legally dispose of them off-site unless indicated to be salvaged or reinstalled.
- B. Remove and Salvage: Detach items from existing construction, in a manner to prevent damage, and deliver to Owner, ready for reuse or store on a per project basis. .
- C. Remove and Reinstall: Detach items from existing construction, in a manner to prevent damage, prepare for reuse, and reinstall where indicated.
- D. Existing to Remain: Leave existing items that are not to be removed and that are not otherwise indicated to be salvaged or reinstalled.
- E. Dismantle: To remove by disassembling or detaching an item from a surface, using gentle methods and equipment to prevent damage to the item and surfaces; disposing of items unless indicated to be salvaged or reinstalled.

#### 1.4 MATERIALS OWNERSHIP

- A. Unless otherwise indicated, demolition waste becomes property of Contractor.





- B. Historic items, relics, antiques, and similar objects including, but not limited to, cornerstones and their contents, commemorative plaques and tablets, and other items of interest or value to Owner that may be uncovered during demolition remain the property of Owner.
  - 1. Carefully salvage in a manner to prevent damage and promptly return to Owner.

#### 1.5 PRE-CONSTRUCTION MEETINGS

- A. Predemolition Conference: Conduct conference at Project site .
  - 1. Inspect and discuss condition of construction to be selectively demolished.
  - 2. Review structural load limitations of existing structures.
  - 3. Review and finalize selective demolition schedule and verify availability of materials, demolition personnel, equipment, and facilities needed to make progress and avoid delays.
  - 4. Review requirements of work performed by other trades that rely on substrates exposed by selective demolition operations.
  - 5. Review areas where existing construction is to remain and requires protection.

#### 1.6 INFORMATIONAL SUBMITTALS

- A. Proposed Protection Measures: Submit report, including Drawings, that indicates the measures proposed for protecting individuals and property , for environmental protection , for dust control and , for noise control. Indicate proposed locations and construction of barriers.
- B. Schedule of Selective Demolition Activities: Indicate the following:
  - 1. Detailed sequence of selective demolition and removal work, with starting and ending dates for each activity. Ensure Owner's on-site uses are uninterrupted.
  - 2. Interruption of utility services. Indicate how long utility services will be interrupted.
  - 3. Coordination for shutoff, capping, and continuation of utility services.
  - 4. Coordination of Owner's continuing use of portions of existing site and of Owner's partial use of completed Work.
- C. Predemolition Photographs or Video: Show existing conditions of adjoining construction, including finish surfaces, that might be misconstrued as damage caused by demolition operations. Comply with Section 013233 "Photographic Documentation." Submit before Work begins.
- D. Warranties: Documentation indicating that existing warranties are still in effect after completion of selective demolition.

#### 1.7 FIELD CONDITIONS

- A. Owner will occupy portions of the site immediately adjacent to selective demolition area. Conduct selective demolition so Owner's use will not be disrupted.



- B. Conditions existing at time of inspection for bidding purpose will be maintained by Owner as far as practical.
    - 1. Before selective demolition, Owner will remove the items specifically indicated on the drawings
  - C. Notify Owner's Representative of discrepancies between existing conditions and Drawings before proceeding with selective demolition.
  - D. Hazardous Materials: It is not expected that hazardous materials will be encountered in the Work.
    - 1. Hazardous materials will be removed by Owner before start of the Work.
    - 2. If suspected hazardous materials are encountered, do not disturb; immediately notify Architect and Owner. Hazardous materials will be removed by Owner under a separate contract.
  - E. Hazardous Materials: Present in buildings and structures to be selectively demolished. A report on the presence of hazardous materials is on file for review and use. Examine report to become aware of locations where hazardous materials are present.
    - 1. Hazardous material remediation is specified elsewhere in the Contract Documents.
    - 2. Do not disturb hazardous materials or items suspected of containing hazardous materials except under procedures specified elsewhere in the Contract Documents.
    - 3. Owner will provide material safety data sheets for suspected hazardous materials that are known to be present in buildings and structures to be selectively demolished because of building operations or processes performed there.
  - F. Historic Areas: Demolition and hauling equipment and other materials shall be of sizes that clear surfaces within historic spaces, areas, rooms, and openings, including temporary protection
  - G. Storage or sale of removed items or materials on-site is not permitted.
  - H. Utility Service: Maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations.
- 1.8 WARRANTY
- A. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during selective demolition, by methods and with materials and using approved contractors so as not to void existing warranties. Notify warrantor before proceeding.
  - B. Notify Owner on completion of selective demolition, and obtain documentation verifying that existing system has been inspected and warranty remains in effect. Submit documentation at Project closeout.



1.9 COORDINATION

- A. Arrange selective demolition schedule so as not to interfere with Owner's use.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Regulatory Requirements: Comply with governing EPA notification regulations before beginning selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.
- B. Standards: Comply with ASSE A10.6 and NFPA 241.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify that utilities have been disconnected and capped before starting selective demolition operations.
  - 1. Contact Dig Safe-Provide Dig Safe number to Owner prior to mobilization.
- B. Review Project Record Documents of existing construction or other existing condition and hazardous material information provided by Owner. Owner does not guarantee that existing conditions are same as those indicated in Project Record Documents.
  - 1. Meet with Owner's Representative to identify local utilities prior to mobilization.
- C. Survey of Existing Conditions: Record existing conditions by use of preconstruction photographs. measured drawings .
  - 1. Comply with requirements specified in Section 013233 "Photographic Documentation."
  - 2. Inventory and record the condition of items to be removed and salvaged. Provide photographs or video of conditions that might be misconstrued as damage caused by salvage operations. Notify Owner of damaged items.
  - 3. Before selective demolition or removal of existing elements that will be reproduced or duplicated in final Work, make permanent record of measurements, materials, and construction details required to make exact reproduction.

3.2 UTILITY SERVICES AND MECHANICAL/ELECTRICAL SYSTEMS

- A. Existing Services/Systems to Be Removed, Relocated, or Abandoned: Locate, identify, disconnect, and seal or cap off utility services and mechanical/electrical systems serving areas to be selectively demolished.



1. Arrange to shut off utilities with utility companies.
2. If services/systems are required to be removed, relocated, or abandoned, provide temporary services/systems that bypass area of selective demolition and that maintain continuity of services/systems to other parts of the site.
3. Disconnect, demolish, and remove fire-suppression systems, plumbing, and HVAC systems, equipment, and components indicated on Drawings to be removed.
  - a. Piping to Be Removed: Remove portion of piping indicated to be removed and cap or plug remaining piping with same or compatible piping material.
  - b. Piping to Be Abandoned in Place: Drain piping and cap or plug piping with same or compatible piping material and leave in place.
  - c. Equipment to Be Removed and Reinstalled: Disconnect and cap services and remove, clean, and store equipment; when appropriate, reinstall, reconnect, and make equipment operational.

### 3.3 PROTECTION

- A. Temporary Protection: Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.
  1. Provide protection to ensure safe passage of people around selective demolition area and to and from occupied portions of the site.
- B. Remove temporary barricades and protections where hazards no longer exist.

### 3.4 SELECTIVE DEMOLITION, GENERAL

- A. General: Demolish and remove existing construction only to the extent required by new construction and as indicated. Use methods required to complete the Work within limitations of governing regulations and as follows:
  1. Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction. Use hand tools or small power tools designed for sawing or grinding, not hammering and chopping. Temporarily cover openings to remain.
  2. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.
  3. Do not use cutting torches until work area is cleared of flammable materials. At concealed spaces, such as duct and pipe interiors, verify condition and contents of hidden space before starting flame-cutting operations. Maintain portable fire-suppression devices during flame-cutting operations.
  4. Maintain adequate ventilation when using cutting torches.
  5. Remove decayed, vermin-infested, or otherwise dangerous or unsuitable materials and promptly dispose of off-site.
  6. Dispose of demolished items and materials promptly and legally off site.
- B. Site Access and Temporary Controls: Conduct selective demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.



- C. Work in Historic Areas: Selective demolition may be performed only in areas of Project that are not designated as historic. In historic spaces, areas, and rooms, or on historic surfaces, the terms "demolish" or "remove" shall mean historic "removal" or "dismantling."
- D. Removed and Salvaged Items (Granite Cobblestones):
  - 1. Clean salvaged items.
  - 2. Pack or crate items after cleaning. Identify contents of containers.
  - 3. Store items in a secure area until delivery to Owner.
  - 4. Transport items to location designated by Owner's Representative.
  - 5. Protect items from damage during transport and storage.
- E. Removed and Reinstalled Items (Water Troughs & Electric Fence/Solar Chargers):
  - 1. Clean and repair items to functional condition adequate for intended reuse.
  - 2. Protect items from damage during transport and storage.
  - 3. Reinstall items in locations indicated. Comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make item functional for use indicated.

### 3.5 SELECTIVE DEMOLITION PROCEDURES FOR SPECIFIC MATERIALS

- A. Concrete Slabs-on-Grade: Saw-cut perimeter of area to be demolished, and then break up and remove.

### 3.6 DISPOSAL OF DEMOLISHED MATERIALS

- A. Remove demolition waste materials from Project site and dispose of legally.
  - 1. Do not allow demolished materials to accumulate on-site.
  - 2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
  - 3. Remove debris from elevated portions of building by chute, hoist, or other device that will convey debris to grade level in a controlled descent.
- B. Burning: Do not burn demolished materials.

### 3.7 CLEANING

- A. Clean adjacent structures and improvements of dust, dirt, and debris caused by selective demolition operations. Return adjacent areas to condition existing before selective demolition operations began.

END OF SECTION 024119



## SECTION 055000 - METAL FABRICATIONS

### PART 1 - PART 1 – GENERAL

#### 1.1 SUMMARY

- A. This Section includes construction and contractor requirements to provide structural support for exterior gate frames, posts, and hinge, latch, and drop pin assemblies.

#### 1.2 PERFORMANCE REQUIREMENTS

- A. Structural Performance:

1. Gate Framing: Provide exterior gate fabricated from tubular steel and channel that incorporates HDPE rails so as to match the three-rail fencing system. Gates shall be capable of withstanding the following structural loads without exceeding the allowable design working stress of the materials involved, including anchors and connections, or of exhibiting excessive deflections in any of the components making up the countertops and vanities:
  - a. All dead loads.
  - b. 1000-pound live load
  - c. Deflection at Midspan:  $L/500$  times span or  $1/8''$ , whichever is less
2. Tube Steel Posts: Provide gate support posts set in concrete
3. Supply industrial grade hinge, latch, and drop pin assemblies sufficiently sized and of a grade sufficient to endure the rigors daily livestock use.

#### 1.3 SUBMITTALS

- A. Product Data: Submit product data for the following:

1. Paint products

- B. Shop Drawings: Submit shop drawings detailing the fabrication and erection of each metal fabrication indicated. Include plans, elevations, sections, and details of metal fabrications and their connections. Show anchorage and accessory items.

- C. For installed products indicated to comply with design loads, include structural analysis data.

#### 1.4 QUALITY ASSURANCE

- A. Fabricator/Installer Qualifications: A firm experienced in producing metal fabrications similar to those indicated for this Project for a minimum of 5 years, with a record of successful in-service performance, with sufficient production capacity to produce required units without causing delay in the work.



- B. Welding: qualify procedures and personnel according to the following:
  - 1. AWS D1.1, "Structural Welding Code--Steel."
  - 2. AWS D1.3, "Structural Welding Code--Sheet Steel."
- C. Certify that each welder has satisfactorily passed AWS qualification tests for welding processes involved and, if pertinent, has undergone recertification.
- D. Determination of existing structure to accommodate new loads.

#### 1.5 STORAGE, DELIVERY AND HANDLING

- A. Store metal fabrications to prevent any type of damage to the fabricated work.

#### 1.6 PROJECT CONDITIONS

- A. Field Measurements: Where metal fabrications are indicated to fit with other constructed elements, verify dimensions by field measurements before fabrication and indicate measurements on Shop Drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.
- B. Established Dimensions: Where field measurements cannot be made without delaying the Work, establish dimensions and proceed with fabricating metal fabrications without field measurements. Coordinate construction to ensure that actual dimensions correspond to established dimensions. Allow for trimming and fitting. Coordinate installation of anchorages for metal fabrications. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.

### PART 2 - PART 2 - PRODUCTS

#### 2.1 METALS, GENERAL

- A. Metal Surfaces, General: For metal fabrications exposed to view in the completed Work, provide materials with smooth, flat surfaces without blemishes.
- B. Do not use materials with exposed pitting, seam marks, roller marks, rolled trade names, or roughness.

#### 2.2 FERROUS METALS

- A. Steel Plates, Shapes, and Bars: ASTM A 36/A 36M.
- B. Cold Finished Steel Bars: ASTM A108, grade as selected by fabricator.



- C. Steel Tubing: Cold-formed steel tubing complying with ASTM A 500, or hot formed steel tubing complying with ASTM A 501.
- D. Steel Pipe: ASTM A 53, standard weight (Schedule 40) minimum, unless otherwise indicated or required to satisfy the performance requirements; finish as follows:
  - 1. Black finish, unless otherwise indicate.
  - 2. Galvanized finish for exterior installations, and where indicated.
- E. Welding Rods and Bare Electrodes: Select according to AWS specifications for metal alloy welded

### 2.3 PAINT

- A. Shop Primer for Ferrous Metal: Fast-curing, lead- and chromate-free, universal modified-alkyd primer complying with performance requirements in FS TT-P-664; selected for good resistance to normal atmospheric corrosion, compatibility with finish paint systems indicated, and capability to provide a sound foundation for field- applied topcoats despite prolonged exposure.
- B. Galvanizing Repair Paint: High-zinc-dust-content paint for re-galvanizing welds in steel, complying with SSPC-Paint 20
- C. Bituminous Paint: Cold-applied asphalt mastic complying with SSPC-Paint 12, except containing no asbestos fibers, or cold-applied asphalt emulsion complying with ASTM D 1187.

### 2.4 FASTENERS

- A. General: Provide Type 304 or 316 stainless-steel fasteners for exterior use and zinc-plated fasteners with coating complying with ASTM B 633, Class Fe/Zn 5, where built into exterior walls. Select fasteners for type, grade, and class required
- B. Bolts and Nuts: Regular hexagon-head bolts, ASTM A 307, Grade A (ASTM F 568M, Property Class 4.6); with hex nuts, ASTM A 563 (ASTM A 563M); and, where indicated, flat washers
- C. Anchor Bolts: ASTM F 1554, Grade 36.
- D. Machine Screws: ASME B18.6.3 (ASME B18.6.7M).
- E. Lag Bolts: ASME B18.2.1 (ASME B18.2.3.8M).
- F. Plain Washers: Round, carbon steel, ASME B18.22.1 (ASME B18.22M).
- G. Lock Washers: Helical, spring type, carbon steel, ASME B18.21.1 (ASME B18.21.2M).
- H. Expansion Anchors: Anchor bolt and sleeve assembly of material indicated below with capability to sustain, without failure, a load equal to six times the load imposed when installed in unit masonry and equal to four times the load imposed when installed in concrete, as determined by testing per ASTM E 488, conducted by a qualified independent testing agency.





1. Indoor Expansion Anchor Material: Carbon-steel components zinc-plated to comply with ASTM B 633, Class Fe/Zn 5.
  2. Exterior Expansion Anchor Material: Alloy Group 1 or 2 stainless-steel bolts complying with ASTM F 593 (ASTM F 738M) and nuts complying with ASTM F 594 (ASTM F 836M).
- I. Toggle Bolts: FS FF-B-588, tumble-wing type, class and style as needed.

## 2.5 FABRICATION, GENERAL

- A. Shop Assembly: Preassemble items in shop to greatest extent possible to minimize field splicing and assembly. Disassemble units only as necessary for shipping and handling limitations. Use connections that maintain structural value of joined pieces. Clearly mark units for reassembly and coordinated installation.
1. Welded connections may be used where bolted connections are shown.
- B. Shear and punch metals cleanly and accurately. Remove burrs.
- C. Ease exposed edges to a radius of approximately 1/32 inch (1 mm), unless otherwise indicated. Form bent-metal corners to smallest radius possible without causing grain separation or otherwise impairing work.
- D. Weld corners and seams continuously along entire line of contact to comply with the following:
1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
  2. Obtain fusion without undercut or overlap.
  3. Remove welding flux immediately.
  4. At exposed connections, finish exposed welds and surfaces smooth and blended so no roughness shows after finishing and contour of welded surface matches that of adjacent surface.
- E. Provide for anchorage of type indicated, coordinate with supporting structure. Fabricate and space anchoring devices and fasteners to secure metal fabrications rigidly in place and to support indicated loads.
- F. Cut, reinforce, drill, and tap metal fabrications as indicated to receive finish hardware, screws, and similar items.
- G. Fabricate joints that will be exposed to weather in a manner to exclude water or provide weep holes where water may accumulate.
- H. Form exposed work true to line and level with accurate angles and surfaces and straight sharp edges.
- I. Remove sharp or rough areas on exposed traffic surfaces.



- J. Form exposed connections with hairline joints, flush and smooth, using concealed fasteners where possible. Use exposed fasteners of type indicated or, if not indicated, Phillips flat-head (countersunk) screws or bolts. Locate joints where least conspicuous. Make up threaded connections tight so that threads are entirely concealed.

## 2.6 MISCELLANEOUS FRAMING AND SUPPORTS

- A. General: Provide steel framing and supports indicated and as necessary to complete the Work and which are not a part of the structural framework, including but not limited to countertop and vanities, ceiling hung toilet compartments, framing for partial height walls, mechanical and electrical equipment.
- B. Fabricate gates from structural-steel shapes, plates, and bars of welded construction, unless otherwise indicated. Fabricate to sizes, shapes, and profiles indicated and as necessary to receive adjacent construction retained by framing and supports. Cut, drill, and tap units to receive hardware, hangers, and similar items.
- C. Framing for Gates: Provide framing, including provisions for hinges and anchorage as required to sustain imposed loads and to limit deflections to  $L/360$  between hangers, fabricated from the following.
  - 1. Structural Steel Shapes, Plates and Bars: ASTM A36/A36M.
  - 2. Modular Structural Framing System: ASTM A569; modular, structural quality steel pre-formed "U" channel framing system with continuous open slot prepared to receive attachment nuts, bolts, straps, threaded rods, beam clamps, hanger rods support brackets and other accessories. Provide manufacturers standard corrosion resistant finish.
  - 3. Provide steel rods, 1/2" diameter, spaced not more than 36" o.c. Thread rods to receive anchor and stop nuts. Fit hangers with wedge shape washers for full bearing on sloping flanges of support beam.

## 2.7 FINISHES GENERAL

- A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
- B. Finish metal fabrications after assembly

## 2.8 STEEL AND IRON FINISHES

- A. Galvanizing: Hot-dip galvanize items as indicated to comply with applicable standard listed below:
  - 1. ASTM A 123, for galvanizing steel and iron products.
  - 2. ASTM A 153/A 153M, for galvanizing steel and iron hardware.
- B. Preparation for Shop Priming: Prepare uncoated ferrous-metal surfaces by removing oil, grease, and similar contaminants in accordance with SSPC -SP 1 "Solvent Cleaning," followed with the



SSPC surface-preparation specifications listed below and environmental exposure conditions of installed metal fabrications. Surface preparation shall be done after fabrication and immediately prior to shop painting. Apply shop coat of paint within 4 hours after cleaning and before rust bloom occurs.

1. Interiors (SSPC Zone 1A): SSPC-SP 3, "Power Tool Cleaning."
- C. Apply a minimum of one coat of shop primer to uncoated surfaces of metal fabrications, except those with galvanized finishes and those to be field welded, and those to be embedded in concrete, sprayed-on fireproofing, or masonry, unless otherwise indicated. Comply with SSPC-PA 1, "Paint Application Specification No. 1," for shop painting
1. Stripe paint corners, crevices, bolts, welds, and sharp edges.
  2. Dry Film Thickness of Primer: 2.5 to 3.0 mils, dry film thickness. Apply paint thoroughly and evenly to dry surfaces, free from holidays and pinholes, in accordance with manufacturer's directions.
- D. Stainless steel
1. Material – Stainless Steel, Type 304
  2. Finish – No. 6
  3. Corner Radius – 1/8"
  4. Taper – 1/4" from leg edges
  5. Mounting – flat head countersunk screws through shop drilled countersunk holes

## PART 3 - PART 3 - EXECUTION

### 3.1 INSTALLATION, GENERAL

- A. Fastening to In-Place Construction: Provide anchorage devices and fasteners where necessary for securing metal fabrications to in-place construction. Include threaded fasteners for concrete and masonry inserts, toggle bolts, through-bolts, lag bolts, wood screws, and other connectors. Drill holes for bolts to the exact diameter of the bolt. Provide screws threaded full length to the screw head.
- B. Cutting, Fitting, and Placement: Perform cutting, drilling, and fitting required for installing metal fabrications. Set metal fabrications accurately in location, alignment, and elevation; with edges and surfaces level, plumb, true, and free of rack; and measured from established lines and levels.
- C. Provide temporary bracing or anchors in formwork for items that are to be built into concrete, masonry, or similar construction.
- D. Fit exposed connections accurately together to form hairline joints. Weld connections that are not to be left as exposed joints but cannot be shop welded because of shipping size limitations. Do not weld, cut, or abrade surfaces of exterior units that have been hot-dip galvanized after fabrication and are for bolted or screwed field connections.



- E. Field Welding: Comply with the following requirements:
  - 1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
  - 2. Obtain fusion without undercut or overlap.
  - 3. Remove welding flux immediately.
  - 4. At exposed connections, finish exposed welds and surfaces smooth and blended so no roughness shows after finishing and contour of welded surface matches that of adjacent surface.

### 3.2 INSTALLING MISCELLANEOUS FRAMING AND SUPPORTS

- A. General: Install framing and supports to comply with requirements of items being supported, including manufacturers' written instructions and requirements.
- B. Ceiling Hung Toilet Partitions: Anchor supports securely to, and rigidly brace from, overhead building structure.

### 3.3 ADJUSTING AND CLEANING

- A. Touchup Painting: Immediately after erection, clean field welds, bolted connections, and abraded areas of shop paint, and paint exposed areas with the same material as used for shop painting to comply with SSPC-PA 1 for touching up shop-painted surfaces.
  - 1. Apply by brush or spray to provide a minimum 2.0-mil (0.05-mm) dry film thickness.

END OF SECTION 055000



## SECTION 119219 - STOCK WATERERS

### PART 1 - PART I - GENERAL

#### 1.1 SUMMARY

- A. This work consists of providing the following items:
  - 1. Livestock waterers
  - 2. Water supply line
  - 3. Washed stone, gravel, bedding sand

#### 1.2 SYSTEM DESCRIPTION

- A. Installation of 9' freeze proof, automatic livestock waterer

#### 1.3 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site

#### 1.4 SUBMITTALS SECTION 010000 - GENERAL REQUIREMENTS

- A. Provide Drawings for the following items (See 3.14 under SECTION 010000 - GENERAL REQUIREMENTS)
  - 1. Livestock Waterer
- B. Provide Product Data for the following items (See 3.16 under SECTION 010000 - GENERAL REQUIREMENTS)
  - 1. Livestock Waterer

### PART 2 - PRODUCTS

#### 2.1 MANUFACTURER

- A. Livestock waterer (watering post) shall be manufactured by Drinking Post Waterer, Aurora, CO, (844).311.7678, [www.dpwaterer.com](http://www.dpwaterer.com)
- B. The Livestock Waterer shall be a nine foot (9') Ultimate Watering Post
- C. Substitutions: Approved equal permitted.



- D. Source Limitations: Livestock Waterer and appurtenances shall be provided from a single source with the resources to provide a product of consistent quality in appearance and physical properties.
- E. Plumbing connections:
  - 1. Contractor shall furnish and install water supply lines per manufacturer's installation instructions.
  - 2. Contractor shall furnish and install backfill materials.
  - 3. All fasteners shall be stainless steel.

## 2.2 WARRANTY

- A. The Livestock Waterer shall have a written 5 Year warranty against rust and defects in workmanship and materials.

## PART 3 - EXECUTION

### 3.1 PREPARATION

- A. Verify that areas to receive a livestock waterer are sufficiently complete and established grades appear suitable for livestock waterers to be installed.
- B. Stake out locations and obtain landscape architect approval to begin installation.

### 3.2 LIVESTOCK WATERER INSTALLATION

- A. Installation of livestock waterer shall occur prior to the completion of work in close proximity. Any damage to surrounding finished work shall be full repaired.
- B. Install livestock waterers following manufacturer's instructions
- C. Excavate to proper depth to suit local conditions for stability and support of the livestock watering post without disturbing the underlying materials. Excavate deeper as required to ensure adequate drainage.
- D. Center and align posts in holes to required depth. Place drainage stone and granular backfill around posts and tamp for consolidation. After tamping, check alignment of posts, and make necessary corrections.

### 3.3 WATER SUPPLY LINE INSTALLATION

- A. Installation of water supply line extension shall occur prior to the completion of work in close proximity. Any damage to surrounding finished work shall be full repaired.
- B. Set gate posts plumb and level for gate openings as specified in construction drawings.



- C. Excavate to proper depth to suit local conditions
- D. All joints / connections shall be tested for water tightness prior to backfilling.
- E. Backfill trench with bedding sand per standard specifications for water lines.

#### 3.4 CLEANING

- A. Contractor shall clean site of debris and excess materials. Post hole excavations shall be scattered uniformly away from posts.
- B. If necessary, clean fence system with mild household detergent and clean water. Excess concrete must be removed from posts and other fencing material before it hardens.

END OF SECTION 119219



## SECTION 312213 - ROUGH GRADING

### PART 1 - GENERAL

#### 1.1 SUMMARY

##### A. Section Includes:

1. Excavating topsoil.
2. Excavating subsoil.
3. Cutting, grading, filling, rough contouring, & compacting site for a variety of surfaces.

##### B. Related Sections:

1. Section 310513 - Soils for Earthwork: Soils for fill.
2. Section 310516 - Aggregates for Earthwork: Aggregates for fill.
3. Section 329119 - Landscape Grading: Finish grading with topsoil to contours.

#### 1.2 UNIT PRICE - MEASUREMENT AND PAYMENT

##### A. Topsoil Fill Type S4 :

1. Basis of Measurement: By Cubic Yard .
2. Basis of Payment: Includes excavating existing soil, supplying soil materials, stockpiling, scarifying substrate surface, placing where required, and compacting.

##### B. Subsoil Fill Type S2 :

1. Basis of Measurement: By the cubic yard.
2. Basis of Payment: Includes excavating existing subsoil, supplying subsoil materials, stockpiling, scarifying substrate surface, placing where required, and compacting.

#### 1.3 REFERENCES

##### A. American Association of State Highway and Transportation Officials:

1. AASHTO T180 - Standard Specification for Moisture-Density Relations of Soils Using a 4.54-kg (10-lb) Rammer and a 457-mm (18-in.) Drop.

##### B. ASTM International:

1. ASTM C136 - Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.
2. ASTM D698 - Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft<sup>3</sup> (600 kN-m/m<sup>3</sup>).
3. ASTM D1557 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft<sup>3</sup> (2,700 kN-m/m<sup>3</sup>).





1.4 SUBMITTALS

- A. Materials Source: Submit name of imported materials suppliers.

1.5 CLOSEOUT SUBMITTALS

- A. Section 01000 - General Requirements: Requirements for submittals.
- B. Project Record Documents: Accurately record actual locations of utilities remaining by horizontal dimensions, elevations or inverts, and slope gradients.

1.6 QUALITY ASSURANCE

- A. Perform Work in accordance with RIDOT Standard Specifications for Road and Bridge Construction, latest edition.
- B. Maintain one copy of each document on site

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Topsoil: Type S4 as specified in Section 310513.
- B. Subsoil Fill: Type S2 as specified in Section 310513.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify survey bench mark and intended elevations for the Work are as indicated on Drawings.

3.2 PREPARATION

- A. Call Local Utility Line Information service at 1-888-DIG-SAFE not less than three (3) working days before performing Work.
  - 1. Request underground utilities to be located and marked within and surrounding construction areas.
- B. Identify required lines, levels, contours, and datum.
- C. Protect utilities indicated to remain from damage.



- D. Protect plant life, lawns, structures, and other features remaining as portion of final landscaping.
- E. Protect bench marks, survey control point, existing structures, fences, sidewalks, paving, and curbs from excavating equipment and vehicular traffic.

### 3.3 TOPSOIL EXCAVATION

- A. Excavate topsoil from areas to be further excavated, relandscaped, or regraded, in marked areas, without mixing with foreign materials for use in finish grading.
- B. Do not excavate wet topsoil.
- C. Stockpile in area designated on site to depth not exceeding 8 feet and protect from erosion. Stockpile material on impervious material and cover over with same material, until disposal.
- D. Remove excess topsoil not intended for reuse, from site.

### 3.4 SUBSOIL EXCAVATION

- A. Excavate subsoil from areas to be further excavated, relandscaped, or regraded. marked areas.
- B. Do not excavate wet subsoil .
- C. When excavating through roots, perform Work by hand and do not remove any roots over 2" in diameter.
- D. Stockpile excavated material in area designated on site in accordance with Section 310513 .
- E. Benching Slopes: Horizontally bench existing slopes greater than 1: 4 to key placed fill material to slope to provide firm bearing.
- F. Stability: Replace damaged or displaced subsoil as specified for fill.

### 3.5 FILLING

- A. Fill areas to contours and elevations with unfrozen materials.
- B. Place material in continuous layers as follows:
  - 1. Subsoil Fill: Maximum 8 inches compacted depth.
  - 2. Granular Fill: Maximum 6 inches compacted depth.
- C. Maintain optimum moisture content of fill materials to attain required compaction density.
- D. Make grade changes gradual. Blend slope into level areas.
- E. Repair or replace items indicated to remain damaged by excavation or filling.



- F. Install Work in accordance with RIDOT Standard Specifications for Road and Bridge Construction, latest edition.

### 3.6 TOLERANCES

- A. Section 014000 - Quality Requirements: Tolerances.
- B. Top Surface of Subgrade: Plus or minus 1/10 foot from required elevation.

### 3.7 SCHEDULES

- A. Subsoil Fill:
  - 1. Fill Type S2 : To subgrade elevation. 6" thick.
  - 2. Compact uniformly to minimum 95% percent of maximum density.
- B. Topsoil Fill:
  - 1. Fill Type S4 : To subgrade elevation. 6" thick.
  - 2. Compact uniformly to minimum 90 % percent of maximum density.

END OF SECTION 312213



## SECTION 312316.13 - TRENCHING

### PART 1 - GENERAL

#### 1.1 SUMMARY

##### A. Section Includes:

1. Excavating trenches for utilities & stormwater conveyance
2. Compacted fill from top of utility bedding to subgrade elevations .
3. Backfilling and compaction.

##### B. Related Sections:

1. Section 321216 - Asphalt Paving: paving over trenches in parking area
2. Section 329119 - Landscape Grading: Filling of topsoil over backfilled trenches to finish grade elevation.
3. Section 331413 - Public Water Utility Distribution Piping
4. Section 334200 - Stormwater Conveyance

#### 1.2 UNIT PRICE - MEASUREMENT AND PAYMENT

##### A. Trenching:

1. Basis of Measurement: By cubic yard.
2. Basis of Payment: Includes excavating to required elevations, and Over Excavating: Payment is not made for over excavated work nor for replacement materials.

#### 1.3 REFERENCES

##### A. American Association of State Highway and Transportation Officials:

1. AASHTO T180 - Standard Specification for Moisture-Density Relations of Soils Using a 4.54-kg (10-lb) Rammer and a 457-mm (18-in.) Drop.

##### B. ASTM International:

1. ASTM D698 - Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft<sup>3</sup> (600 kN-m/m<sup>3</sup>).
2. ASTM D1556 - Standard Test Method for Density and Unit Weight of Soil in Place by the Sand-Cone Method.
3. ASTM D1557 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft<sup>3</sup> (2,700 kN-m/m<sup>3</sup>).
4. ASTM D2167 - Standard Test Method for Density and Unit Weight of Soil in Place by the Rubber Balloon Method.



5. ASTM D2922 - Standard Test Method for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).
6. ASTM D3017 - Standard Test Method for Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth).

#### 1.4 DEFINITIONS

- A. Utility: Any buried pipe, duct, conduit, or cable.

#### 1.5 SUBMITTALS

- A. Section 013300 - Submittal Procedures: Requirements for submittals.
- B. Excavation Protection Plan: Describe sheeting, shoring, and bracing materials and installation required to protect excavations and adjacent structures and property; include structural calculations to support plan.

#### 1.6 QUALITY ASSURANCE

- A. Perform Work in accordance with RIDOT Standard Specifications for Road and Bridge Construction- latest edition.

#### 1.7 FIELD MEASUREMENTS

- A. Verify field measurements prior to fabrication.

#### 1.8 COORDINATION

- A. Verify Work associated with lower elevation utilities is complete before placing higher elevation utilities.

### PART 2 - PRODUCTS

### PART 3 - EXECUTION

#### 3.1 LINES AND GRADES

- A. Lay pipes to lines and grades indicated on Drawings.
  1. Architect/Engineer reserves right to make changes in lines, grades, and depths of utilities when changes are required for Project conditions.
- B. Use laser-beam instrument with qualified operator to establish lines and grades.



### 3.2 PREPARATION

- A. Call Local Utility Line Information service at 1-888-DIG-SAFE not less than seven working days before performing Work.
  - 1. Request underground utilities to be located and marked within and surrounding construction areas.
- B. Identify required lines, levels, contours, and datum locations.
- C. Protect plant life, lawns, and other features remaining as portion of final landscaping.
- D. Protect bench marks, fences, sidewalks, paving, and curbs from excavating equipment and vehicular traffic.
- E. Maintain and protect above and below grade utilities indicated to remain.
- F. Establish temporary traffic control when trenching is performed in public right-of-way. Relocate controls as required during progress of Work.

### 3.3 TRENCHING

- A. Excavate subsoil required for utilities to irrigation system
- B. Remove lumped subsoil, boulders, and rock above 3" diameter, remove larger material as specified in Section . 312213
- C. Perform excavation in accordance with State & Local requirements.
- D. Do not advance open trench more than 200 feet ahead of installed pipe.
- E. Cut trenches sufficiently wide to enable installation and allow inspection. Remove water or materials that interfere with Work.
- F. Excavate bottom of trenches maximum 2 feet wider than outside diameter of pipe.
- G. Excavate trenches to depth indicated on Drawings. Provide uniform and continuous bearing and support for bedding material and pipe .
- H. Trim excavation. Remove loose matter.
- I. Correct areas over excavated areas with compacted backfill as specified for authorized excavation or replace with fill concrete as directed by Architect/Engineer.
- J. Remove excess subsoil not intended for reuse from site.

### 3.4 BACKFILLING

- A. Backfill trenches to contours and elevations with unfrozen fill materials.



- B. Systematically backfill to allow maximum time for natural settlement. Do not backfill over porous, wet, frozen, or spongy subgrade surfaces.
- C. Place fill material in continuous layers and compact .
- D. Maintain optimum moisture content of fill materials to attain required compaction density.
- E. Do not leave more than 50 feet of trench open at end of working day.
- F. Protect open trench to prevent danger to the public .

### 3.5 TOLERANCES

- A. Top Surface of General Backfilling: Plus or minus 1 inch (**0.08 feet**) from required elevations.

### 3.6 PROTECTION OF FINISHED WORK

- A. Reshape and re-compact fills subjected to vehicular traffic during construction.

END OF SECTION 312316.13



## SECTION 312500 - EROSION AND SEDIMENTATION CONTROLS

### PART 1 - GENERAL

#### 1.1 SUMMARY

- A. Furnish all labor, materials, equipment and incidentals required and perform all installation, maintenance, removal and area cleanup related to erosion and sedimentation control work required to meet Federal, State, and local permit requirements and as shown on the Drawings and as specified herein. The work shall include, but not necessarily be limited to; installation of temporary access ways and staging areas, compost filter socks, catch basin sediment filters (silt sack), sediment removal and disposal, device maintenance, removal of temporary devices, and final cleanup.
- B. Related Sections:
  - 1. Section 329119 - Landscape Grading.

#### 1.2 REFERENCES

- A. EPA document titled: "Stormwater Management for Construction Activities — Developing Pollution Prevention Plans and Best Management Practices" document number EPA 832-R-92-005, dated 1992, or most recent edition. State, County Conservation Districts or local Conservation Commission standards can be substituted for the EPA standard if the State, County or Local Conservation Commission standards is equal to, or more detailed than, the EPA standard.
- B. State of Rhode Island Department of Transportation Standard Specifications for Road and Bridge Construction, Current Edition with latest addenda.

#### 1.3 SUBMITTALS

- A. Submit, in accordance with Division 01 10 00 – General Requirements: Submittal Procedures ten (10) days after award of Contract, technical product literature for all commercial products to be used for erosion and sedimentation control.
- B. If a NPDES General Permit is required, Contractor shall, prior to the start of construction:
- C. Prepare and submit the EPA NPDES Notice of Intent to Discharge to the applicable EPA office in accordance with EPA regulations. Submit one copy of the permit to Owner's Representative for informational purposes only.
  - 1. Prepare and submit a Stormwater Pollution Prevention Plan (SWPPP) in accordance with the U.S. Environmental Protection Agency (EPA) National Pollution Discharge





Elimination System (NPDES) General Permit for this work. Submit one copy of the permit to Owner's Representative for informational purposes only.

#### 1.4 QUALITY ASSURANCE

- A. Be responsible for the timely installation and maintenance of all erosion and sedimentation control devices necessary to prevent the movement of sediment from the construction site to off-site areas or into the stream system via surface runoff or underground drainage systems. Measures in addition to those shown on the Drawings necessary to prevent the movement of sediment off site shall be installed, maintained, removed, and cleaned up at the expense of the Contractor. No additional charges to the Owner will be considered.
- B. Where Contractor's efforts to control erosion and sediment have been demonstrated to be ineffective or potentially ineffective in the opinion of the Owner's Representative, the Owner's Representative may order that additional measures be implemented and constructed at no additional cost to the Owner.
- C. Perform Work in accordance with requirements of Section 310513, Section 312213.
- D. Perform Work according to Municipality of Public Works standards.

### PART 2 - PRODUCTS

#### 2.1 MATERIALS

- A. Catch Basin sediment control devices shall be sediment capture devices specifically designed for this purpose such as "Silt Sack" by Geo-Synthetics, LLC or approved equal.
- B. When work is performed outside of normal seeding window straw mulch shall be utilized on all newly graded areas to protect areas against washouts and erosion. Straw mulch shall be comprised of threshed straw of oats, wheat, barley, or rye that is free from noxious weeds, mold or other objectionable material. The straw mulch shall contain at least 50 percent by weight of material to be 10-in or longer. Straw shall be in an air-dry condition and suitable for placement with blower equipment.
- C. Compost Filter Sock
  - 1. Machine produced.
    - a. Straw filled tubes of compacted straw of rice, wheat or barley.
    - b. Compost filter sock to be certified as weed free.
    - c. Netting for tubes to be seamless, high density polyethylene with ultra violet inhibitors.
    - d. Roll length to be 10.0 feet to 25.0 feet.
    - e. Weight per linear foot, 12-inch: 2.5 lbs. minimum 9-inch: 1.5 lbs. minimum
    - f. Stakes shall be wooden, 1 1/8-inch x 1 1/8-inch x 2.5 feet long, with lower ends tapered to facilitate driving into compacted soil. Rebar may be substituted for wooden stakes



### PART 3 - EXECUTION

#### 3.1 INSTALLATION

- A. Catch basin sediment control devices shall be installed according to manufacturer's recommendations and as directed by the Owner's Representative.
- B. Staging areas and stabilized construction entrance shall be surfaced with a minimum depth of 6 inches of crushed stone (if so directed by the Owner's Representative). Stabilized construction entrances shall be installed as shown on the Plans.

#### 3.2 MAINTENANCE AND INSPECTION

- A. Inspections
- B. Make a visual inspection of all erosion and sedimentation control devices once per week and promptly after every rainstorm. If such inspection reveals that additional measures are needed to prevent movement of sediment to offsite areas, promptly install additional devices as needed. Sediment controls in need of maintenance shall be repaired promptly.
- C. Device Maintenance
- D. Sediment Filters
  - 1. Catch basin sediment control devices shall be cleaned of sediment in a manner as recommended by the manufacturer and as directed by the Owner's Representative. Remove sediment from filter bag when saturated with sediment as directed by the Owner's Representative.

#### 3.3 REMOVAL AND FINAL CLEANUP

- A. Once the site has been permanently stabilized against erosion, remove all sediment control devices and sediment. Dispose sediment and all waste materials in a proper manner.
- B. When sediment accumulation in sedimentation structures has reached a point one-third depth of sediment structure or device, remove and dispose of sediment.
- C. Do not damage structure or device during cleaning operations.
- D. Clean channels when depth of sediment reaches approximately one half channel depth.
- E. Clean channels when depth of sediment reaches approximately one half channel depth.

END OF SECTION 312500



## SECTION 321216 - ASPHALT PAVING

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Requirements apply to this Section.

#### 1.2 SUMMARY

- A. Section Includes:

- 1. Hot-mix asphalt paving.

- B. Related Requirements:

- 1. Section 024119 "Selective Demolition" for demolition and removal of existing asphalt pavement.
- 2. Section 312000 "Earth Moving" for subgrade preparation, fill material, separation geotextiles, unbound-aggregate subbase and base courses, and aggregate pavement shoulders.
- 3. Section 321400 "Unit Paving" for bituminous setting bed for pavers and for stone and precast concrete curbs.

#### 1.3 UNIT PRICES

- A. Work of this Section is affected by square foot .

#### 1.4 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site .

- 1. Review methods and procedures related to hot-mix asphalt paving including, but not limited to, the following:
  - a. Review proposed sources of paving materials, including capabilities and location of plant that will manufacture hot-mix asphalt.
  - b. Review requirements for protecting paving work, including restriction of traffic during installation period and for remainder of construction period.

#### 1.5 ACTION SUBMITTALS

- A. Product Data: For each type of product.



1. Include technical data and tested physical and performance properties.
2. Job-Mix Designs: Certification, by authorities having jurisdiction, of approval of each job mix proposed for the Work.
3. Job-Mix Designs: For each job mix proposed for the Work.

#### 1.6 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For manufacturer .
- B. Material Certificates: For each paving material. Include statement that mixes containing recycled materials will perform equal to mixes produced from all new materials.
- C. Material Test Reports: For each paving material, by a qualified testing agency.

#### 1.7 QUALITY ASSURANCE

- A. Manufacturer Qualifications: A paving-mix manufacturer registered with and approved by authorities having jurisdiction or the DOT of state in which Project is located .
- B. Testing Agency Qualifications: Qualified according to ASTM D 3666 for testing indicated.
- C. Regulatory Requirements: Comply with materials, workmanship, and other applicable requirements of RIDOT Standard Specifications for Road and Bridge Construction for asphalt paving work.
  1. Measurement and payment provisions and safety program submittals included in standard specifications do not apply to this Section.

#### 1.8 FIELD CONDITIONS

- A. Environmental Limitations: Do not apply asphalt materials if subgrade is wet or excessively damp, if rain is imminent or expected before time required for adequate cure, or if the following conditions are not met:
  1. Asphalt Base Course: Minimum surface temperature of 40 deg F and rising at time of placement.
  2. Asphalt Surface Course: Minimum surface temperature of 60 deg F at time of placement.

### PART 2 - PRODUCTS

#### 2.1 AGGREGATES

- A. General: Use materials and gradations that have performed satisfactorily in previous installations.

- B. Coarse Aggregate: ASTM D 692/D 692M, sound; angular crushed stone, crushed gravel, or cured, crushed blast-furnace slag.
- C. Fine Aggregate: ASTM D 1073 or , sharp-edged natural sand or sand prepared from stone, gravel, cured blast-furnace slag, or combinations thereof.
  - 1. For hot-mix asphalt, limit natural sand to a maximum of 20 percent by weight of the total aggregate mass.
- D. Mineral Filler: ASTM D 242/D 242M or , rock or slag dust, hydraulic cement, or other inert material.

## 2.2 ASPHALT MATERIALS

- A. Asphalt Binder: ASTM D 6373 or binder designation PG 64-22 .
- B. Asphalt Cement: ASTM D 3381/D 3381M for viscosity-graded material ASTM D 946/D 946M for penetration-graded material.
- C. Cutback Prime Coat: ASTM D 2027/D 2027M, medium-curing cutback asphalt, MC-30 or MC-70 .
- D. Emulsified Asphalt Prime Coat: ASTM D 977 or emulsified asphalt, or ASTM D 2397/D 2397M or cationic emulsified asphalt, slow setting, diluted in water, of suitable grade and consistency for application.
- E. Fog Seal: ASTM D 977 or emulsified asphalt, or ASTM D 2397/D 2397M or cationic emulsified asphalt, slow setting, factory diluted in water, of suitable grade and consistency for application.
- F. Water: Potable.

## 2.3 AUXILIARY MATERIALS

- A. Recycled Materials for Hot-Mix Asphalt Mixes: Reclaimed asphalt pavement; reclaimed, unbound-aggregate base material; and recycled tires asphalt shingles or glass from sources and gradations that have performed satisfactorily in previous installations, equal to performance of required hot-mix asphalt paving produced from all new materials.

## 2.4 MIXES

- A. Hot-Mix Asphalt: Dense-graded, hot-laid, hot-mix asphalt plant mixes ; designed according to procedures in AI MS-2, "Asphalt Mix Design Methods"; and complying with the following requirements:
  - 1. Provide mixes with a history of satisfactory performance in geographical area where Project is located.



2. Base Course: Class 9.5 .
3. Surface Course: Class 19.0 .

### PART 3 - EXECUTION

#### 3.1 EXAMINATION

- A. Verify that subgrade is dry and in suitable condition to begin paving.
- B. Proceed with paving only after unsatisfactory conditions have been corrected.

#### 3.2 PREPARATION

- A. Protection: Provide protective materials, procedures, and worker training to prevent asphalt materials from spilling, coating, or building up on curbs, driveway aprons, manholes, and other surfaces adjacent to the Work.
- B. Proof-roll subgrade below pavements with heavy pneumatic-tired equipment to identify soft pockets and areas of excess yielding. Do not proof-roll wet or saturated subgrades.
  1. Completely proof-roll subgrade in one direction ,repeating proof-rolling in direction perpendicular to first direction. Limit vehicle speed to 3 mph.
  2. Proof roll with a loaded 10-wheel, tandem-axle dump truck weighing not less than 15 tons.
  3. Excavate soft spots, unsatisfactory soils, and areas of excessive pumping or rutting, as determined by Architect, and replace with compacted backfill or fill as directed.

#### 3.3 REPAIRS

#### 3.4 SURFACE PREPARATION

- A. Immediately before placing asphalt materials, remove loose and deleterious material from substrate surfaces. Ensure that prepared subgrade is ready to receive paving.
- B. Cutback Prime Coat: Apply uniformly over surface of compacted unbound-aggregate base course at a rate of 0.15 to 0.50 gal./sq. yd.. Apply enough material to penetrate and seal, but not flood, surface. Allow prime coat to cure.
  1. If prime coat is not entirely absorbed within 24 hours after application, spread sand over surface to blot excess asphalt. Use enough sand to prevent pickup under traffic. Remove loose sand by sweeping before pavement is placed and after volatiles have evaporated.
  2. Protect primed substrate from damage until ready to receive paving.
- C. Emulsified Asphalt Prime Coat: Apply uniformly over surface of compacted unbound-aggregate base course at a rate of 0.10 to 0.30 gal./sq. yd. per inch depth. Apply enough material to penetrate and seal, but not flood, surface. Allow prime coat to cure.

1. If prime coat is not entirely absorbed within 24 hours after application, spread sand over surface to blot excess asphalt. Use enough sand to prevent pickup under traffic. Remove loose sand by sweeping before pavement is placed and after volatiles have evaporated.
2. Protect primed substrate from damage until ready to receive paving.

### 3.5 PLACING HOT-MIX ASPHALT

- A. Machine place hot-mix asphalt on prepared surface, spread uniformly, and strike off. Place asphalt mix by hand in areas inaccessible to equipment in a manner that prevents segregation of mix. Place each course to required grade, cross section, and thickness when compacted.
  1. Place hot-mix asphalt base course in number of lifts and thicknesses indicated.
  2. Place hot-mix asphalt surface course in single lift.
  3. Spread mix at a minimum temperature of 250 deg F.
  4. Begin applying mix along centerline of crown for crowned sections and on high side of one-way slopes unless otherwise indicated.
  5. Regulate paver machine speed to obtain smooth, continuous surface free of pulls and tears in asphalt-paving mat.
- B. Place paving in consecutive strips not less than 10 feet wide unless infill edge strips of a lesser width are required.
  1. After first strip has been placed and rolled, place succeeding strips and extend rolling to overlap previous strips. Overlap mix placement about 1 to 1-1/2 inches from strip to strip to ensure proper compaction of mix along longitudinal joints.
  2. Complete a section of asphalt base course before placing asphalt surface course.
- C. Promptly correct surface irregularities in paving course behind paver. Use suitable hand tools to remove excess material forming high spots. Fill depressions with hot-mix asphalt to prevent segregation of mix; use suitable hand tools to smooth surface.

### 3.6 COMPACTION

- A. General: Begin compaction as soon as placed hot-mix paving will bear roller weight without excessive displacement. Compact hot-mix paving with hot, hand tampers or with vibratory-plate compactors in areas inaccessible to rollers.
  1. Complete compaction before mix temperature cools to 185 deg F.
- B. Breakdown Rolling: Complete breakdown or initial rolling immediately after rolling joints and outside edge. Examine surface immediately after breakdown rolling for indicated crown, grade, and smoothness. Correct laydown and rolling operations to comply with requirements.
- C. Intermediate Rolling: Begin intermediate rolling immediately after breakdown rolling while hot-mix asphalt is still hot enough to achieve specified density. Continue rolling until hot-mix asphalt course has been uniformly compacted to the following density:



1. Average Density: 96 percent of reference laboratory density according to ASTM D 6927 , but not less than 94 percent or greater than 100 percent.
  2. Average Density: 92 percent of reference maximum theoretical density according to ASTM D 2041/D 2041M, but not less than 90 percent or greater than 96 percent.
- D. Finish Rolling: Finish roll paved surfaces to remove roller marks while hot-mix asphalt is still warm.
- E. Edge Shaping: While surface is being compacted and finished, trim edges of pavement to proper alignment. Bevel edges while asphalt is still hot; compact thoroughly.
- F. Repairs: Remove paved areas that are defective or contaminated with foreign materials and replace with fresh, hot-mix asphalt. Compact by rolling to specified density and surface smoothness.
- G. Protection: After final rolling, do not permit vehicular traffic on pavement until it has cooled and hardened.
- H. Erect barricades to protect paving from traffic until mixture has cooled enough not to become marked.

### 3.7 INSTALLATION TOLERANCES

- A. Pavement Thickness: Compact each course to produce the thickness indicated within the following tolerances:
1. Base Course: Plus or minus 1/2 inch.
  2. Surface Course: Plus 1/4 inch, no minus.
- B. Pavement Surface Smoothness: Compact each course to produce a surface smoothness within the following tolerances as determined by using a 10-foot straightedge applied transversely or longitudinally to paved areas:
1. Base Course: 1/2 inch .
  2. Surface Course: 1/4 inch .

### 3.8 SURFACE TREATMENTS

- A. Fog Seals: Apply fog seal at a rate of 0.10 to 0.15 gal./sq. yd. to existing asphalt pavement and allow to cure. With fine sand, lightly dust areas receiving excess fog seal.

### 3.9 FIELD QUALITY CONTROL

- A. Testing Agency: Engage a qualified testing agency to perform tests and inspections.
- B. Thickness: In-place compacted thickness of hot-mix asphalt courses will be determined according to ASTM D 3549/D 3549M.





- C. Surface Smoothness: Finished surface of each hot-mix asphalt course will be tested for compliance with smoothness tolerances.
- D. Asphalt Traffic-Calming Devices: Finished height of traffic-calming devices above pavement will be measured for compliance with tolerances.
- E. In-Place Density: Testing agency will take samples of uncompacted paving mixtures and compacted pavement according to ASTM D 979/D 979M or .
  - 1. Reference maximum theoretical density will be determined by averaging results from four samples of hot-mix asphalt-paving mixture delivered daily to site, prepared according to ASTM D 2041/D 2041M, and compacted according to job-mix specifications.
  - 2. In-place density of compacted pavement will be determined by testing core samples according to ASTM D 1188 or ASTM D 2726/D 2726M.
    - a. One core sample will be taken for every 1000 sq. yd. or less of installed pavement, with no fewer than three cores taken.
    - b. Field density of in-place compacted pavement may also be determined by nuclear method according to ASTM D 2950 and correlated with ASTM D 1188 or ASTM D 2726/D 2726M.
- F. Replace and compact hot-mix asphalt where core tests were taken.
- G. Remove and replace or install additional hot-mix asphalt where test results or measurements indicate that it does not comply with specified requirements.

### 3.10 WASTE HANDLING

- A. General: Handle asphalt-paving waste according to approved waste management plan required in Section 017419 "Construction Waste Management and Disposal."

END OF SECTION 321216



## SECTION 321320 - STONE DUST WALK

### PART 1 - PART I - GENERAL

#### 1.1 SUMMARY

- A. This work consists of providing the following items:
  - 1. Earthwork
  - 2. Stone dust walk.
  - 3. Gravel base

#### 1.2 SYSTEM DESCRIPTION

- A. A. Installation of stone dust walk as shown on the drawings.

### PART 2 - PART 2 - PRODUCT

#### 2.1 MATERIALS

- A. Stone Dust: 1/4" Processed Bluestone Dust, composition as follows:

Sieve Size	% Passing By Weight
1/4"	100
#10	50-85
#40	20-45
#200	3-10

- B. Base Course: Washed 3/4" Gravel.

### PART 3 - PART 3 - EXECUTION

#### 3.1 PREPARATION

- A. Excavate the ground to NO DEEPER THAN 10" and grade out irregularities to form the walk at the lines and depths indicated on the drawings.
- B. Excavated area should be rectangular in section with vertical sides and level base.
- C. Stripped vegetation and excavated topsoil to be stockpiled or removed from site.
- D. If soft spots are present, excavate the area until the sub grade is stable.



- E. Fill excess w scalplings, crusher run or crushed demolition waste to formation level and compact to refusal.

### 3.2 INSTALLATION

#### A. Base:

1. Using a drag box lay 6-inch depth of granular sub base upon the filter fabric sheet to falls and levels, to form 2" Crown in center of walk.. If no drag box is available, granular sub base should be laid, spread and raked to required falls and levels using asphalt rake.
2. Compact sub base layer thoroughly to refusal using a heavy ride-on tandem vibrating roller until full compaction is achieved (minimum 120 type roller recommended).
3. Once base layer is compacted, check levels of the surface at regular intervals along the compacted sub base layer for consistent even surface regularity, which should be accurate to maximum gap of 1/4"-inch under a 3-foot long straight edge, with no high or low points or hollows.
4. Any part of the sub base layer deviating from the required level must be raked off or topped up with additional granular sub base and re-compacted to the correct levels.
5. Check the finished compacted sub base layer is closed tightly with no exposed surface voids before laying the surface layer. If necessary, fill any voids with 1/4" bluestone dust.

#### B. Stone Dust Surface

1. Using drag box lay specified depth of bluestone dust to falls and levels, to form width of walk surface.
2. Provide 2" Crown along the center line of compacted sub base layer.
3. If no drag box is available, 1/4" bluestone dust should be laid, spread and raked to falls and levels using asphalt rake.
4. Compact surface layer thoroughly to refusal using a heavy ride-on tandem vibrating roller and continue rolling non-stop until there is no roller marks in the finished surface (minimum 120 type roller recommended).
5. Once rolling is finished, check levels of the surface at regular intervals along the compacted surface layer for consistent even surface regularity, which should be accurate to maximum gap of 1/4-inch under a 3-foot long straight edge, with no high or low points or hollows.
6. Any part of the surface layer deviating from the required level must be raked off or topped up with additional 1/4" bluestone dust and re- compacted to the correct levels.

#### C. FINISHING

1. Grade areas on both sides of walk to lines shown on drawings
2. Ensure that lawn areas are level with walk surface using available topsoil and turfs to cover walk base edges and to support walk surface edges.
3. Install lawn as per specification Section Turfs and Grasses.
4. Landscaped edges should be finished level with walk surface and taper down and away from the walk surface to allow surface water to run off unimpeded.

END OF SECTION 321320



## SECTION 321400 - UNIT PAVING

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Requirements, apply to this Section.

#### 1.2 SUMMARY

- A. Section Includes:
  - 1. edge restraints.
  - 2. Stone curbs.
- B. Related Requirements:
  - 1. Section 321329 "Stone Dust Walk" for Granite Curb as edging to stone dust walk
  - 2. Section 321443 "Porous Unit Paving" for granite curb as edge restraint.

#### 1.3 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site .

#### 1.4 ACTION SUBMITTALS

- A. Product Data: For the following:
  - 1. Mortar and grout materials.
  - 2. Granite curbs.
- B. Samples for Initial Selection: For each type of unit paver indicated .
  - 1. Granite curbs.

#### 1.5 INFORMATIONAL SUBMITTALS

#### 1.6 QUALITY ASSURANCE

- A. Mockups: Build mockups to verify selections made under Sample submittals, to demonstrate aesthetic effects, and to set quality standards for materials and execution.



1. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

#### 1.7 PRECONSTRUCTION TESTING

#### 1.8 DELIVERY, STORAGE, AND HANDLING

- A. Store cementitious materials on elevated platforms, under cover, and in a dry location. Do not use cementitious materials that have become damp.
- B. Store aggregates where grading and other required characteristics can be maintained and contamination avoided.

#### 1.9 FIELD CONDITIONS

- A. Cold-Weather Protection: Do not use frozen materials or materials mixed or coated with ice or frost. Do not build on frozen subgrade or setting beds. Remove and replace unit paver work damaged by frost or freezing.
- B. Weather Limitations for Bituminous Setting Bed:
  1. Install bituminous setting bed only when ambient temperature is above 40 deg F and when base is dry.
- C. Weather Limitations for Mortar and Grout:
  1. Cold-Weather Requirements: Comply with cold-weather construction requirements contained in TMS 602/ACI 530.1/ASCE 6.
  2. Hot-Weather Requirements: Comply with hot-weather construction requirements contained in TMS 602/ACI 530.1/ASCE 6. Provide artificial shade and windbreaks and use cooled materials as required. Do not apply mortar to substrates with temperatures of 100 deg F and higher.
    - a. When ambient temperature exceeds 100 deg F, or when wind velocity exceeds 8 mph and ambient temperature exceeds 90 deg F, set pavers within 1 minute of spreading setting-bed mortar.

### PART 2 - PRODUCTS

#### 2.1 MANUFACTURERS

- A. Source Limitations: Obtain each type of unit paver, joint material, and setting material from single source with resources to provide materials and products of consistent quality in appearance and physical properties.



## 2.2 CURBS AND EDGE RESTRAINTS

- A. Granite Curbs: Granite curbing, with face battered 1 inch per foot, produced in random lengths not less than 36 inches from granite complying with ASTM C 615/C 615M.
  - 1. Granite Color and Grain: Light gray or Dark gray with fine or medium grain.
  - 2. Top Width: 6 inches
  - 3. Face Height: 6 inches
  - 4. Total Height: 18 inches
  - 5. Top Finish: Sawed .
  - 6. Face Finish: Split .

## 2.3 AGGREGATE SETTING-BED MATERIALS

- A. Graded Aggregate for Subbase: Sound, crushed stone or gravel complying with ASTM D 448 for Size No. 57 .
- B. Separation Geotextile: Woven geotextile fabric, manufactured for separation applications; made from polyolefins or polyesters, with elongation less than 50 percent; complying with AASHTO M 288 and the following, measured per test methods referenced:
  - 1. Survivability: Class 2, AASHTO M 288.
  - 2. Apparent Opening Size: No. 60 sieve, maximum; ASTM D 4751.
  - 3. Permittivity: 0.02 per second, minimum; ASTM D 4491.
  - 4. UV Stability: 50 percent after 500 hours' exposure, ASTM D 4355.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Examine surfaces indicated to receive unit paving, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

### 3.2 PREPARATION

- A. Remove substances from concrete substrates that could impair mortar bond, including curing and sealing compounds, form oil, and laitance.
- B. Sweep concrete substrates to remove dirt, dust, debris, and loose particles.
- C. Proof-roll prepared subgrade according to requirements in Section 312000 "Earth Moving" to identify soft pockets and areas of excess yielding. Proceed with unit paver installation only after deficient subgrades have been corrected and are ready to receive base course for unit pavers.



### 3.3 INSTALLATION, GENERAL

- A. Do not use unit pavers with chips, cracks, voids, discolorations, or other defects that might be visible or cause staining in finished work.
- B. Mix pavers from several pallets or cubes, as they are placed, to produce uniform blend of colors and textures.
- C. Cut unit pavers with motor-driven masonry saw equipment to provide clean, sharp, unchipped edges. Cut units to provide pattern indicated and to fit adjoining work neatly. Use full units without cutting where possible. Hammer cutting is not acceptable.
  - 1. For concrete pavers, a block splitter may be used.
- D. Tolerances: Do not exceed 1/32-inch unit-to-unit offset from flush (lippage) or 1/8 inch in 10 feet from level, or indicated slope, for finished surface of paving.
- E. Tolerances: Do not exceed 1/16-inch unit-to-unit offset from flush (lippage) nor 1/8 inch in 24 inches and 1/4 inch in 10 feet from level, or indicated slope, for finished surface of paving.
- F. Expansion and Control Joints: Provide for sealant-filled joints at locations and of widths indicated. Provide compressible foam filler as backing for sealant-filled joints. Install joint filler before setting pavers. Sealant materials and installation are specified in Section 079200 "Joint Sealants."

### 3.4 AGGREGATE SETTING-BED APPLICATIONS

- A. Compact soil subgrade uniformly to at least 95 percent of ASTM D 698 laboratory density.
- B. Proof-roll prepared subgrade to identify soft pockets and areas of excess yielding. Excavate soft spots, unsatisfactory soils, and areas of excessive pumping or rutting, as determined by Architect, and replace with compacted backfill or fill as directed.
- C. Place separation geotextile over prepared subgrade, overlapping ends and edges at least 12 inches.
- D. Place aggregate base, compact by tamping with plate vibrator, and screed to depth indicated.
- E. Place leveling course and screed to a thickness of 1 to 1-1/2 inches, taking care that moisture content remains constant and density is loose and uniform until pavers are set and compacted.
- F. Set pavers with a minimum joint width of 1/16 inch and a maximum of 1/8 inch, being careful not to disturb leveling base. If pavers have spacer bars, place pavers hand tight against spacer bars. Use string lines to keep straight lines.



3.5 REPAIRING, POINTING, AND CLEANING

- A. Remove and replace unit pavers that are loose, chipped, broken, stained, or otherwise damaged or that do not match adjoining units. Provide new units to match adjoining units and install in same manner as original units, with same joint treatment and with no evidence of replacement.
- B. Pointing: During tooling of joints, enlarge voids or holes and completely fill with grout. Point joints at sealant joints to provide a neat, uniform appearance, properly prepared for sealant application.
- C. Cleaning: Remove excess grout from exposed paver surfaces; wash and scrub clean.

END OF SECTION 321400





## SECTION 321413.19 - POROUS PRECAST CONCRETE UNIT PAVING

### PART 1 - PART 1 GENERAL

#### 1.1 SUMMARY

A. Section includes the following:

1. Permeable Concrete Pavers
2. Permeable Joint Opening Aggregate
3. Permeable Joint Aggregate Type 1
4. Permeable Joint Aggregate Type 2
5. Permeable Setting Bed Aggregate (Open-graded)
6. Permeable Base Aggregate (Open-graded)
7. Permeable Subbase Aggregate (Open-graded)

#### 1.2 REFERENCES

A. ASTM International, latest edition:

1. C 29 Bulk Density and Voids in Aggregate Materials.
2. C 33, Standard Specification for Concrete Aggregates.
3. C 136, Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.
4. C 140, Standard Test Methods for Sampling and Testing Concrete Masonry Units and Related Units.
5. D 448, Standard Classification for Sizes of Aggregate for Road and Bridge Construction.
6. C 936, Standard Specification for Solid Concrete Interlocking Paving Units.
7. C 979, Standard Specification for Pigments for Integrally Colored Concrete.
8. D 698 Test Methods for Moisture Density Relations of Soil and Soil Aggregate Mixtures Using a 5.5 lb (24.4 N) Rammer and 12 in. (305 mm) drop.
9. D 1557 Test Methods for Moisture Density Relations of Soil and Soil Aggregate Mixtures Using a 10-lb (44.5 N) Rammer and 18 in. (457 mm) drop.
10. C1645 Standard Test Method for Freeze-thaw and De-icing Salt Durability of Solid Concrete Interlocking Paving Units
11. D 4254, Standard Test Methods for Minimum Index Density and Unit Weight of Soils and Calculation of Relative Density.

#### 1.3 SUBMITTALS

A. Permeable Concrete Pavers:



1. Samples for verification: Three representative full-size samples of each paver type, thickness, color and finish that indicate the range of color variation and texture expected upon project completion.
2. Accepted samples become the standard of acceptance for the product produced.
3. Test results from an independent testing laboratory for compliance of concrete pavers with ASTM C 936.
4. Manufacturer's catalog product data, installation instructions, and material safety data sheets for the safe handling of the specified materials and products.

B. Permeable Joint Opening Aggregate:

1. Provide three representative one pound samples in containers of aggregate materials that indicate the range of color variation and texture expected upon project completion.
2. Accepted samples become the standard of acceptance for the product produced.
3. Test results from an independent testing laboratory for sieve analysis, including washed gradations per ASTM C 136.
4. Test results for void space percentage per ASTM C 29.

C. Permeable Setting Bed, Base and Subbase Aggregate:

1. Test results from an independent testing laboratory for compliance with ASTM D 448 No. 8, No. 57 and No. 2.
2. Test results from an independent testing laboratory for sieve analysis, including washed gradations per ASTM C 136.
3. Test results for void space percentage per ASTM C 29.

D. Paving Installation Contractor:

1. Job references from a minimum of three projects similar in size and complexity. Provide Owner/Client/General Contractor names, postal address, phone, fax, and email address.

## 1.4 QUALITY ASSURANCE

A. Utilize a Manufacturer having at least ten years of experience manufacturing interlocking concrete pavers on projects of similar nature or project size.

B. Source Limitations:

1. Obtain Permeable Concrete Pavers from one source location with the resources to provide products of consistent quality in appearance and physical properties.
2. Obtain Permeable Joint Opening Aggregate from one source with the resources to provide materials and products of consistent quality in appearance and physical properties.

C. Paving Contractor Qualifications:

1. Utilize an installer having successfully completed concrete paver installation similar in design, material, and extent indicated on this project.



D. Mockups:

1. Install a 5 ft x 5 ft paver area.
2. Use this area to determine joint sizes, lines, laying pattern(s) and levelness. This area will serve as the standard by which the workmanship will be judged.
3. Subject to acceptance by owner, mock-up may be retained as part of finished work.
4. If mock-up is not retained, haul offsite and dispose legally.

1.5 DELIVERY, STORAGE & HANDLING

- A. In accordance with Conditions of the Contract and Division 1 Product Requirement Section. (Modify this to match the general conditions of the specific project)
- B. Deliver Permeable Concrete Pavers in manufacturer's original, unopened and undamaged container packaging with identification labels intact.
1. Coordinate delivery and paving schedule to minimize interference with normal use of streets and sidewalks adjacent to paver installation.
  2. Deliver concrete pavers to the site in steel banded, plastic banded or plastic wrapped packaging capable of transfer by forklift or clamp lift.
  3. Unload pavers at job site in such a manner that no damage occurs to the product or adjacent surfaces.
- C. Store and protect materials free from mud, dirt and other foreign materials.

1.6 PROJECT/SITE CONDITIONS

- A. Environmental Requirements:
1. Install permeable pavers only on unfrozen permeable setting bed aggregate materials.
  2. Install permeable setting bed only on unfrozen permeable base and subbase aggregates.
  3. Install permeable base or subbase aggregates only over unfrozen subgrade.

1.7 PERMEABLE CONCRETE PAVER OVERAGE AND ATTIC STOCK

- A. Provide a minimum of 5% additional material for overage to be used during construction.
- B. Furnish 100 square feet of each product and size used to owner for maintenance and repair. Furnish Permeable Concrete Pavers from the same production run as installed materials.
- C. Manufacture to supply maintenance and reinstatement manuals for Permeable Concrete Paver units.



## PART 2 - PART 2 PRODUCTS

### 2.1 PERMEABLE CONCRETE PAVERS

- A. Basis-of-Design Product: The permeable concrete paver shapes are based on:
  - 1. Unilock:
    - a. Eco-Priora
  - 2. As manufactured by: Unilock (Add location) 35 Commerce Dr. Uxbridge, MA 01569
    - a. Contact: Ashley Allard-LaCroix - 508 277 4413
  - 3. Substitutions: Approved Equal.
- B. Product requirements:
  - 1. Permeable Paver Type 1: Unilock Eco-Priora
    - a. Finish:
    - b. Smooth (Premier) – this is a face mix finish.
    - c. Color: Opal Blend
    - d. Edge: Chamfer - 3 mm bevel
    - e. Size: 9.5" X 4.75" X 3.125"
- C. Provide pavers meeting the minimum material and physical properties set forth in ASTM C 936, Standard Specification for Interlocking Concrete Paving Units. Efflorescence is not a cause for rejection.
  - 1. Average compressive strength 8000 psi (55MPa) with no individual unit under 7,200 psi (50 MPa).
  - 2. Average absorption of 5% with no unit greater than 7% when tested according to ASTM C 140.
  - 3. Conforming to ASTM C 1645 when tested for freeze-thaw requirements.
  - 4. Height tolerances +/- 3.2 mm (1/8 in).
- D. Accept only pigments in concrete pavers conforming to ASTM C 979. Note: ACI Report No. 212.3R provides guidance on the use of pigments.
- E. Maximum allowable breakage of product is 5%.

### 2.2 PERMEABLE JOINT OPENING AGGREGATE

- A. Provide Permeable Joint Opening Polymeric Sand
  - 1. Gator Nitro Joint Sand
  - 2. Approved Equal



2.3 PERMEABLE SETTING BED AGGREGATE

- A. Provide Permeable Setting Bed Aggregate materials conforming to ASTM C 33 and gradation requirements of ASTM D 448 No. 8 as presented in Table 3.

1. TABLE 1

**TABLE 1  
PERMEABLE SETTING BED  
AGGREGATE GRADATION  
REQUIREMENTS**

<b>ASTM No. 8</b>	
<b>Sieve Size</b>	<b>Percent Passing</b>
½ in (12.5 mm)	100
3/8 in (9.5 mm)	85 to 100
No. 4 (4.75 mm)	10 to 30
No. 8 (2.36 mm)	0 to 10
No. 16 (1.18 mm)	0 to 5

2.4 PERMEABLE BASE AGGREGATE

- A. Provide Permeable Base Aggregate materials conforming to ASTM C 33 and gradation requirements of ASTM D 448 No. 57 as presented in Table 4.

1. TABLE 2

**TABLE 2  
PERMEABLE BASE  
AGGREGATE GRADATION  
REQUIREMENTS**

<b>ASTM No. 57</b>	
<b>Sieve Size</b>	<b>Percent Passing</b>
1-1/2 in (37.5 mm)	100
1 in (25 mm)	95 to 100
1/2 in (12.5 mm)	25 to 60
No. 4 (4.75 mm)	0 to 10
No. 8 (2.36 mm)	0 to 5

2.5 EDGE RESTRAINTS

- A. Granite Curb Edge Restraint as indicated in Section 321400



### PART 3 - PART 3 EXECUTION

#### 3.1 EXAMINATION

- A. Examine areas indicated to receive paving for compliance with requirements for installation tolerances and other conditions affecting performance for the following items before placing the Permeable Concrete Pavers.
  - 1. Verify that subgrade preparation, compacted density and elevations conform to specified requirements.
  - 2. Verify that Geotextiles, if applicable, have been placed according to drawings and specifications.
  - 3. Verify that Permeable Base and Subbase Aggregate materials, thickness, compacted density, surface tolerances and elevations conform to specified requirements.
  - 4. Provide written density test results for soil subgrade, Permeable Base and Subbase Aggregate materials to the Owner, General Contractor and paver installation subcontractor.
  - 5. Verify location, type, and elevations of edge restraints, concrete collars around utility structures, and drainage inlets.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.
  - 1. Beginning of bedding sand and paver installation signifies acceptance of base and edge restraints.

#### 3.2 PREPARATION

- A. Verify that the subgrade soil is free from standing water.
- B. Stockpile Permeable Setting Bed, Joint, Base and Subbase Aggregate materials such that they are free from standing water, uniformly graded, free of any organic material or sediment, debris, and ready for placement.
- C. Remove any excess thickness of soil applied over the excavated soil subgrade to trap sediment from adjacent construction activities before placing the Geotextile and Permeable Subbase Aggregate materials.
- D. Keep area where pavement is to be constructed free from sediment during entire job. Remove and replace all Geotextile, Permeable Joint, Setting Bed, Base and Subbase Aggregate materials contaminated with sediment with clean materials.
- E. Complete all subdrainage of underground services within the pavement area in conjunction with subgrade preparation and before the commencement of Permeable Subbase Aggregate construction.
- F. Prevent damage to underdrain pipes, overflow pipes, observation wells, or inlets and other drainage appurtenances during installation. Report all damage immediately.



- G. Compact soil subgrade uniformly to at least 90 percent of Standard Proctor Density per ASTM D 698 for pedestrian areas. Compact soil subgrade uniformly to at least 95 percent Modified Proctor per ASTM D 1557 for vehicular areas.
- H. Proof-roll prepared subgrade according to requirements in Division 31 Section "Earth Moving" to identify soft pockets and areas of excess yielding. Excavate soft spots, unsatisfactory soils, and areas of excessive pumping or rutting and replace with compacted backfill or fill as directed.

### 3.3 INSTALLATION

#### A. EDGE RESTRAINTS

- 1. Provide edge restraints as indicated.
  - a. Install Granite Curb Edge to comply with requirements in 321400
  - b. Install only in locations shown on plan, not around entire perimeter

#### B. PERMEABLE BASE AGGREGATE

- 1. Provide the Permeable Subbase Aggregate in uniform lifts not exceeding 6 in. (150 mm) loose thickness and compact to at least 95 percent as per ASTM D 4254 to depths as indicated.
- 2. Compact the Permeable Subbase Aggregate material with at least two passes in the vibratory mode then at least two in the static mode with a minimum 10 ton vibratory roller until there is no visible movement. Do not crush aggregate with the roller.
- 3. Tolerance: Do not exceed the specified surface grade of the compacted Permeable Subbase Aggregate material more than  $\pm 3/4$  in. (20 mm) over a 10 ft. (3 m) long straightedge laid in any direction.
- 4. Provide the Permeable Base Aggregate material in uniform lifts not exceeding 6 in. (150 mm) over the compacted Permeable Subbase Aggregate material and compact to at least 95 percent as per ASTM D 4254 to depths as indicated.
- 5. Compact the Permeable Base Aggregate material with at least two passes in the vibratory mode then at least two in the static mode with a minimum 10 ton vibratory roller until there is no visible movement. Do not crush aggregate with the compaction device.
- 6. Tolerance: Do not exceed the specified surface grade of the compacted Permeable Base Aggregate material more than  $\pm 1/2$  in. (13 mm) over a 10 ft. (3 m) long straightedge laid in any direction.
- 7. Grade and compact the upper surface of the Permeable Base Aggregate material sufficiently to prevent infiltration of the Permeable Setting Bed Aggregate material both during construction and throughout its service life.

#### C. PERMEABLE SETTING BED AGGREGATE

- 1. Provide, spread and screed Permeable Setting Bed aggregate evenly over the Permeable Base Aggregate course.
  - a. Protect screeded Permeable Setting Bed Aggregate from being disturbed.
  - b. Screed only the area which can be covered by pavers in one day.
  - c. Do not use Permeable Setting Bed Aggregate material to fill depressions in the base surface.

2. Keep moisture content constant and density loose and constant until Concrete Pavers are set and compacted.
3. Inspect the Permeable Setting Bed Aggregate course prior to commencing the placement of the permeable concrete pavers.
4. Inspect the Setting Bed Aggregate course prior to commencing the placement of the Permeable Concrete Pavers. Acceptance of the Setting Bed Aggregate occurs with the initiation of Permeable Concrete Paver placement.

D. PERMEABLE CONCRETE PAVERS

1. Replace unit pavers with chips, cracks, voids, discolorations, and other defects that might be visible in finished work.
2. Mix Concrete Pavers from a minimum of three (3) bundles simultaneously drawing the paver vertically rather than horizontally, as they are placed, to produce uniform blend of colors and textures. (Color variation occurs with all concrete products. This phenomenon is influenced by a variety of factors, e.g. moisture content, curing conditions, different aggregates and, most commonly, from different production runs. By installing from a minimum of three (3) bundles simultaneously, variation in color is dispersed and blended throughout the project).
3. Exercise care in handling face mix pavers to prevent surfaces from contacting backs or edges of other units.
4. Provide Permeable Concrete Pavers using joint pattern as indicated. Adjust joint pattern at pavement edges such that cutting of edge pavers is minimized. Cut all pavers exposed to vehicular tires no smaller than one-third of a whole paver.
5. Use string lines or chalk lines on Permeable Setting Bed aggregate to hold all pattern lines true.
6. Set surface elevation of pavers 1/8 in. (3 mm) above adjacent drainage inlets, concrete collars or channels.
7. Place units hand tight against spacer bars. Adjust horizontal placement of laid pavers to align straight.
  - a. When installation is performed with mechanical equipment, use only unit pavers with spacer bars on sides of each unit.
8. Provide space between paver units of 1/32 in. (1 mm) wide to achieve straight bond lines.
9. Prevent joint (bond) lines from shifting more than  $\pm 1/2$  in. ( $\pm 15$  mm) over 50 ft. (15 m) from string lines.
10. Fill gaps between units or at edges of the paved area that exceed 3/8 inch (10 mm) with pieces cut to fit from full-size unit pavers.
11. Cut unit pavers with motor-driven masonry saw equipment to provide clean, sharp, unchipped edges. Cut units to provide pattern indicated and to fit adjoining work neatly. Use full units without cutting where possible. Hammer cutting is not acceptable.
12. Prevent all traffic on installed pavers until Permeable Joint Aggregate has been vibrated into joints. Keep skid steer and forklift equipment off newly laid pavers that have not received initial compaction and Permeable Joint Aggregate material. .
13. Vibrate pavers into leveling course with a low-amplitude plate vibrator capable of a to 5000-lbf (22-kN) compaction force at 80 to 90 Hz. Perform at least three passes across paving with vibrator. Vibrate under the following conditions:
  - a. After edge pavers are installed and there is a completed surface.
  - b. Compact installed concrete pavers to within 6 feet (1,800 mm) of the laying face before ending each day's work. Cover pavers that have not been compacted and





leveling course on which pavers have not been placed, with nonstaining plastic sheets to prevent Permeable Setting Bed Aggregate from becoming disturbed.

14. Protect face mix Concrete Paver surface from scuffing during compaction by utilizing a urethane pad.
15. Remove any cracked or structurally damaged pavers and replace with new units prior to installing Permeable Joint Opening Aggregate material.
16. Provide, spread and sweep Permeable Joint Opening Aggregate into joints immediately after vibrating pavers into Permeable Setting Bed course until full. Vibrate pavers and add Permeable Joint Aggregate material until joints are completely filled, then remove excess material. This will require at least 4 passes with a plate compactor.
17. Remove excess Permeable Joint Aggregate broom clean from surface when installation is complete.

### 3.4 FIELD QUALITY CONTROL

- A. Verify final elevations for conformance to the drawings after sweeping the surface clean.
  1. Prevent final Concrete Paver finished grade elevations from deviating more than
  2.  $\pm 3/8$  in. ( $\pm 10$  mm) under a 10 ft (3 m) straightedge or indicated slope, for finished surface of paving.
- B. Lippage: Paver-to-Paver Lippage:
  1. No greater than 3 mm (1/8 inch) difference in height between adjacent pavers.

### 3.5 REPAIRING, CLEANING AND SEALING

- A. Remove and replace unit pavers that are loose, chipped, broken, stained, or otherwise damaged or that do not match adjoining units. Provide new units to match adjoining units and install in same manner as original units, with same joint treatment and with no evidence of replacement.
- B. Cleaning: Remove excess dirt, debris, stains, grit, etc. from exposed paver surfaces; wash and scrub clean.
  1. Clean Permeable Concrete Pavers in accordance with the manufacturer's written recommendations.

### 3.6 PROTECTION

- A. Protect completed work from damage due to subsequent construction activity on the site.

### 3.7 PERMEABLE JOINT AGGREGATE MATERIAL REFILLING

- A. Remove all debris from joint and provide additional Permeable Joint Aggregate material after 120 days and before 150 days after date of Substantial Completion/Provisional Acceptance.



1. Fill Permeable Joint Aggregate material full to the lip of the paver.

END OF SECTION 321413.19



## SECTION 321823.63 - EQUESTRIAN SURFACING

### PART 1 - GENERAL

#### 1.1 SUMMARY

A. This work consists of providing the following items:

1. Earthwork
2. Gravel Base
3. Equestrian Sand

#### 1.2 SYSTEM DESCRIPTION

A. Installation of equestrian sand as shown on the drawings.

#### 1.3 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site

#### 1.4 SUBMITTALS SECTION 010000 - GENERAL REQUIREMENTS

A. Provide Samples for the following items (See 3.15 under SECTION 010000 - GENERAL REQUIREMENTS)

1. Equestrian Sand

B. Provide Product data for the following items ( See 3.16 under SECTION 010000 - GENERAL REQUIREMENTS)

1. Gravel Base
2. Equestrian Sand

### PART 2 - PRODUCT

#### 2.1 MATERIALS

A. Equestrian Sand

1. Equestrian Sand Analysis (Fletcher Sand 21)



Soil Separate			% Retained mm (US sieve)							
% Sand 2.0- .05mm	% Silt 0.05- 0.002mm	% Clay <0.002mm	No. 5 Gravel 4.0 mm	No. 10 Gravel 2.0 mm	No. 18 V.Coarse 1.0 mm	No. 35 Coarse 0.50 mm	No. 60 Medium 0.25 mm	No. 100 Fine 0.15 mm	No. 140 Fine 0.10 mm	No. 270 V. Fine 0.05 mm
96.5	<1.0	<1.0	0.0	0.1	0.2	1.7	21.3	44.1	22.0	9.0

Uniformity Coefficient Cu	D15 mm	D50 mm	D85 mm	Shape Angularity	Shape Sph- ericity	Acid Reaction	Infiltration Rate*in/hr	Infiltration Rate** cm/hr	Bulk Density g/cc
2.2	0.11	0.18	0.33	Sub- Angular to Sub- Rounded	Medium to Low	None	8.0	20.4	1.5

\*ASTM F1815 30cm Tension

Dry Color	Cnisting	Penetrometer Value kg/cm <sup>2</sup>	Angle of Repose	Shape of Pile
10YR 7/4 Very Pale Brown	Slight	2.8	Angle**	

\*\*ASTM F1632 Method B. Determination of Size factors SOP, & Bunker Sand SOP

B. Base Course: 3/4" Gravel.

### PART 3 - EXECUTION

#### 3.1 PREPARATION

- A. Excavate the ground to NO DEEPER THAN 10" and grade out irregularities to form the paddock at the lines and depths indicated on the drawings.
- B. Excavated area should be rectangular in section with vertical sides and level base.
- C. Stripped vegetation and excavated topsoil to be stockpiled or removed from site.
- D. If soft spots are present, excavate the area until the sub grade is stable.
- E. Fill excess w scalplings, crusher run or crushed demolition waste to formation level and compact to refusal.



### 3.2 INSTALLATION

#### A. Base:

1. Using a drag box lay 6-inch depth of granular sub base to form a Crown in the center of the Paddock. If no drag box is available, granular sub base should be laid, spread and raked to required falls and levels using asphalt rake.
2. Compact sub base layer thoroughly to refusal using a heavy ride-on tandem vibrating roller until full compaction is achieved (minimum 120 type roller recommended).
3. Once base layer is compacted, check levels of the surface at regular intervals along the compacted sub base layer for consistent even surface regularity, which should be accurate to maximum gap of 1/4"-inch under a 3-foot long straight edge, with no high or low points or hollows.
4. Any part of the sub base layer deviating from the required level must be raked off or topped up with additional granular sub base and re-compacted to the correct levels.
5. Check the finished compacted sub base layer is closed tightly with no exposed surface voids before laying the surface layer. If necessary, fill any voids with 1/4" bluestone dust.

#### B. Equestrian Sand Surface

1. Using drag box lay specified depth of equestrian sand to falls and levels, to form width of Paddock surface.
2. Provide 2" Crown along the center line of compacted sub base layer.
3. If no drag box is available, equestrian sand should be laid, spread and raked to falls and levels using asphalt rake.
4. Compact surface layer thoroughly to refusal using a heavy ride-on tandem vibrating roller (minimum 120 type roller recommended).
5. Once rolling is finished, check levels of the surface at regular intervals along the compacted surface layer for consistent even surface regularity, which should be accurate to maximum gap of 1/4"-inch under a 3-foot long straight edge, with no high or low points or hollows.
6. Any part of the surface layer deviating from the required level must be raked off or topped up with additional equestrian sand and re-compacted to the correct levels.

#### C. FINISHING

1. Grade areas surrounding each paddock to lines shown on drawings
2. Ensure that adjacent lawn areas are flush with the paddock surface using available topsoil to transition edges and support the paddock sand surface. Accommodate for material compaction.
3. Install fencing, loam, and seed surrounding each paddock per specifications.
4. Landscaped edges should be finished level and taper down and away from the paddock to allow surface water to run off unimpeded.

END OF SECTION 321823.63



## SECTION 323116.10 - ORNAMENTAL WELDED WIRE FENCES AND GATES

### PART 1 - GENERAL:

#### 1.1 SECTION INCLUDES

- A. Decorative welded wire fencing, gates, and accessories.

#### 1.2 SYSTEM DESCRIPTION

- A. The manufacturer shall supply a total ornamental welded wire fence system of the style, strength, size, and color defined herein. The system shall include all components as required, and shall be fabricated, coated, and assembled in the United States.

#### 1.3 QUALITY ASSURANCE

- A. The contractor shall provide laborers and supervisors who are familiar with the type of construction involved, and the materials and techniques specified.
- B. Manufacturer of fence system must have ten (10) years of documented experience in manufacturing the products specified in this section.

#### 1.4 REFERENCES

- A. ASTM A525 - Specification for General Requirements for Steel Sheet, Zinc-coated (Galvanized) by the Hot-Dip Process
- B. ASTM A641 – Specification for Zinc-Coated (Galvanized) Carbon Steel Wire
- C. ASTM A185 – Specification for Steel Welded Wire Fabric, Plain, for Concrete Reinforcement.
- D. ASTM B117 – Practice for Operating Salt Spray (Fog) Apparatus
- E. ASTM D2247 – Standard Practice for Testing Water Resistance of Coatings in 100% Relative Humidity

#### 1.5 SUBMITTALS

- A. Manufacturer's submittal package shall be provided prior to installation.
- B. Changes in specification may not be made after the bid date.
- C. Samples of assembled materials, components, hardware, accessories, and/or colors, if requested.



1.6 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Upon receipt, materials should be checked for damage that may have occurred in shipping to the job site.
- B. Each package shall bear the name of the manufacturer.
- C. Store products in manufacturer's unopened packaging.
- D. Store materials in a secure and dry area to protect against damage, weather, vandalism, and theft.
- E. Transport, handle and store products with care to protect against damage before installation.

PART 2 - PRODUCTS:

2.1 MANUFACTURER

- A. The fencing system shall be Patriot Ornamental Wire Fence as manufactured by Jerith Manufacturing LLC., 14400 McNulty Road, Philadelphia, PA 19154. Telephone: 800-344-2242; Fax: 215-676-9756; email: sales@jerith.com.
- B. Substitutions: Approved equal permitted.
- C. Nominal fence height shall be 72 inches. Fences taller than 72" shall be made by stacking two same height panels on top of each other.
- D. Color shall be Black.

2.2 MATERIALS

- A. Structural Components: All posts and rails used in the fence system shall be manufactured from coil steel having a minimum yield strength of 55,000 psi. The steel shall be galvanized to meet the requirements of ASTM A525 with a zinc coating weight of 0.60-1.0 ounces per square foot.
- B. Infill: Section infill wires shall be steel with a minimum yield strength of 50,000 psi. The steel shall be galvanized to meet the designation of "regular coating" in accordance with requirements of ASTM A641.

2.3 FINISH

- A. Pretreatment: A five stage non-chrome pretreatment shall be applied. The final stage shall be a dry-in-place activator which produces a uniform chemical conversion coating for superior adhesion.



- B. Coating: Fence materials shall be coated with a TGIC polyester powder-coat finish system. Epoxy powder coatings, baked enamel or acrylic paint finishes are not acceptable. The finish shall have a cured film thickness of at least 2.0 mils.
- C. Tests: The cured finish shall meet the following requirements:
  - 1. Humidity resistance of 1,000 hours using ASTM D2247.
  - 2. Salt-spray resistance of 1,000 hours using ASTM B117.
  - 3. Outdoor weathering shall show no adhesion loss, checking or crazing, with only slight fade and chalk when exposed for 3 years in Florida facing south at a 45 degree angle.

## 2.4 FABRICATION

- A. Fence Sections shall be manufactured with 1" square x 18 gauge (.049") tubing welded every 12" to the top and bottom of welded wire panels. Welded wire panels shall be comprised of 4 (.225") gauge (Washburn & Moen Standard) vertical wires and 6 (.192") gauge horizontal wires. 4 gauge vertical wires shall be placed 3½" on center. 6 gauge vertical wires shall be placed 1¾" on center. Horizontal wires shall be 6 gauge and spaced to provide style differences but no further apart than would allow substantial rigidity of vertical wires. Horizontal and vertical wires shall be assembled by automatic machines or other suitable mechanical means that will ensure accurate spacing and alignment of all members of the finished fabric. The wires shall be connected at every intersection by electric resistance welding in accordance with all requirements in ASTM A185. Sections shall be capable of supporting a 550 lb. load applied vertically at midspan and a concentrated load of 225 lbs. applied horizontally at midspan without permanent deformation.
- B. Posts shall be 2½" square x 11 (.125") gauge steel tubing. Posts shall be spaced 70" apart from inside face to inside face. Steel rail ends shall be screwed to terminal posts to receive the 1" square top and bottom rails. The rails shall be secured to the rail ends by stainless steel screws. Steel caps shall be provided with all posts.
- C. Residential and light commercial grade gates shall be assembled using gate uprights with 1" outside cross-section dimensions having 7/8" tubes welded to them. A Fence Section shall then be cut to size and secured to two uprights using stainless steel screws. A 1" x .125" diagonal brace shall be provided, cut to length, cold galvanized, touched up, and screwed into position from the top hinge side to the bottom latch side of the gate. All gates shall support a 300 lb. vertical load on the latch side of the gate without collapsing.
- D. Heavy duty grade gate frames shall consist of 2" square x .125" wall gate uprights and 1.5" x 1.5" x .125" U-channels for top and bottom members welded at each connection with a 1" x .125" wall diagonal brace welded into place. Infill of matching Fence Section shall be welded into frame.

## 2.5 WARRANTY

- A. The entire fence system shall have a written 8 Year Warranty against rust and defects in workmanship and materials. In addition, the finish shall be warranted not to crack, chip, peel, or blister for the same period.





### PART 3 - EXECUTION:

#### 3.1 PREPARATION

- A. Verify areas to receive fencing are completed to final grades and elevations.
- B. Ensure property lines and legal boundaries are clearly established.
- C. Remove any surface irregularities which may cause interference with the installation of the fence.

#### 3.2 FENCE INSTALLATION

- A. Install fence in accordance with the manufacturer's instructions.
- B. Excavate post holes to proper depth to suit local conditions for stability and support of the fence system without disturbing the underlying materials. Excavate deeper as required for adequate support in soft and loose soils.
- C. Set fence posts in concrete footers at 70" spacing from inside of post to inside of post. Note that this fence must be stepped for installations on a slope. It can not follow the grade.
- D. Center and align posts in holes to required depth. Place concrete around posts and tamp for consolidation. After tamping, check alignment of posts, and make necessary corrections before the concrete hardens.
- E. Insert rail ends into horizontal rails and fasten in place to the posts.
- F. When fence is installed on a slope, panels will be stepped evenly down the slope, with a 12" maximum vertical difference between adjacent panels. Half-sized panels may be used on steep slopes (see drawings for reference).

#### 3.3 GATE INSTALLATION

- A. Set gate posts plumb and level for gate openings specified in construction drawings.
- B. Install gates to allow full opening without interference after concrete has hardened around gate posts. Adjust hardware for smooth operation. Install one drop rod for double gates.

#### 3.4 ACCESSORIES

- A. Install post caps and other accessories to complete fence.



3.5 CLEANING

- A. Contractor shall clean site of debris and excess materials. Post hole excavations shall be scattered uniformly away from posts.
- B. If necessary, clean fence system with mild household detergent and clean water. Excess concrete must be removed from posts and other fencing material before it hardens.

END OF SECTION 323116.10



## SECTION 323132 - COMPOSITE FENCES AND GATES

### PART 1 - GENERAL

#### 1.1 SUMMARY

- A. This work consists of providing the following items:
  - 1. HDPE Fencing
  - 2. Double steel swing gate with three HDPE rails
  - 3. Single Steel Swing gates with three HDPE rails (Add Alternate #3)
  - 4. All necessary hardware and accessories
  - 5. Steel gate posts
  - 6. Concrete footings

#### 1.2 SYSTEM DESCRIPTION

- A. Installation of HDPE three and four rail paddock style equestrian fencing, posts, and gates

#### 1.3 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site

#### 1.4 SUBMITTALS SECTION 010000 - GENERAL REQUIREMENTS

- A. Provide Samples for the following items (See 3.15 under SECTION 010000 - GENERAL REQUIREMENTS)
  - 1. HDPE fencing in the specified color
- B. Provide Drawings for the following items (See 3.14 under SECTION 010000 - GENERAL REQUIREMENTS)
  - 1. Double Gate
  - 2. Single Gate (Add Alternate #3)
- C. Provide Product data for the following items (See 3.16 under SECTION 010000 - GENERAL REQUIREMENTS)
  - 1. HDPE fencing
  - 2. Hinges, latches and critical hardware



## PART 2 - PRODUCTS

### 2.1 MANUFACTURER

- A. HDPE three and four rail paddock style equestrian fencing and posts shall be manufactured by Derby Fence, Mundelein, IL, 847.680.1550, [www.derbyfence.com](http://www.derbyfence.com)
- B. Substitutions: Approved equal permitted.
- C. Source Limitations: Fencing materials shall be provided from a single source with the resources to provide products of consistent quality in appearance and physical properties.
- D. Color of HDPE fencing shall be Weathered Wood

### 2.2 FENCING

- A. HDPE Fencing: All fencing materials shall be produced by a manufacturer specializing in producing fencing products for containing livestock. HDPE shall be thick-walled with an internal rib system to add strength and firmness creating a sturdy and safe containment for livestock.
  - 1. HDPE fencing products shall be entirely made in USA and meet the following criteria:
    - a. Wall thickness .09
    - b. Density (Lbs./Cu. In.) D61110.0023 – 0.0028
    - c. Compression (psi@0.4psi@0.4")D61083000 – 3100
    - d. Tensile (psi)D6382100 – 2600
    - e. Flexural Strength (psi)D61092000 – 3000
    - f. Tangent Modulus216,000 – 222,000
    - g. Coefficient of Thermal ExpansionD69600007
    - h. Vicat Softening Point (F)150 – 160 (F)
    - i. Brittleness Point (F)(-100) (-104) (F)
  - 2. HDPE Fence Posts shall measure 6" x 6" x 8'
  - 3. HDPE Fence Rails shall measure 1 3/4" x 5 1/2" supplied at 16' lengths.
  - 4. Rails shall be fitted with a button release system.



### 2.3 STEEL GATES WITH HDPE RAILS

- A. Steel Gates: Provide gates as shown on the drawings and as detailed, The Double Swing Gate is a base bid item while Single Swing Gates are identified as Add Alternate #3. All fencing materials shall be produced by a manufacturer specializing in fabricating gates for containing livestock. HDPE rails integrated into the gates shall be thick-walled with an internal rib system to match fencing by Derby Fence specified herein or approved equal.
- B. Existing galvanized steel pipe gates shall be reinstalled under the Base Bid
- C. Add Alternate #3: Gates shall be fabricated in accordance with SECTION 055000 – METAL FABRICATIONS
  - 1. Gate to be fabricated from steel as detailed in the drawings.
  - 2. All welds shall meet structural tolerances and ground smooth.
  - 3. Steel shall be galvanized and finish coated, post-fabrication. The final protective coating of the gate shall be black
  - 4. Supply industrial grade hinge and latch. Where required provide a drop pin assembly and receiving sleeve.
  - 5. Gate posts shall be 4'x4' galvanized steel tubing with finish coating to match structural steel of gate. Color: black.
  - 6. Gate posts shall be set in concrete.

### 2.4 CONCRETE

- A. Concrete for footings shall have a 28-day compressive strength of 3,000 psi.

### 2.5 WARRANTY

- A. The entire fence system shall have a written 20 Year Warranty against rust and defects in workmanship and materials. In addition, the finish shall be warranted not to crack, chip, peel, or blister for the same period.
- B. Gates shall have a written 8 Year Warranty against rust and defects in workmanship and materials. In addition, the finish shall be warranted not to crack, chip, peel, or blister for the same period.



### PART 3 - EXECUTION

#### 3.1 PREPARATION

- A. Verify areas to receive fencing are sufficiently complete and established grades appear suitable for fencing to be installed.
- B. Ensure property lines and legal boundaries are clearly established.
- C. Remove any surface irregularities which may cause interference with the installation of the fence.
- D. Stake out fence lines and obtain landscape architect approval to begin installation.

#### 3.2 FENCE INSTALLATION

- A. Install fence in accordance with the manufacturer's instructions.
- B. Excavate post holes to proper depth to suit local conditions for stability and support of the fence system without disturbing the underlying materials. Excavate deeper as required for adequate support in soft and loose soils. Width of excavation shall be no less than 18"
- C. Center and align posts in holes to required depth. Place concrete around posts and tamp for consolidation. After tamping, check alignment of posts, and make necessary corrections before the concrete hardens.
- D. It is critical that fence posts be spaced at exactly 8'-0" on center. This spacing will ensure a 1" gap between rail sections internal to the post.
- E. Rail lengths shall be set staggered. Top and bottom rails shall terminate at a common post, the middle rail shall be staggered 8'.
- F. Insert rail ends into pockets making sure button clip is engaged.

#### 3.3 GATE INSTALLATION

- A. Set gate posts plumb and level for gate openings as specified in construction drawings.
- B. Install gates to allow full opening without interference after concrete has hardened around gate posts. Adjust hardware for smooth operation. Install one drop rod for double gates.

#### 3.4 ACCESSORIES

- A. Install post caps and other accessories to complete fence.



3.5 CLEANING

- A. Contractor shall clean site of debris and excess materials. Post hole excavations shall be scattered uniformly away from posts.
- B. If necessary, clean fence system with mild household detergent and clean water. Excess concrete must be removed from posts and other fencing material before it hardens.

END OF SECTION 323132



## SECTION 323253 - STONE RETAINING WALLS

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Requirements, apply to this Section.

#### 1.2 SUMMARY

- A. Work includes furnishing and installing dry boulder retaining wall to be installed to the lines and grades designated on the project's final construction drawings or as directed by the Landscape Architect.
- B. Related Requirements:
  - 1. Section 312213 "Rough Grading" for excavation for boulder retaining walls.

#### 1.3 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site

#### 1.4 ACTION SUBMITTALS

- A. Work Samples: Submit photos of at least three (3) similar projects completed by the installer that will be working on this project.
- B. Boulder Samples: Submit photos & measurements of a minimum of five (5) boulders that will be used.
- C. Work Documentation: Contractor shall submit detailed photographic or video documentation of the project from start to completion. This report is to verify correct building techniques.
  - 1. Document to include the following points:
  - 2. Prepared sub grade
  - 3. First Boulder Placement
  - 4. Completed Wall with Backfill

#### 1.5 DELIVERY, STORAGE, AND HANDLING

- A. Store and handle stone to prevent deterioration or damage due to contaminants, breaking, chipping, or other causes.





## PART 2 - MATERIALS

### 2.1 BOULDERS

- A. Boulders for the wall shall be sized appropriately per the details to retain 12-24" of grade. The size ranges are as follows:
  - 1. Boulders for first course: 24-36" Height x 24-36" Depth x 32-48" Width/Length

### 2.2 FOOTING MATERIAL

- A. Drainage aggregate shall be clean angular stone, allowing water to freely pass through.
- B. Material must be stable and firm when compacted.
- C. Commonly available crushed stone aggregate in the size range of ¾" to 1½" is required.
- D. In areas where the ground freezes water must easily pass through the footing material and have a place to drain to well away from the wall.

### 2.3 BACKFILL AGGREGATE

- A. Drainage aggregate shall be clean angular stone, that allows water to freely pass through.
- B. Material must be stable and firm when compacted.
- C. Aggregate size must be large enough that water will not "wash" it through the wall.
- D. Commonly available crushed stone aggregate in the size range of ¾" to 1½" is typically suitable.

## PART 3 - PART 3 – CONSTRUCTION

### 3.1 EXCAVATION

- A. A. Contractor shall excavate to the lines and grades shown on the project grading plans. Contractor shall take precautions to minimize over--- excavation. Over---excavation shall be filled with compacted infill material, or as directed by the Landscape Architect, at the Contractor's expense.
- B. B. Contractor shall verify location of existing structures and utilities prior to excavation. Contractor shall ensure all surrounding structures are protected from the effects of wall excavation. Excavation support, if required, is the responsibility of the Contractor.



### 3.2 FOOTING

- A. The subgrade soil shall be proof rolled and compacted to 95% standard Proctor density and inspected by the Owner's Engineer prior to placement of footing material.
- B. The footing material shall be placed to the depth and width called for in the construction documents. It shall be proof rolled and compacted to 95% standard Proctor density and inspected by the Owner's Engineer prior to placement of Foundation Stones.

### 3.3 PREPARING TO BUILD

- A. The Contractor shall build the wall in the location shown on the project plans.
- B. The Contractor shall build the wall to the dimensions and grades shown on the project plans.
- C. The exterior face of the wall shall have no bulges or hollows greater than 3" from adjacent stone

### 3.4 BUILDING THE WALL

- A. All stones shall be placed with their depth into the wall structure (perpendicular to the face of the wall).
- B. Stones should be set level at the base.
- C. To the greatest extent possible, stones of the same height should be placed next to each other to form an even horizontal course.
- D. The underside of the stone shall be free of voids and well packed with footing material

### 3.5 BACKFILL PLACEMENT

- A. A. Only hand---operated compaction equipment shall be allowed within 3 feet of the back of the wall. Compaction within the 3 feet behind the wall shall be achieved by at least three (3) passes of a lightweight mechanical tamper, plate, or roller.
- B. At completion of wall construction, backfill shall be placed up to the height shown in the construction drawings. If final grading adjacent to the wall is not placed immediately after wall completion, temporary grading and drainage shall be provided to ensure water runoff is not directed at the wall nor allowed to collect or pond behind the wall until final grading adjacent to the wall is completed.
- C. Filter fabric should be used to separate the drainage aggregate from the backfill and other soil.

END OF SECTION 323253



## SECTION 329113 - SOIL PREPARATION

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Requirements, apply to this Section.

#### 1.2 SUMMARY

- A. Section includes planting soils specified by composition of the mixes.
- B. Related Requirements:
  - 1. Section 329200 "Turf and Grasses" for placing planting soil for turf and grasses.

#### 1.3 ALLOWANCES

- A. Preconstruction and field quality-control testing are part of testing and inspecting allowance.

#### 1.4 UNIT PRICES

- A. Work of this Section is affected by cubic yard

#### 1.5 DEFINITIONS

- A. Backfill: The earth used to replace or the act of replacing earth in an excavation. This can be amended or unamended soil as indicated.
- B. CEC: Cation exchange capacity.
- C. Compost: The product resulting from the controlled biological decomposition of organic material that has been sanitized through the generation of heat and stabilized to the point that it is beneficial to plant growth.
- D. Imported Soil: Soil that is transported to Project site for use.
- E. Manufactured Soil: Soil produced by blending soils, sand, stabilized organic soil amendments, and other materials to produce planting soil.
- F. Organic Matter: The total of organic materials in soil exclusive of undecayed plant and animal tissues, their partial decomposition products, and the soil biomass; also called "humus" or "soil organic matter."



- G. Planting Soil: Existing, on-site soil; imported soil; or manufactured soil that has been modified as specified with soil amendments and perhaps fertilizers to produce a soil mixture best for plant growth.
- H. RCRA Metals: Hazardous metals identified by the EPA under the Resource Conservation and Recovery Act.
- I. Subgrade: Surface or elevation of subsoil remaining after excavation is complete, or the top surface of a fill or backfill before planting soil is placed.
- J. Subsoil: Soil beneath the level of subgrade; soil beneath the topsoil layers of a naturally occurring soil profile, typified by less than 1 percent organic matter and few soil organisms.
- K. Surface Soil: Soil that is present at the top layer of the existing soil profile. In undisturbed areas, surface soil is typically called "topsoil"; but in disturbed areas such as urban environments, the surface soil can be subsoil.
- L. USCC: U.S. Composting Council.

#### 1.6 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site .

#### 1.7 ACTION SUBMITTALS

- A. Product Data: For each type of product.
  - 1. Include recommendations for application and use.
  - 2. Include test data substantiating that products comply with requirements.
  - 3. Include sieve analyses for aggregate materials.
  - 4. Material Certificates: For each type of soil amendment and fertilizer before delivery to the site, according to the following:
    - a. Manufacturer's qualified testing agency's certified analysis of standard products.
    - b. Analysis of fertilizers, by a qualified testing agency, made according to AAPFCO methods for testing and labeling and according to AAPFCO's SUIP #25.
    - c. Analysis of nonstandard materials, by a qualified testing agency, made according to SSSA methods, where applicable.
- B. Samples: For each bulk-supplied material, 1-quart volume of each in sealed containers labeled with content, source, and date obtained. Each Sample shall be typical of the lot of material to be furnished; provide an accurate representation of composition, color, and texture.

#### 1.8 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For each testing agency.



- B. Preconstruction Test Reports: For preconstruction soil analyses specified in "Preconstruction Testing" Article.
- C. Field quality-control reports.

#### 1.9 QUALITY ASSURANCE

- A. Testing Agency Qualifications: An independent, state-operated, or university-operated laboratory; experienced in soil science, soil testing, and plant nutrition; with the experience and capability to conduct the testing indicated; and that specializes in types of tests to be performed.
  - 1. Laboratories: Subject to compliance with requirements, provide testing by the following :
    - a. UMass Soil & Plant Nutrient Testing Laboratory Paige Laboratory, Room 203  
161 Holdsworth Way Amherst, MA 01003 (413)545-2311.
  - 2. Multiple Laboratories: At Contractor's option, work may be divided among qualified testing laboratories specializing in physical testing, chemical testing, and fertility testing.

#### 1.10 PRECONSTRUCTION TESTING

- A. Preconstruction Testing Service: Engage a qualified testing agency to perform preconstruction soil analyses on existing, on-site soil imported soil .
  - 1. Notify Architect seven days in advance of the dates and times when laboratory samples will be taken.
- B. Preconstruction Soil Analyses: For each unamended soil type, perform testing on soil samples and furnish soil analysis and a written report containing soil-amendment and fertilizer recommendations by a qualified testing agency performing the testing according to "Soil-Sampling Requirements" and "Testing Requirements" articles.
  - 1. Have testing agency identify and label samples and test reports according to sample collection and labeling requirements.

#### 1.11 SOIL-SAMPLING REQUIREMENTS

- A. General: Extract soil samples according to requirements in this article.
- B. Sample Collection and Labeling: Have samples taken and labeled by Contractor in presence of Architect under the direction of the testing agency.
  - 1. Number and Location of Samples: Minimum of three representative soil samples from varied locations where directed by Architect for each soil to be used or amended for landscaping purposes.
  - 2. Procedures and Depth of Samples: as directed by testing laboratory
  - 3. Division of Samples: Split each sample into two, equal parts. Send half to the testing agency and half to Owner for its records.

4. Labeling: Label each sample with the date, location keyed to a site plan or other location system, visible soil condition, and sampling depth.

#### 1.12 TESTING REQUIREMENTS

- A. General: Perform tests on soil samples according to requirements in this article.
- B. Physical Testing:
  1. Soil Texture: Soil-particle, size-distribution analysis by one of the following methods according to SSSA's "Methods of Soil Analysis - Part 1-Physical and Mineralogical Methods":
    - a. Sieving Method: Report sand-gradation percentages for very coarse, coarse, medium, fine, and very fine sand; and fragment-gradation (gravel) percentages for fine, medium, and coarse fragments; according to USDA sand and fragment sizes.
    - b. Hydrometer Method: Report percentages of sand, silt, and clay.
  2. Total Porosity: Calculate using particle density and bulk density according to SSSA's "Methods of Soil Analysis - Part 1-Physical and Mineralogical Methods."
  3. Water Retention: According to SSSA's "Methods of Soil Analysis - Part 1-Physical and Mineralogical Methods."
  4. Saturated Hydraulic Conductivity: According to SSSA's "Methods of Soil Analysis - Part 1-Physical and Mineralogical Methods"; at 85% compaction according to ASTM D 698 (Standard Proctor).
- C. Chemical Testing:
  1. CEC: Analysis by sodium saturation at pH 7 according to SSSA's "Methods of Soil Analysis - Part 3- Chemical Methods."
  2. Clay Mineralogy: Analysis and estimated percentage of expandable clay minerals using CEC by ammonium saturation at pH 7 according to SSSA's "Methods of Soil Analysis - Part 1- Physical and Mineralogical Methods."
  3. Metals Hazardous to Human Health: Test for presence and quantities of RCRA metals including aluminum, arsenic, barium, copper, cadmium, chromium, cobalt, lead, lithium, and vanadium. If RCRA metals are present, include recommendations for corrective action.
  4. Phytotoxicity: Test for plant-available concentrations of phytotoxic minerals including aluminum, arsenic, barium, cadmium, chlorides, chromium, cobalt, copper, lead, lithium, mercury, nickel, selenium, silver, sodium, strontium, tin, titanium, vanadium, and zinc.
- D. Fertility Testing: Soil-fertility analysis according to standard laboratory protocol of SSSA NAFT NEC-67 , including the following:
  1. Percentage of organic matter.
  2. CEC, calcium percent of CEC, and magnesium percent of CEC.
  3. Soil reaction (acidity/alkalinity pH value).
  4. Buffered acidity or alkalinity.
  5. Nitrogen ppm.
  6. Phosphorous ppm.
  7. Potassium ppm.



8. Manganese ppm.
  9. Manganese-availability ppm.
  10. Zinc ppm.
  11. Zinc availability ppm.
  12. Copper ppm.
  13. Sodium ppm and sodium absorption ratio.
  14. Soluble-salts ppm.
  15. Presence and quantities of problem materials including salts and metals cited in the Standard protocol. If such problem materials are present, provide additional recommendations for corrective action.
  16. Other deleterious materials, including their characteristics and content of each.
- E. Organic-Matter Content: Analysis using loss-by-ignition method according to SSSA's "Methods of Soil Analysis - Part 3- Chemical Methods."
- F. Recommendations: Based on the test results, state recommendations for soil treatments and soil amendments to be incorporated to produce satisfactory planting soil suitable for healthy, viable plants indicated. Include, at a minimum, recommendations for nitrogen, phosphorous, and potassium fertilization, and for micronutrients.
1. Fertilizers and Soil Amendment Rates: State recommendations in weight per 1000 sq. ft. for 6-inch depth of soil .
  2. Soil Reaction: State the recommended liming rates for raising pH or sulfur for lowering pH according to the buffered acidity or buffered alkalinity in weight per 1000 sq. ft. for 6-inch depth of soil .

#### 1.13 DELIVERY, STORAGE, AND HANDLING

- A. Packaged Materials: Deliver packaged materials in original, unopened containers showing weight, certified analysis, name and address of manufacturer, and compliance with state and Federal laws if applicable.
- B. Bulk Materials:
1. Do not dump or store bulk materials near structures, utilities, walkways and pavements, or on existing turf areas or plants.
  2. Provide erosion-control measures to prevent erosion or displacement of bulk materials, discharge of soil-bearing water runoff, and airborne dust reaching adjacent properties, water conveyance systems, or walkways.
  3. Do not move or handle materials when they are wet or frozen.
  4. Accompany each delivery of bulk fertilizers and soil amendments with appropriate certificates.



## PART 2 - PRODUCTS

### 2.1 MATERIALS

### 2.2 ORGANIC SOIL AMENDMENTS

- A. Compost: Well-composted, stable, and weed-free organic matter produced by composting feedstock, and bearing USCC's "Seal of Testing Assurance," and as follows:
  - 1. Reaction: pH of 5.5 to 8 .
  - 2. Soluble-Salt Concentration: Less than 4 dS/m.
  - 3. Moisture Content: 35 to 55 percent by weight.
  - 4. Organic-Matter Content: 50 to 60 percent of dry weight.
  - 5. Particle Size: Minimum of 98 percent passing through a 1/2-inch sieve.
- B. Sphagnum Peat: Partially decomposed sphagnum peat moss, finely divided or of granular texture with 100 percent passing through a 1/2-inch sieve, a pH of 3.4 to 4.8, and a soluble-salt content measured by electrical conductivity of maximum 5 dS/m.
- C. Manure: Well-rotted, unleached, stable or cattle manure containing not more than 25 percent by volume of straw, sawdust, or other bedding materials; free of toxic substances, stones, sticks, soil, weed seed, debris, and material harmful to plant growth.

## PART 3 - EXECUTION

### 3.1 GENERAL

- A. Place planting soil and fertilizers according to requirements in other Specification Sections.
- B. Verify that no foreign or deleterious material or liquid such as paint, paint washout, concrete slurry, concrete layers or chunks, cement, plaster, oils, gasoline, diesel fuel, paint thinner, turpentine, tar, roofing compound, or acid has been deposited in planting soil.
- C. Proceed with placement only after unsatisfactory conditions have been corrected.

### 3.2 PREPARATION OF UNAMENDED, ON-SITE SOIL BEFORE AMENDING

- A. Excavation: Excavate soil from designated area(s) to a depth of As indicated on drawings and stockpile until amended.
- B. Unacceptable Materials: Clean soil of concrete slurry, concrete layers or chunks, cement, plaster, building debris, oils, gasoline, diesel fuel, paint thinner, turpentine, tar, roofing compound, acid, and other extraneous materials that are harmful to plant growth.
- C. Unsuitable Materials: Clean soil to contain a maximum of 8 percent by dry weight of stones, roots, plants, sod, clay lumps, and pockets of coarse sand.





### 3.3 PLACING AND MIXING PLANTING SOIL OVER EXPOSED SUBGRADE

- A. General: Apply and mix unamended soil with amendments on-site to produce required planting soil. Do not apply materials or till if existing soil or subgrade is frozen, muddy, or excessively wet.
- B. Subgrade Preparation: Till subgrade to a minimum depth of 6 inches . Remove stones larger than 1-1/2 inches in any dimension and sticks, roots, rubbish, and other extraneous matter and legally dispose of them off Owner's property.
  - 1. Apply, add soil amendments, and mix approximately half the thickness of unamended soil over prepared, loosened subgrade according to "Mixing" Paragraph below. Mix thoroughly into top 2 inches of subgrade. Spread remainder of planting soil.
- C. Mixing: Spread unamended soil to total depth indicated on Drawings , but not less than required to meet finish grades after mixing with amendments and natural settlement. Do not spread if soil or subgrade is frozen, muddy, or excessively wet.
  - 1. Amendments: Apply soil amendments and fertilizer, if required, evenly on surface, and thoroughly blend them with unamended soil to produce planting soil.
  - 2. Lifts: Apply and mix unamended soil and amendments in lifts not exceeding 8 inches in loose depth for material compacted by compaction equipment, and not more than 6 inches in loose depth for material compacted by hand-operated tampers.
- D. Compaction: Compact each blended lift of planting soil to 75 to 82 percent of maximum Standard Proctor density according to ASTM D 698 and tested in-place except where a different compaction value is indicated on Drawings.
- E. Finish Grading: Grade planting soil to a smooth, uniform surface plane with loose, uniformly fine texture. Roll and rake, remove ridges, and fill depressions to meet finish grades.

### 3.4 FIELD QUALITY CONTROL

- A. Testing Agency: Engage a qualified testing agency to perform tests and inspections.
- B. Soil will be considered defective if it does not pass tests and inspections.
- C. Prepare test reports.
- D. Label each sample and test report with the date, location keyed to a site plan or other location system, visible conditions when and where sample was taken, and sampling depth.

### 3.5 PROTECTION

- A. Protection Zone: Identify protection zones according to Section 015639 "Temporary Tree and Plant Protection."



- B. Protect areas of in-place soil from additional compaction, disturbance, and contamination. Prohibit the following practices within these areas except as required to perform planting operations:
  - 1. Storage of construction materials, debris, or excavated material.
  - 2. Parking vehicles or equipment.
  - 3. Vehicle traffic.
  - 4. Foot traffic.
  - 5. Erection of sheds or structures.
  - 6. Impoundment of water.
  - 7. Excavation or other digging unless otherwise indicated.
  
- C. If planting soil or subgrade is overcompacted, disturbed, or contaminated by foreign or deleterious materials or liquids, remove the planting soil and contamination; restore the subgrade as directed by Architect and replace contaminated planting soil with new planting soil.

### 3.6 CLEANING

- A. Protect areas adjacent to planting-soil preparation and placement areas from contamination. Keep adjacent paving and construction clean and work area in an orderly condition.
  
- B. Remove surplus soil and waste material including excess subsoil, unsuitable materials, trash, and debris and legally dispose of them off Owner's property unless otherwise indicated.
  - 1. Dispose of excess subsoil and unsuitable materials on-site where directed by Owner.

END OF SECTION 329113



## SECTION 329119 - LANDSCAPE GRADING

### PART 1 - GENERAL

#### 1.1 SUMMARY

A. Section Includes:

1. Final grade topsoil for finish landscaping.

B. Related Sections:

1. Section 312213 - Rough Grading: Site contouring.
2. 329113 - Soil Preparation
3. 329200 - Turf and Grasses

#### 1.2 UNIT PRICE - MEASUREMENT AND PAYMENT

A. Topsoil:

1. Basis of Measurement: By Cubic Yard (CY) .
2. Basis of Payment: Includes excavating existing topsoil, supplying topsoil materials, stockpiling, preparing and scarifying substrate surface, placing where required, and rolling.

#### 1.3 SUBMITTALS

- A. Materials Source: Submit name of imported materials source.

#### 1.4 QUALITY ASSURANCE

- A. Furnish each topsoil material from single source throughout the Work.
- B. Perform Work in accordance with RIDOT Standard Specifications for Road & Bridge Construction, latest edition .

### PART 2 - PRODUCTS

#### 2.1 MATERIAL

- A. Topsoil: Fill Type S2 as specified in Section 329300.



### PART 3 - EXECUTION

#### 3.1 EXAMINATION

- A. Section 013000 - Administrative Requirements: Verification of existing conditions before starting work.
- B. Verify substrate base has been contoured and compacted.

#### 3.2 PREPARATION

- A. Protect landscaping and other features remaining as final Work.
- B. Protect existing structures, sidewalks, utilities, paving, and curbs.

#### 3.3 SUBSTRATE PREPARATION

- A. Eliminate uneven areas and low spots.
- B. Remove debris, loose roots, branches, stones, in excess of ½ inch in size. Remove contaminated subsoil.
- C. Scarify surface to depth of 3 inches where topsoil is scheduled. Scarify in areas where equipment used for hauling and spreading topsoil has compacted subsoil.

#### 3.4 PLACING TOPSOIL

- A. Place topsoil in areas where seeding, is required. to thickness as scheduled. Place topsoil during dry weather.
- B. Fine grade topsoil to eliminate rough or low areas. Maintain profiles and contour of subgrade.
- C. Remove roots, weeds, rocks, and foreign material while spreading.
- D. Manually spread topsoil close to plant material, and path to prevent damage.
- E. Roll placed topsoil.
- F. Remove surplus subsoil and topsoil from site.
- G. Leave stockpile area and site clean and raked, ready to receive landscaping.

#### 3.5 TOLERANCES

- A. Section 014000 - Quality Requirements: Tolerances.



- B. Top of Topsoil: Plus or minus 1/2 inch.

### 3.6 PROTECTION OF INSTALLED WORK

- A. Section 017000 - Execution and Closeout Requirements: Requirements for protecting finished Work.
- B. Prohibit construction traffic over topsoil.

### 3.7 SCHEDULES

- A. Compacted topsoil thicknesses:
  - 1. Seeded Grass: 6 inches.

END OF SECTION 329119



## SECTION 329200 - TURF AND GRASSES

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Requirements, apply to this Section.

#### 1.2 SUMMARY

- A. Section Includes:

1. Seeding.
2. Hydroseeding.
3. Meadow grasses and wildflowers.
4. Turf renovation.
5. Erosion-control material(s).

- B. Related Requirements:

1. Section 329300 "Plants" for trees, shrubs, ground covers, and other plants as well as border edgings and mow strips.

#### 1.3 DEFINITIONS

- A. Finish Grade: Elevation of finished surface of planting soil.
- B. Pesticide: A substance or mixture intended for preventing, destroying, repelling, or mitigating a pest. Pesticides include insecticides, miticides, herbicides, fungicides, rodenticides, and molluscicides. They also include substances or mixtures intended for use as a plant regulator, defoliant, or desiccant.
- C. Pests: Living organisms that occur where they are not desired or that cause damage to plants, animals, or people. Pests include insects, mites, grubs, mollusks (snails and slugs), rodents (gophers, moles, and mice), unwanted plants (weeds), fungi, bacteria, and viruses.
- D. Planting Soil: Existing, on-site soil; imported soil; or manufactured soil that has been modified with soil amendments and perhaps fertilizers to produce a soil mixture best for plant growth. See Section 329113 "Soil Preparation" and drawing designations for planting soils.
- E. Subgrade: The surface or elevation of subsoil remaining after excavation is complete, or the top surface of a fill or backfill before planting soil is placed.



#### 1.4 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site .

#### 1.5 INFORMATIONAL SUBMITTALS

- A. Certification of Grass Seed: From seed vendor for each grass-seed monostand or mixture, stating the botanical and common name, percentage by weight of each species and variety, and percentage of purity, germination, and weed seed. Include the year of production and date of packaging.
- B. Product Certificates: For fertilizers, from manufacturer.

#### 1.6 CLOSEOUT SUBMITTALS

- A. Maintenance Data: Recommended procedures to be established by Owner for maintenance of turf and meadows during a calendar year. Submit before expiration of required maintenance periods.

#### 1.7 QUALITY ASSURANCE

- A. Installer Qualifications: A qualified landscape installer whose work has resulted in successful turf and meadow establishment.
  - 1. Professional Membership: Installer shall be a member in good standing of either the National Association of Landscape Professionals or AmericanHort.
  - 2. Experience: Five years' experience in turf installation in addition to requirements in Section 014000 "Quality Requirements."
  - 3. Installer's Field Supervision: Require Installer to maintain an experienced full-time supervisor on Project site when work is in progress.
  - 4. Personnel Certifications: Installer's field supervisor shall have certification in one of the following categories from the National Association of Landscape Professionals:
    - a. Landscape Industry Certified Technician - Exterior.
    - b. Landscape Industry Certified Lawn Care Manager.
    - c. Landscape Industry Certified Lawn Care Technician.
  - 5. Pesticide Applicator: State licensed, commercial.

#### 1.8 DELIVERY, STORAGE, AND HANDLING

- A. Seed and Other Packaged Materials: Deliver packaged materials in original, unopened containers showing weight, certified analysis, name and address of manufacturer, and indication of compliance with state and Federal laws, as applicable.
- B. Bulk Materials:



1. Do not dump or store bulk materials near structures, utilities, walkways and pavements, or on existing turf areas or plants.
2. Provide erosion-control measures to prevent erosion or displacement of bulk materials; discharge of soil-bearing water runoff; and airborne dust reaching adjacent properties, water conveyance systems, or walkways.
3. Accompany each delivery of bulk materials with appropriate certificates.

#### 1.9 FIELD CONDITIONS

- A. Planting Restrictions: Plant during one of the following periods. Coordinate planting periods with initial maintenance periods to provide required maintenance from date of Substantial Completion .
  1. Spring Planting: April 1 - May 15 .
- B. Weather Limitations: Proceed with planting only when existing and forecasted weather conditions permit planting to be performed when beneficial and optimum results may be obtained. Apply products during favorable weather conditions according to manufacturer's written instructions.

### PART 2 - PRODUCTS

#### 2.1 SEED

- A. Grass Seed: Fresh, clean, dry, new-crop seed complying with AOSA's "Rules for Testing Seeds" for purity and germination tolerances.
- B. Seed Species:
  1. Quality: Seed of grass species as listed below for solar exposure, with not less than 85 percent germination, not less than 95 percent pure seed, and not more than 0.5 percent weed seed:
- C. Grass-Seed Mixes:
  1. Lawn Seed Mix (% by weight):
    - 40% Celmfine, Rebel II, or Tribute Tall Fescue
    - 15% Palmer II Perennial Ryegrass
    - 10% Jamestown Chewings Fescue
    - 10% Reliant Hard Fescue
    - 10% Birdsfoot Trefoil - Arvenis variety
    - 5% Switchgrass
    - 5% Dutch White Clover
    - 5% Redtop, Streaker VarietyApplication Rate: 265 lbs per acre or 6-7 lbs per 1,000 sq ft.
  2. Pasture Seed Mix (% by weight). Blend of NE Premium Horse Pasture and NE Persistent Horse Pasture Mixes from Allen's Seed :





25% Meadow Bromegrass (*Bromopsis biebersteinii*)  
25% Early Orchardgrass (*Dactylis glomerata*)  
20% Tetraploid Perennial Rye (*Lolium perenne*)  
15% Improved Timothygrass (*Phleum pratense*)  
10% Forage Bluegrass (*Poa pratensis*)  
5% Ladino Clover (*Trifolium repens*)  
Application Rate: 10 lbs per acre or 1/4lb per 1,000 sq ft.

3. Products may be acquired from the following source (or approved equal) :
  - a. Allen's Seed Store : 693 S County Trail Exeter, RI 02822 Phone: 401 294 2722

## 2.2 MEADOW GRASSES AND WILDFLOWERS

- A. Wildflower and Native-Grass Seed: Fresh, clean, and dry new seed, of mixed species as follows:

1. Dry Meadow Seed Mix: Dry Meadow Seed Mix (% by weight):
  - 5.5% Canada Wild Rye (*Elymus canadensis*)
  - 5.5% Creeping Red Fescue (*Festuca Rubra*)
  - 5.5% Annual Ryegrass (*Lolium multiflorum*)
  - 5.5% Perennial Ryegrass (*Lolium perenne*)
  - 6% Little Bluestem (*Schizachyrium scoparium*)
  - 5.5% Switchgrass (*Panicum virgatum*)
  - 11% Indian Grass (*Sorghastrum nutans*)
  - 5.5% Butterfly Milkweed (*Asclepias tuberosa*)
  - 5.5% New England Aster (*Aster nova-angliae*)
  - 5.5% Cornflower (*Centaurea cyanus*)
  - 5.5% Lanceleaf Coreopsis (*Coreopsis lanceolata*)
  - 11% Purple Coneflower (*Echinacea purpurea*)
  - 5.5% California Poppy (*Eschscholzia californica*)
  - 11% Ox-Eye Sunflower (*Heliopsis helianthoides*)Application Rate: 48 lbs per acre, average germination shall be a minimum of 79%

- B. Seed Carrier: Inert material, sharp clean sand or perlite.

## 2.3 FERTILIZERS

- A. Commercial Fertilizer: Commercial-grade complete fertilizer of neutral character, consisting of fast- and slow-release nitrogen, 50 percent derived from natural organic sources of urea formaldehyde, phosphorous, and potassium in the following composition:

1. Composition: fertilizer to have a ratio of 18 Nitrogen (N) - 24 Phosphorous (P) - 12 Potassium (K)

- B. Slow-Release Fertilizer: Granular or pelleted fertilizer consisting of 50 percent water-insoluble nitrogen, phosphorus, and potassium in the following composition:

1. Composition: fertilizer to have a ratio of 18 Nitrogen (N) - 24 Phosphorous (P) - 12 Potassium (K)



## 2.4 EROSION-CONTROL MATERIALS

- A. Erosion-Control Blankets: Biodegradable wood excelsior, straw, or coconut-fiber mat enclosed in a photodegradable plastic mesh. Include manufacturer's recommended steel wire staples, 6 inches long.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Examine areas to be planted for compliance with requirements and other conditions affecting installation and performance of the Work.
  - 1. Verify that no foreign or deleterious material or liquid such as paint, paint washout, concrete slurry, concrete layers or chunks, cement, plaster, oils, gasoline, diesel fuel, paint thinner, turpentine, tar, roofing compound, or acid has been deposited in soil within a planting area.
  - 2. Suspend planting operations during periods of excessive soil moisture until the moisture content reaches acceptable levels to attain the required results.
  - 3. Uniformly moisten excessively dry soil that is not workable or which is dusty.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.
- C. If contamination by foreign or deleterious material or liquid is present in soil within a planting area, remove the soil and contamination as directed by Architect and replace with new planting soil.

### 3.2 PREPARATION

- A. Protect structures; utilities; sidewalks; pavements; and other facilities, trees, shrubs, and plantings from damage caused by planting operations.
  - 1. Protect adjacent and adjoining areas from hydroseeding and hydromulching overspray.
  - 2. Protect grade stakes set by others until directed to remove them.
- B. Install erosion-control measures to prevent erosion or displacement of soils and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways.

### 3.3 TURF AREA PREPARATION

- A. General: Prepare planting area for soil placement and mix planting soil according to Section 329113 "Soil Preparation."
- B. Placing Planting Soil: Place and mix planting soil in place over exposed subgrade .
- C. Moisten prepared area before planting if soil is dry. Water thoroughly and allow surface to dry before planting. Do not create muddy soil.



- D. Before planting, obtain Architect's acceptance of finish grading; restore planting areas if eroded or otherwise disturbed after finish grading.

### 3.4 PREPARATION FOR EROSION-CONTROL MATERIALS

- A. Prepare area as specified in "Turf Area Preparation" Article.
- B. For erosion-control mats, install planting soil in two lifts, with second lift equal to thickness of erosion-control mats. Install erosion-control mat and fasten as recommended by material manufacturer.
- C. Fill cells of erosion-control mat with planting soil and compact before planting.
- D. For erosion-control blanket or mesh, install from top of slope, working downward, and as recommended by material manufacturer for site conditions. Fasten as recommended by material manufacturer.
- E. Moisten prepared area before planting if surface is dry. Water thoroughly and allow surface to dry before planting. Do not create muddy soil.

### 3.5 SEEDING

- A. Sow seed with spreader or seeding machine. Do not broadcast or drop seed when wind velocity exceeds 5 mph .
  - 1. Evenly distribute seed by sowing equal quantities in two directions at right angles to each other.
  - 2. Do not use wet seed or seed that is moldy or otherwise damaged.
  - 3. Do not seed against existing trees. Limit extent of seed to outside edge of planting saucer.
- B. Sow seed at a total rate of 5 to 8 lb/1000 sq. ft. .
- C. Rake seed lightly into top 1/8 inch of soil, roll lightly, and water with fine spray.

### 3.6 HYDROSEEDING

- A. Hydroseeding: Mix specified seed, fertilizer , and fiber mulch in water, using equipment specifically designed for hydroseed application. Continue mixing until uniformly blended into homogeneous slurry suitable for hydraulic application.
  - 1. Mix slurry with fiber-mulch manufacturer's recommended tackifier.
  - 2. Spray-apply slurry uniformly to all areas to be seeded in a one-step process. Apply slurry at a rate so that mulch component is deposited at not less than 1500-lb/acre dry weight, and seed component is deposited at not less than the specified seed-sowing rate.



### 3.7 TURF RENOVATION

- A. Renovate existing turf where indicated.
- B. Remove sod and vegetation from diseased or unsatisfactory turf areas; do not bury in soil.
- C. Remove topsoil containing foreign materials, such as oil drippings, fuel spills, stones, gravel, and other construction materials resulting from Contractor's operations, and replace with new planting soil.
- D. Mow, dethatch, core aerate, and rake existing turf.
- E. Remove weeds before seeding. Where weeds are extensive, apply selective herbicides as required. Do not use pre-emergence herbicides.
- F. Remove waste and foreign materials, including weeds, soil cores, grass, vegetation, and turf, and legally dispose of them off Owner's property.
- G. Till stripped, bare, and compacted areas thoroughly to a soil depth of 6 inches .
- H. Apply soil amendments and initial fertilizer required for establishing new turf and mix thoroughly into top 4 inches of existing soil. Install new planting soil to fill low spots and meet finish grades.
  - 1. Initial Fertilizer: Commercial fertilizer applied according to manufacturer's recommendations.
- I. Water newly planted areas and keep moist until new turf is established.

### 3.8 TURF MAINTENANCE

- A. General: Maintain and establish turf by watering, fertilizing, weeding, mowing, trimming, replanting, and performing other operations as required to establish healthy, viable turf. Roll, regrade, and replant bare or eroded areas and remulch to produce a uniformly smooth turf. Provide materials and installation the same as those used in the original installation.
  - 1. Fill in as necessary soil subsidence that may occur because of settling or other processes. Replace materials and turf damaged or lost in areas of subsidence.
  - 2. In areas where mulch has been disturbed by wind or maintenance operations, add new mulch and anchor as required to prevent displacement.
  - 3. Apply treatments as required to keep turf and soil free of pests and pathogens or disease. Use integrated pest management practices whenever possible to minimize the use of pesticides and reduce hazards.
- B. Watering: Install and maintain temporary piping, hoses, and turf-watering equipment to convey water from sources and to keep turf uniformly moist to a depth of 4 inches .



1. Schedule watering to prevent wilting, puddling, erosion, and displacement of seed or mulch. Lay out temporary watering system to avoid walking over muddy or newly planted areas.
  2. Water turf with fine spray at a minimum rate of 1 inch per week unless rainfall precipitation is adequate.
- C. Mow turf as soon as top growth is tall enough to cut. Repeat mowing to maintain specified height without cutting more than one-third of grass height. Remove no more than one-third of grass-leaf growth in initial or subsequent mowings. Do not delay mowing until grass blades bend over and become matted. Do not mow when grass is wet. Schedule initial and subsequent mowings to maintain the following grass height:
1. Mow Lawn to a height of 1-1/2 to 2 inches .
  2. Mow Pasture to a height of 2 to 3 inches .

### 3.9 SATISFACTORY TURF

- A. Turf installations shall meet the following criteria as determined by Architect:
1. Satisfactory Seeded Turf: At end of maintenance period, a healthy, uniform, close stand of grass has been established, free of weeds and surface irregularities, with coverage exceeding 90 percent over any 10 sq. ft. and bare spots not exceeding 5 by 5 inches .
- B. Use specified materials to reestablish turf that does not comply with requirements, and continue maintenance until turf is satisfactory.

### 3.10 MEADOW

- A. Sow seed with spreader or seeding machine. Do not broadcast or drop seed when wind velocity exceeds 5 mph .
1. Before sowing, mix seed with seed carrier at a ratio of not less than two parts seed carrier to one part seed.
  2. Evenly distribute seed by sowing equal quantities in two directions at right angles to each other.
  3. Do not use wet seed or seed that is moldy or otherwise damaged.
- B. Sow seed at a total rate of 1.1 lb per 1,000 sq ft or 48 lbs per acre .
- C. Brush seed into top 1/16 inch of soil, roll lightly, and water with fine spray.
- D. Protect seeded areas from hot, dry weather or drying winds by applying mulch within 24 hours after completing seeding operations. Soak areas, scatter mulch uniformly to a thickness of 3/16 inch , and roll surface smooth.
- E. Water newly planted areas and keep moist until meadow is established.



### 3.11 MEADOW MAINTENANCE

- A. Maintain and establish meadow by watering, weeding, mowing, trimming, replanting, and performing other operations as required to establish a healthy, viable meadow. Roll, regrade, and replant bare or eroded areas and mulch. Provide materials and installation the same as those used in the original installation.
  - 1. Fill in as necessary soil subsidence that may occur because of settling or other processes. Replace materials and meadow damaged or lost in areas of subsidence.
  - 2. In areas where mulch has been disturbed by wind or maintenance operations, add new mulch and anchor as required to prevent displacement.
  - 3. Apply treatments as required to keep meadow and soil free of pests and pathogens or disease. Use integrated pest management practices whenever possible to minimize the use of pesticides and reduce hazards.
- B. Watering: Install and maintain temporary piping, hoses, and meadow-watering equipment to convey water from sources and to keep meadow uniformly moist.
  - 1. Schedule watering to prevent wilting, puddling, erosion, and displacement of seed or mulch. Lay out temporary watering system to avoid walking over muddy or newly planted areas.
  - 2. Water meadow with fine spray at a minimum rate of 1/2 inch per week for eight weeks after planting unless rainfall precipitation is adequate.
- C. Mowing: Contractor is responsible for mowing Meadow areas once in fall (following spring planting) to a height of 4-6 inches.

### 3.12 CLEANUP AND PROTECTION

- A. Promptly remove soil and debris created by turf work from paved areas. Clean wheels of vehicles before leaving site to avoid tracking soil onto roads, walks, or other paved areas.
- B. Remove surplus soil and waste material, including excess subsoil, unsuitable soil, trash, and debris, and legally dispose of them off Owner's property.
- C. Erect temporary fencing or barricades and warning signs as required to protect newly planted areas from traffic. Maintain fencing and barricades throughout initial maintenance period and remove after plantings are established.
- D. Remove nondegradable erosion-control measures after grass establishment period.

### 3.13 MAINTENANCE SERVICE

- A. Turf Maintenance Service: Provide full maintenance by skilled employees of landscape Installer. Maintain as required in "Turf Maintenance" Article. Begin maintenance immediately after each area is planted and continue until acceptable turf is established, but for not less than the following periods:



1. Seeded Turf: 90 days from date of Substantial Completion .
  - a. When initial maintenance period has not elapsed before end of planting season, or if turf is not fully established, continue maintenance during next planting season.
  
- B. Meadow Maintenance Service: Provide full maintenance by skilled employees of landscape Installer. Maintain as required in "Meadow Maintenance" Article. Begin maintenance immediately after each area is planted and continue until acceptable meadow is established, but for not less than maintenance period below.
  1. Maintenance Period: 365 days from date of planting completion .

END OF SECTION 329200



## SECTION 329300 - PLANTS

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Requirements, apply to this Section.

#### 1.2 SUMMARY

- A. Section Includes:

- 1. Plants.
- 2. Tree stabilization.

- B. Related Requirements:

- 1. Section 015639 "Temporary Tree and Plant Protection" for protecting, trimming, pruning, repairing, and replacing existing trees to remain that interfere with, or are affected by, execution of the Work.
- 2. Section 329200 "Turf and Grasses" for turf (lawn) and meadow planting, hydroseeding, and erosion-control materials.

#### 1.3 UNIT PRICES

- A. Work of this Section is affected by unit prices specified in Section 012200 "Unit Prices."
- B. Unit prices apply to authorized work covered by quantity allowances.
- C. Unit prices apply to additions to and deletions from the Work as authorized by Change Orders.

#### 1.4 DEFINITIONS

- A. Backfill: The earth used to replace or the act of replacing earth in an excavation.
- B. Balled and Burlapped Stock: Plants dug with firm, natural balls of earth in which they were grown, with a ball size not less than diameter and depth recommended by ANSI Z60.1 for type and size of plant required; wrapped with burlap, tied, rigidly supported, and drum laced with twine with the root flare visible at the surface of the ball as recommended by ANSI Z60.1.
- C. Container-Grown Stock: Healthy, vigorous, well-rooted plants grown in a container, with a well-established root system reaching sides of container and maintaining a firm ball when removed from container. Container shall be rigid enough to hold ball shape and protect root mass during shipping and be sized according to ANSI Z60.1 for type and size of plant required.





- D. Finish Grade: Elevation of finished surface of planting soil.
  - E. Pesticide: A substance or mixture intended for preventing, destroying, repelling, or mitigating a pest. Pesticides include insecticides, miticides, herbicides, fungicides, rodenticides, and molluscicides. They also include substances or mixtures intended for use as a plant regulator, defoliant, or desiccant. Some sources classify herbicides separately from pesticides.
  - F. Pests: Living organisms that occur where they are not desired or that cause damage to plants, animals, or people. Pests include insects, mites, grubs, mollusks (snails and slugs), rodents (gophers, moles, and mice), unwanted plants (weeds), fungi, bacteria, and viruses.
  - G. Planting Area: Areas to be planted.
  - H. Planting Soil: Existing, on-site soil; imported soil; or manufactured soil that has been modified with soil amendments and perhaps fertilizers to produce a soil mixture best for plant growth. See Section 329113 "Soil Preparation" for drawing designations for planting soils.
  - I. Plant; Plants; Plant Material: These terms refer to vegetation in general, including trees, shrubs, vines, ground covers, ornamental grasses, bulbs, corms, tubers, or herbaceous vegetation.
  - J. Root Flare: Also called "trunk flare." The area at the base of the plant's stem or trunk where the stem or trunk broadens to form roots; the area of transition between the root system and the stem or trunk.
  - K. Stem Girdling Roots: Roots that encircle the stems (trunks) of trees below the soil surface.
  - L. Subgrade: The surface or elevation of subsoil remaining after excavation is complete, or the top surface of a fill or backfill before planting soil is placed.
- 1.5 COORDINATION
- A. Coordination with Turf Areas (Lawns): Plant trees, shrubs, and other plants after finish grades are established and before planting turf areas unless otherwise indicated.
    - 1. When planting trees, shrubs, and other plants after planting turf areas, protect turf areas, and promptly repair damage caused by planting operations.
- 1.6 PREINSTALLATION MEETINGS
- A. Preinstallation Conference: Conduct conference at Project site .
- 1.7 ACTION SUBMITTALS
- A. Product Data: For each type of product.
    - 1. Plant Materials: Include quantities, sizes, quality, and sources for plant materials.
    - 2. Plant Photographs: Include color photographs in digital format of each required species and size of plant material as it will be furnished to Project. Take photographs from an



angle depicting true size and condition of the typical plant to be furnished. Include a scale rod or other measuring device in each photograph. For species where more than 5 plants are required, include a minimum of three photographs showing the average plant, the best quality plant, and the worst quality plant to be furnished. Identify each photograph with the full scientific name of the plant, plant size, and name of the growing nursery.

#### 1.8 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For landscape Installer. Include list of similar projects completed by Installer demonstrating Installer's capabilities and experience. Include project names, addresses, and year completed, and include names and addresses of owners' contact persons.
- B. Product Certificates: For each type of manufactured product, from manufacturer, and complying with the following:
  - 1. Manufacturer's certified analysis of standard products.
  - 2. Analysis of other materials by a recognized laboratory made according to methods established by the Association of Official Analytical Chemists, where applicable.
- C. Sample Warranty: For special warranty.

#### 1.9 CLOSEOUT SUBMITTALS

#### 1.10 QUALITY ASSURANCE

- A. Installer Qualifications: A qualified landscape installer whose work has resulted in successful establishment of plants.
  - 1. Professional Membership: Installer shall be a member in good standing of either the Professional Landcare Network or the American Nursery and Landscape Association.
  - 2. Experience: Five years' experience in landscape installation in addition to requirements in Section 014000 "Quality Requirements."
  - 3. Installer's Field Supervision: Require Installer to maintain an experienced full-time supervisor on Project site when work is in progress.
  - 4. Personnel Certifications: Installer's field supervisor shall have certification in one of the following categories from the Professional Landcare Network:
    - a. Landscape Industry Certified Technician - Exterior.
    - b. Landscape Industry Certified Interior.
    - c. Landscape Industry Certified Horticultural Technician.
  - 5. Pesticide Applicator: State licensed, commercial.
- B. Provide quality, size, genus, species, and variety of plants indicated, complying with applicable requirements in ANSI Z60.1.
  - 1. Selection of plants purchased under allowances is made by Architect, who tags plants at their place of growth before they are prepared for transplanting.

- C. Measurements: Measure according to ANSI Z60.1. Do not prune to obtain required sizes.
  - 1. Trees and Shrubs: Measure with branches and trunks or canes in their normal position. Take height measurements from or near the top of the root flare for field-grown stock and container-grown stock. Measure main body of tree or shrub for height and spread; do not measure branches or roots tip to tip. Take caliper measurements 6 inches above the root flare for trees up to 4-inch caliper size, and 12 inches above the root flare for larger sizes.
  - 2. Other Plants: Measure with stems, petioles, and foliage in their normal position.
- D. Plant Material Observation: Architect may observe plant material either at place of growth or at site before planting for compliance with requirements for genus, species, variety, cultivar, size, and quality. Architect may also observe trees and shrubs further for size and condition of balls and root systems, pests, disease symptoms, injuries, and latent defects and may reject unsatisfactory or defective material at any time during progress of work. Remove rejected trees or shrubs immediately from Project site.
  - 1. Notify Architect of sources of planting materials seven days in advance of delivery to site.

#### 1.11 DELIVERY, STORAGE, AND HANDLING

- A. Packaged Materials: Deliver packaged materials in original, unopened containers showing weight, certified analysis, name and address of manufacturer, and indication of compliance with state and Federal laws if applicable.
- B. Bulk Materials:
  - 1. Do not dump or store bulk materials near structures, utilities, walkways and pavements, or on existing turf areas or plants.
  - 2. Provide erosion-control measures to prevent erosion or displacement of bulk materials; discharge of soil-bearing water runoff; and airborne dust reaching adjacent properties, water conveyance systems, or walkways.
  - 3. Accompany each delivery of bulk materials with appropriate certificates.
- C. Do not prune trees and shrubs before delivery. Protect bark, branches, and root systems from sun scald, drying, wind burn, sweating, whipping, and other handling and tying damage. Do not bend or bind-tie trees or shrubs in such a manner as to destroy their natural shape. Provide protective covering of plants during shipping and delivery. Do not drop plants during delivery and handling.
- D. Handle planting stock by root ball.
- E. Wrap trees and shrubs with burlap fabric over trunks, branches, stems, twigs, and foliage to protect from wind and other damage during digging, handling, and transportation.
- F. Deliver plants after preparations for planting have been completed, and install immediately. If planting is delayed more than six hours after delivery, set plants and trees in their appropriate aspect (sun, filtered sun, or shade), protect from weather and mechanical damage, and keep roots moist.



1. Heel-in bare-root stock. Soak roots that are in less than moist condition in water for two hours. Reject plants with dry roots.
2. Set balled stock on ground and cover ball with soil, peat moss, sawdust, or other acceptable material.
3. Do not remove container-grown stock from containers before time of planting.
4. Water root systems of plants stored on-site deeply and thoroughly with a fine-mist spray. Water as often as necessary to maintain root systems in a moist, but not overly wet condition.

#### 1.12 FIELD CONDITIONS

- A. Field Measurements: Verify actual grade elevations, service and utility locations, irrigation system components, and dimensions of plantings and construction contiguous with new plantings by field measurements before proceeding with planting work.
- B. Planting Restrictions: Plant during one of the following periods. Coordinate planting periods with maintenance periods to provide required maintenance from date of Substantial Completion.
  1. Spring Planting: March 21 - June 15 .
- C. Weather Limitations: Proceed with planting only when existing and forecasted weather conditions permit planting to be performed when beneficial and optimum results may be obtained. Apply products during favorable weather conditions according to manufacturer's written instructions and warranty requirements.

#### 1.13 WARRANTY

- A. Special Warranty: Installer agrees to repair or replace plantings and accessories that fail in materials, workmanship, or growth within specified warranty period.
  1. Failures include, but are not limited to, the following:
    - a. Death and unsatisfactory growth, except for defects resulting from abuse, lack of adequate maintenance, or neglect by Owner.
    - b. Structural failures including plantings falling or blowing over.
    - c. Faulty performance of tree stabilization .
  2. Warranty Periods: From date of Substantial Completion .
    - a. Trees, Shrubs, Vines, and Ornamental Grasses: 12 months.
    - b. Ground Covers, Biennials, Perennials, and Other Plants: 12 months.
  3. Include the following remedial actions as a minimum:
    - a. Immediately remove dead plants and replace unless required to plant in the succeeding planting season.
    - b. Replace plants that are more than 25 percent dead or in an unhealthy condition at end of warranty period.
    - c. A limit of one replacement of each plant is required except for losses or replacements due to failure to comply with requirements.
    - d. Provide extended warranty for period equal to original warranty period, for replaced plant material.



## PART 2 - PRODUCTS

### 2.1 PLANT MATERIAL

- A. General: Furnish nursery-grown plants true to genus, species, variety, cultivar, stem form, shearing, and other features indicated in Plant List, Plant Schedule, or Plant Legend indicated on Drawings and complying with ANSI Z60.1; and with healthy root systems developed by transplanting or root pruning. Provide well-shaped, fully branched, healthy, vigorous stock, densely foliated when in leaf and free of disease, pests, eggs, larvae, and defects such as knots, sun scald, injuries, abrasions, and disfigurement.
  - 1. Trees with damaged, crooked, or multiple leaders; tight vertical branches where bark is squeezed between two branches or between branch and trunk ("included bark"); crossing trunks; cut-off limbs more than 3/4 inch in diameter; or with stem girdling roots are unacceptable.
  - 2. Collected Stock: Do not use plants harvested from the wild, from native stands, from an established landscape planting, or not grown in a nursery unless otherwise indicated.
- B. Provide plants of sizes, grades, and ball or container sizes complying with ANSI Z60.1 for types and form of plants required. Plants of a larger size may be used if acceptable to Architect, with a proportionate increase in size of roots or balls.
- C. Root-Ball Depth: Furnish trees and shrubs with root balls measured from top of root ball, which begins at root flare according to ANSI Z60.1. Root flare shall be visible before planting.

### 2.2 MULCHES

- A. Organic Mulch: Free from deleterious materials and suitable as a top dressing of trees and shrubs, consisting of one of the following:
  - 1. Type: Ground or shredded bark .
  - 2. Size Range: 3 inches maximum, 1/2 inch minimum .
  - 3. Color: Natural.
- B. Compost Mulch: Well-composted, stable, and weed-free organic matter, pH of 5.5 to 8; moisture content 35 to 55 percent by weight; 100 percent passing through a 1-inch sieve; soluble-salt content of 2 to 5 dS/m; not exceeding 0.5 percent inert contaminants and free of substances toxic to plantings; and as follows:
  - 1. Organic Matter Content: 50 to 60 percent of dry weight.
  - 2. Feedstock: Agricultural, food, or industrial residuals; biosolids; yard trimmings; or source-separated or compostable mixed solid waste.

### 2.3 TREE-STABILIZATION MATERIALS

- A. Trunk-Stabilization Materials:



1. Upright and Guy Stakes: Rough-sawn, sound, new hardwood softwood with specified wood pressure-preservative treatment, free of knots, holes, cross grain, and other defects, 2-by-2-inch nominal by length indicated, pointed at one end.
2. Guys and Tie Wires: ASTM A 641/A 641M, Class 1, galvanized-steel wire, two-strand, twisted, 0.106 inch in diameter.

#### 2.4 MISCELLANEOUS PRODUCTS

- A. Mycorrhizal Fungi: Dry, granular inoculant containing at least 5300 spores per lb of vesicular-arbuscular mycorrhizal fungi and 95 million spores per lb of ectomycorrhizal fungi, 33 percent hydrogel, and a maximum of 5.5 percent inert material.

### PART 3 - EXECUTION

#### 3.1 EXAMINATION

- A. Examine areas to receive plants, with Installer present, for compliance with requirements and conditions affecting installation and performance of the Work.
  1. Verify that no foreign or deleterious material or liquid such as paint, paint washout, concrete slurry, concrete layers or chunks, cement, plaster, oils, gasoline, diesel fuel, paint thinner, turpentine, tar, roofing compound, or acid has been deposited in soil within a planting area.
  2. Verify that plants and vehicles loaded with plants can travel to planting locations with adequate overhead clearance.
  3. Suspend planting operations during periods of excessive soil moisture until the moisture content reaches acceptable levels to attain the required results.
  4. Uniformly moisten excessively dry soil that is not workable or which is dusty.
- B. If contamination by foreign or deleterious material or liquid is present in soil within a planting area, remove the soil and contamination as directed by Architect and replace with new planting soil.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

#### 3.2 PREPARATION

- A. Protect structures, utilities, sidewalks, pavements, and other facilities and turf areas and existing plants from damage caused by planting operations.
- B. Install erosion-control measures to prevent erosion or displacement of soils and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways.

### 3.3 PLANTING AREA ESTABLISHMENT

- A. General: Prepare planting area for soil placement and mix planting soil according to Section 329113 "Soil Preparation."
- B. Placing Planting Soil: Place and mix planting soil in-place over exposed subgrade .
- C. Before planting, obtain Architect's acceptance of finish grading; restore planting areas if eroded or otherwise disturbed after finish grading.
- D. Application of Mycorrhizal Fungi: At time directed by Architect, broadcast dry product uniformly over prepared soil at application rate according to manufacturer's written recommendations .

### 3.4 EXCAVATION FOR TREES AND SHRUBS

- A. Planting Pits and Trenches: Excavate circular planting pits.
  - 1. Excavate planting pits with sides sloping inward at a 45-degree angle. Excavations with vertical sides are unacceptable. Trim perimeter of bottom leaving center area of bottom raised slightly to support root ball and assist in drainage away from center. Do not further disturb base. Ensure that root ball will sit on undisturbed base soil to prevent settling. Scarify sides of planting pit smeared or smoothed during excavation.
  - 2. Excavate approximately three times as wide as ball diameter for balled and burlapped and container-grown stock.
  - 3. Do not excavate deeper than depth of the root ball, measured from the root flare to the bottom of the root ball.
  - 4. If area under the plant was initially dug too deep, add soil to raise it to the correct level and thoroughly tamp the added soil to prevent settling.
  - 5. Maintain angles of repose of adjacent materials to ensure stability. Do not excavate subgrades of adjacent paving, structures, hardscapes, or other new or existing improvements.
  - 6. Maintain supervision of excavations during working hours.
  - 7. Keep excavations covered or otherwise protected when unattended by Installer's personnel.
  - 8. If drain tile is indicated on Drawings or required under planting areas, excavate to top of porous backfill over tile.
- B. Backfill Soil: Subsoil and topsoil removed from excavations may be used as backfill soil unless otherwise indicated.
- C. Obstructions: Notify Architect if unexpected rock or obstructions detrimental to trees or shrubs are encountered in excavations.
  - 1. Hardpan Layer: Drill 6-inch- diameter holes, 24 inches apart, into free-draining strata or to a depth of 10 feet, whichever is less, and backfill with free-draining material.
- D. Drainage: Notify Architect if subsoil conditions evidence unexpected water seepage or retention in tree or shrub planting pits.

- E. Fill excavations with water and allow to percolate away before positioning trees and shrubs.

### 3.5 TREE, SHRUB, AND VINE PLANTING

- A. Inspection: At time of planting, verify that root flare is visible at top of root ball according to ANSI Z60.1. If root flare is not visible, remove soil in a level manner from the root ball to where the top-most root emerges from the trunk. After soil removal to expose the root flare, verify that root ball still meets size requirements.
- B. Roots: Remove stem girdling roots and kinked roots. Remove injured roots by cutting cleanly; do not break.
- C. Balled and Burlapped Stock: Set each plant plumb and in center of planting pit or trench with root flare 2 inches above adjacent finish grades.
  - 1. Backfill: Planting soil mixed with excavated soil.
  - 2. After placing some backfill around root ball to stabilize plant, carefully cut and remove burlap, rope, and wire baskets from tops of root balls and from sides, but do not remove from under root balls. Remove pallets, if any, before setting. Do not use planting stock if root ball is cracked or broken before or during planting operation.
  - 3. Backfill around root ball in layers, tamping to settle soil and eliminate voids and air pockets. When planting pit is approximately one-half filled, water thoroughly before placing remainder of backfill. Repeat watering until no more water is absorbed.
  - 4. Continue backfilling process. Water again after placing and tamping final layer of soil.
- D. Container-Grown Stock: Set each plant plumb and in center of planting pit or trench with root flare 1 inch above adjacent finish grades.
  - 1. Backfill: Planting soil mixed with excavated soil.
  - 2. Carefully remove root ball from container without damaging root ball or plant.
  - 3. Backfill around root ball in layers, tamping to settle soil and eliminate voids and air pockets. When planting pit is approximately one-half filled, water thoroughly before placing remainder of backfill. Repeat watering until no more water is absorbed.
  - 4. Continue backfilling process. Water again after placing and tamping final layer of soil.
- E. Slopes: When planting on slopes, set the plant so the root flare on the uphill side is flush with the surrounding soil on the slope; the edge of the root ball on the downhill side will be above the surrounding soil. Apply enough soil to cover the downhill side of the root ball.

### 3.6 TREE, SHRUB, AND VINE PRUNING

- A. Remove only dead, dying, or broken branches. Do not prune for shape.
- B. Do not apply pruning paint to wounds.



### 3.7 TREE STABILIZATION

- A. Trunk Stabilization by Upright Staking and Tying: Install trunk stabilization as follows unless otherwise indicated:
  - 1. Upright Staking and Tying: Stake trees of 2- through 5-inch caliper. Stake trees of less than 2-inch caliper only as required to prevent wind tip out. Use a minimum of three stakes of length required to penetrate at least 18 inches below bottom of backfilled excavation and to extend to the dimension indicated on Drawings above grade. Set vertical stakes and space to avoid penetrating root balls or root masses.
  - 2. Upright Staking and Tying: Stake trees with two stakes for trees up to 12 feet high and 2-1/2 inches or less in caliper; three stakes for trees less than 14 feet high and up to 4 inches in caliper. Space stakes equally around trees.
  - 3. Support trees with bands of flexible ties at contact points with tree trunk. Allow enough slack to avoid rigid restraint of tree.
  - 4. Support trees with two strands of tie wire, connected to the brass grommets of tree-tie webbing at contact points with tree trunk. Allow enough slack to avoid rigid restraint of tree.

### 3.8 GROUND COVER AND PLANT PLANTING

- A. Set out and space ground cover and plants other than trees, shrubs, and vines as indicated on Drawings in even rows with triangular spacing.
- B. Use planting soil mixed with excavated soil for backfill.
- C. Dig holes large enough to allow spreading of roots.
- D. For rooted cutting plants supplied in flats, plant each in a manner that minimally disturbs the root system but to a depth not less than two nodes.
- E. Work soil around roots to eliminate air pockets and leave a slight saucer indentation around plants to hold water.
- F. Water thoroughly after planting, taking care not to cover plant crowns with wet soil.
- G. Protect plants from hot sun and wind; remove protection if plants show evidence of recovery from transplanting shock.

### 3.9 PLANTING AREA MULCHING

- A. Mulch backfilled surfaces of planting areas and other areas indicated.
  - 1. Trees and Treelike Shrubs in Turf Areas: Apply organic mulch ring of 2-inch 3-inch average thickness, with 36-inch radius around trunks or stems. Do not place mulch within 3 inches of trunks or stems.



2. Organic Mulch in Planting Areas: Apply 3-inch average thickness of organic mulch over whole surface of planting area, and finish level with adjacent finish grades. Do not place mulch within 3 inches of trunks or stems.

### 3.10 PLANT MAINTENANCE

- A. Maintain plantings by pruning, cultivating, watering, weeding, fertilizing, mulching, restoring planting saucers, adjusting and repairing tree-stabilization devices, resetting to proper grades or vertical position, and performing other operations as required to establish healthy, viable plantings.
- B. Fill in, as necessary, soil subsidence that may occur because of settling or other processes. Replace mulch materials damaged or lost in areas of subsidence.
- C. Apply treatments as required to keep plant materials, planted areas, and soils free of pests and pathogens or disease. Use integrated pest management practices when possible to minimize use of pesticides and reduce hazards. Treatments include physical controls such as hosing off foliage, mechanical controls such as traps, and biological control agents.

### 3.11 REPAIR AND REPLACEMENT

- A. General: Repair or replace existing or new trees and other plants that are damaged by construction operations, in a manner approved by Architect.
  1. Submit details of proposed pruning and repairs.
  2. Perform repairs of damaged trunks, branches, and roots within 24 hours, if approved.
  3. Replace trees and other plants that cannot be repaired and restored to full-growth status, as determined by Architect.
- B. Remove and replace trees that are more than 25 percent dead or in an unhealthy condition before the end of the corrections period or are damaged during construction operations that Architect determines are incapable of restoring to normal growth pattern.
  1. Provide new trees of same size as those being replaced for each tree of 4 inches or smaller in caliper size.
  2. Species of Replacement Trees: Same species being replaced .

### 3.12 CLEANING AND PROTECTION

- A. During planting, keep adjacent paving and construction clean and work area in an orderly condition. Clean wheels of vehicles before leaving site to avoid tracking soil onto roads, walks, or other paved areas.
- B. Remove surplus soil and waste material including excess subsoil, unsuitable soil, trash, and debris and legally dispose of them off Owner's property.



- C. Protect plants from damage due to landscape operations and operations of other contractors and trades. Maintain protection during installation and maintenance periods. Treat, repair, or replace damaged plantings.
- D. After installation and before Substantial Completion , remove nursery tags, nursery stakes, tie tape, labels, wire, burlap, and other debris from plant material, planting areas, and Project site.
- E. At time of Substantial Completion, verify that tree-watering devices are in good working order and leave them in place. Replace improperly functioning devices.

### 3.13 MAINTENANCE SERVICE

- A. Maintenance Service for Trees and Shrubs: Provide maintenance by skilled employees of landscape Installer. Maintain as required in "Plant Maintenance" Article. Begin maintenance immediately after plants are installed and continue until plantings are acceptably healthy and well established, but for not less than maintenance period below:
  - 1. Maintenance Period: 12 months from date of Substantial Completion .

END OF SECTION 329300



## SECTION 331413 - PUBLIC WATER UTILITY DISTRIBUTION PIPING

### PART 1 - GENERAL

#### 1.1 SUMMARY

##### A. Section Includes:

1. Pipe and fittings for public line, including piping to and from new water distribution pit .
2. Valves, valve boxes and related fittings.
3. Water Line Distribution Vault
4. Bedding and cover materials.

##### B. Related Sections:

1. Section 31213 - Rough Grading.
2. Section 312316.13 - Trenching: Execution requirements for trenching as required by this Section.

#### 1.2 UNIT PRICE - MEASUREMENT AND PAYMENT

##### A. Pipe and Fittings:

1. Basis of Measurement: By linear foot.
2. Basis of Payment: Includes excavation and backfill; pipe, fittings, and appurtenances; bedding; connection and tap to Site service piping; connection to municipal utility water source .

##### B. Valves:

1. Basis of Measurement: By each.
2. Basis of Payment: Includes excavation, bedding, backfill, valve, fittings, and accessories.

##### C. Vaults:

1. Basis of Measurement: By each.
2. Basis of Payment: Includes excavation, bedding, backfill, & grading.

#### 1.3 REFERENCE STANDARDS

##### A. American Association of State Highway and Transportation Officials:

1. AASHTO T 180 - Standard Method of Test for Moisture-Density Relations of Soils Using a 4.54-kg (10-lb) Rammer and a 457-mm (18-in.) Drop.

##### B. ASTM International:



1. ASTM D698 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12 400 ft-lbf/ft<sup>3</sup> (600 kN-m/m<sup>3</sup>).
2. ASTM D1785 - Standard Specification for Poly(Vinyl Chloride) (PVC) Plastic Pipe, Schedules 40, 80, and 120.
3. ASTM D2241 - Standard Specification for Poly(Vinyl Chloride) (PVC) Pressure-Rated Pipe (SDR Series).
4. ASTM D3139 - Standard Specification for Joints for Plastic Pressure Pipes Using Flexible Elastomeric Seals.
5. ASTM D6938 - Standard Test Method for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth).
6. ASTM F477 - Standard Specification for Elastomeric Seals (Gaskets) for Joining Plastic Pipe.

C. Manufacturers Standardization Society of the Valve and Fittings Industry:

1. MSS SP-60 - Connecting Flange Joints between Tapping Sleeves and Tapping Valves.

D. NSF International:

1. NSF 61 - Drinking Water System Components - Health Effects.
2. NSF 372 - Drinking Water System Components - Lead Content.

#### 1.4 COORDINATION

- A. Coordinate Work of this Section with termination of water main connection at Site boundary, connection to municipal water utility service , and trenching.

#### 1.5 PREINSTALLATION MEETINGS

- A. Convene minimum one week prior to commencing Work of this Section.

#### 1.6 SUBMITTALS

- A. Product Data: Submit manufacturer information regarding pipe materials, pipe fittings, and valves and valve boxes. .
- B. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.
- C. Field Quality-Control Submittals: Indicate results of Contractor-furnished tests and inspections.
- D. Preconstruction Photographs: Submit digital files of color photographs of Work areas and material storage areas.
- E. Qualifications Statements:
1. Submit qualifications for manufacturer and installer.



1.7 CLOSEOUT SUBMITTALS

- A. Project Record Documents: Record actual locations of piping mains, valves, connections, and centerline elevations via production of As-built Drawings and deliver to scale Plan to the Owner's Representative.
- B. Identify and describe unexpected variations to subsoil conditions or discovery of uncharted utilities.

1.8 QUALITY ASSURANCE

- A. Valves: Mark valve body with manufacturer's name and pressure rating.
- B. Perform Work according to Providence Water standards.

1.9 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing products specified in this Section with minimum three 3 years' documented experience.
- B. Installer: Company specializing in performing Work of this Section with minimum three 3 years' documented experience in installation of liner materials.

1.10 DELIVERY, STORAGE, AND HANDLING

- A. Inspection: Accept materials on Site in manufacturer's original packaging and inspect for damage.
- B. Storage:
  - 1. Store materials according to manufacturer instructions.
  - 2. Block individual and stockpiled pipe lengths to prevent moving.
  - 3. Do not place pipe or pipe materials on private property or in areas obstructing pedestrian or vehicle traffic.
  - 4. Store PE and PVC materials out of sunlight.
- C. Protection:
  - 1. Protect materials from moisture and dust by storing in clean, dry location remote from construction operations areas.
  - 2. Provide additional protection according to manufacturer instructions.

1.11 EXISTING CONDITIONS

- A. Field Measurements:



1. Verify field measurements and topography shown on the plan. Report any discrepancies which will affect the work of this contract to the Owner's Representative in writing. Commencement of the work will be implied to mean acceptance. No adjustments will be made for discrepancies brought to the Owner's Representative's attention after work has begun.
2. Indicate field measurements on Shop Drawings.
3. The Contractor shall carefully protect from disturbance or damage all land monuments until an authorized agent has witnessed or otherwise referenced their location, and shall not remove or destroy them without proper authorization from the Owner's Representative.
4. Existing buried utilities are indicated in the vicinity of new construction. The Contractor shall examine all contract drawings, and seek additional information if necessary of the existing site conditions. Take care to avoid damage to, or interruption of, utilities scheduled to remain.
5. Should unexpected soil or subsurface conditions or discrepancies between plans and layout work occur, contact the Owner's Representative before proceeding with any work in the area.
6. Protect open excavations with fencing, and/or other suitable safeguards.
7. Contractor shall include in his/her Bid all fees required for installing and connection to water distribution system.

#### 1.12 WARRANTY

- A. Furnish five 5 -year manufacturer's warranty for valves and hardware .

### PART 2 - PRODUCTS

#### 2.1 TAPPING SLEEVES AND VALVES

- A. HDPE piping, valves, couplings and adapters, as part of a potable water delivery system.
- B. Water Line Distribution Vault:
  1. Model 446-13 as manufactured by :
    - a. Columbia Precast Products 1765 Howard Way Woodland, WA 98674 Phone: 360-335-8400
  2. Approved Equal
- C. Tapping Sleeves:
  1. Furnish materials according to Providence Water Supply Board standards.
- D. Tapping Valves:
  1. Furnish materials according to Providence Water Supply Board standards.



## 2.2 MATERIALS

### A. Bedding and Cover:

1. Soil Backfill from above Pipe to Finish Grade:
  - a. Soil Type S1 as specified in Section .
  - b. Subsoil with no rocks greater than 6 inches in diameter, frozen earth, or foreign matter.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Verify that existing utility water main size, location, and invert are as indicated on Drawings.

### 3.2 PREPARATION

#### A. Preconstruction Site Photos:

1. Take photographs along centerline of proposed pipe trench; minimum one photograph for each of pipe trench.
2. Show curbing, lawns, driveways, signs, culverts, and other existing Site features.
3. Include Project description, date taken, and sequential number on back of each photograph.

#### B. Pipe Cutting:

1. Use only equipment specifically designed for pipe cutting; use of chisels or hand saws is not permitted.

#### C. Remove scale and dirt on inside and outside before assembly.

#### D. Prepare pipe connections to equipment with flanges or unions.

### 3.3 INSTALLATION

#### A. Bedding:

1. Excavation:
  - a. Hand trim for accurate placement of pipe to elevations as indicated on Drawings.
2. Dewater excavations to maintain dry conditions and to preserve final grades at bottom of excavation.
3. Place bedding material at trench bottom, level fill materials in one continuous layer not exceeding of compacted depth, and compact to 95 percent of maximum density.

#### B. Vault:





1. Excavate to depth and size required to easily maneuver vault into place, allowing for bedding material.
2. Dewater excavations to maintain dry conditions and to preserve final grades at bottom of excavation.
3. Place bedding material at trench bottom, level fill materials in one continuous layer not exceeding 6 inches of compacted depth, and compact to 95 percent of minimum density.
4. Remove knockouts as needed to accommodate piping.
5. Lower vault into place using lifting anchors and check grades before backfilling.

C. Piping:

1. Flanged Joints: Do not use in underground installations except within structures.
2. Route pipe in straight line, and re-lay pipe that is out of alignment or grade.
3. High Points:
  - a. Install pipe with no high points.
4. Bearing:
  - a. Do not lay pipe in wet or frozen trench.
5. Prevent foreign material from entering pipe during placement.
6. Close pipe openings with watertight plugs during Work stoppages.

D. Testing: After pipe has been laid, the joints completed and the trench partially backfilled, leaving the joints exposed for the examination, the newly laid piping, or any valved section of piping, shall unless otherwise specified, be subjected to hydrostatic pressure test of 150 pounds per square inch for one hour. Defective pipes, joints, fittings, valves and hydrants disclosed in the pressure test shall be replaced by the Contractor with sound material and the test shall be repeated until the rest results are satisfactory to Providence Water Standards.

E. Backfilling:

1. Backfill around sides and to top of pipe with cover fill in minimum lifts of 6", tamp in place, and compact to 95 percent of maximum density.
2. Maintain optimum moisture content of bedding material to attain required compaction density.

F. Installation Standards: Install Work according to Providence Water standards.

END OF SECTION 331413



## SECTION 334200 - STORMWATER CONVEYANCE

### PART 1 - GENERAL

#### 1.1 SUMMARY

##### A. Section Includes:

1. Stormwater drainage piping.
2. Catch basins.
3. Bedding and cover materials.

##### B. Related Requirements:

1. Section 31213 - Rough Grading.
2. Section 312316.13 - Trenching: Execution requirements for trenching as required by this Section.

#### 1.2 DEFINITIONS

- ##### A. ABS: Acrylonitrile butadiene styrene.

#### 1.3 UNIT PRICE - MEASUREMENT AND PAYMENT

- ##### A. Section 012000 - Price and Payment Procedures: Contract Sum/Price modification procedures.

##### B. Pipe and Fittings:

1. Basis of Measurement: By linear foot .
2. Basis of Payment: Includes excavating , removing soft subsoil, bedding and fill , geotextile fabric, pipe and fittings, accessories, and connecting to building service piping and to municipal sewer .

#### 1.4 REFERENCE STANDARDS

##### A. American Association of State Highway and Transportation Officials:

1. AASHTO M288 - Standard Specification for Geotextile Specification for Highway Applications.
2. AASHTO M294 - Standard Specification for Corrugated Polyethylene Pipe, 300- to 1500-mm (12- to 60-in.) Diameter.
3. AASHTO T 180 - Standard Method of Test for Moisture-Density Relations of Soils Using a 4.54-kg Rammer and a 457-mm Drop.

##### B. ASTM International:



1. ASTM D2564 - Standard Specification for Solvent Cements for Poly(Vinyl Chloride) (PVC) Plastic Piping Systems.
2. ASTM D2680 - Standard Specification for Acrylonitrile-Butadiene-Styrene (ABS) and Poly(Vinyl Chloride) (PVC) Composite Sewer Piping.
3. ASTM D2729 - Standard Specification for Poly(Vinyl Chloride) (PVC) Sewer Pipe and Fittings.
4. ASTM D6938 - Standard Test Method for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth).

#### 1.5 COORDINATION

- A. Coordinate Work of this Section with termination of storm sewer connection outside building, trenching, connection to existing catch basins .

#### 1.6 PREINSTALLATION MEETINGS

- A. Convene minimum one week prior to commencing Work of this Section.

#### 1.7 SUBMITTALS

- A. Product Data: Submit manufacturer information describing pipe, pipe accessories.
- B. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.
- C. Manufacturer Instructions: Submit special procedures required to install specified products.
- D. Field Quality-Control Submittals: Indicate results of Contractor-furnished tests and inspections.
- E. Qualifications Statement:
  1. Submit qualifications for manufacturer.

#### 1.8 CLOSEOUT SUBMITTALS

- A. Section 017000 - Execution and Closeout Requirements: Requirements for submittals.
- B. Project Record Documents: Record actual locations of pipe runs, connections, catch basins, cleanouts, and invert elevations.
- C. Identify and describe unexpected variations to subsoil conditions or discovery of uncharted utilities.

#### 1.9 QUALITY ASSURANCE

- A. Perform Work according to RIDOT Standard Specifications for Road and Bridge Construction standards Current Edition.



#### 1.10 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing products specified in this Section with minimum three years' documented experience.

#### 1.11 DELIVERY, STORAGE, AND HANDLING

- A. Section 016000 - Product Requirements: Requirements for transporting, handling, storing, and protecting products.
- B. Inspection: Accept materials on Site in manufacturer's original packaging and inspect for damage.
- C. Store materials according to manufacturer instructions.
- D. Protection:
  - 1. Protect materials from moisture and dust by storing in clean, dry location remote from construction operations areas.
  - 2. Provide additional protection according to manufacturer instructions.

#### 1.12 EXISTING CONDITIONS

- A. Field Measurements:
  - 1. Verify field measurements prior to fabrication.
  - 2. Indicate field measurements on Shop Drawings.

### PART 2 - PRODUCTS

#### 2.1 STORM DRAINAGE PIPING

- A. PVC Piping:
  - 1. Pipe:
    - a. Comply with ASTM D2729 .
    - b. Inside Nominal Diameter: 4 inches.
    - c. End Connections: Bell and spigot, solvent sealed.
  - 2. Fittings: PVC.
  - 3. Joints:
    - a. Type: Solvent weld.
    - b. Comply with ASTM D2680 .
    - c. Solvent Cement: Comply with ASTM D2564.



## 2.2 MATERIALS

### A. Bedding and Cover:

1. Bedding: Fill Type A1
2. Cover: Fill Type A1 , as specified in Section .
3. Soil Backfill from above Pipe to Finish Grade: Soil Type S2 as specified in Section 312213 .
4. Subsoil: No rocks more than 6 inches in diameter, frozen earth, or foreign matter.

## 2.3 ACCESSORIES

### A. Geotextile Filter Fabric: As specified in Section 310519.13 - Geotextiles for Earthwork.

### B. Geotextile Filter Fabric:

1. Comply with AASHTO M288 for subsurface drainage.
2. Type:
  - a. Class A , non-biodegradable.
  - b. Non-woven Non-woven .
3. Mirafi 140N , as manufactured by Tencate or approved equal .

### C. 6" Dia Drop-In Drain Overflow

1. Manufactured by NDS or approved equal

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Section 017000 - Execution and Closeout Requirements: Requirements for installation examination.
- B. Verify that excavation base is ready to receive Work of this Section.
- C. Verify that excavations, dimensions, and elevations are as indicated on Drawings.

### 3.2 PREPARATION

- A. Section 017000 - Execution and Closeout Requirements: Requirements for installation preparation.
- B. Correct over-excavation with coarse aggregate .
- C. Remove large stones and other hard matter that could damage piping or impede consistent backfilling or compaction.



### 3.3 INSTALLATION

#### A. Excavation and Bedding:

1. Excavate trench to 6 inches below pipe invert, and as specified in Section 312316.13 - Trenching.
2. Hand trim excavation for accurate placement of piping to indicated elevations.
3. Place bedding material at trench bottom.
4. Level materials in continuous layers not exceeding 6 inch compacted depth.
5. Maintain optimum moisture content of bedding material to attain required compaction density.
6. Level fill materials in continuous layers not exceeding 6 inches in depth, and compact to 95 percent maximum density.
7. Place geotextile fabric over compacted bedding.

#### B. Piping:

1. Pipe, Fittings, and Accessories: Comply with ASTM D2321 .
2. Seal joints watertight.
3. Place pipe on minimum 6-inch- deep bed of Type 57 filter aggregate.
4. Install aggregate at sides and over top of pipe.
5. Install top cover to minimum compacted thickness of 12 inches, and compact to 95 percent maximum density.
6. Backfilling and Compaction:
  - a. Do not displace or damage pipe while compacting.
7. Connect to existing catch basins , through installed sleeves.
8. Installation Standards: Install Work according to RIDOT Standard Specifications for Road and Bridge Construction standards.

### 3.4 TOLERANCES

- A. Section 014000 - Quality Requirements: Requirements for tolerances.
- B. Maximum Variation from Indicated Pipe Slope: 1/8 inch in 10 feet.

### 3.5 FIELD QUALITY CONTROL

- A. Section 014000 - Quality Requirements: Requirements for inspecting and testing.
- B. Inspection:
  1. Request inspection by Architect/Engineer prior to placing aggregate cover over pipe.
- C. Testing:
  1. Piping:
    - a. Infiltration and Exfiltration Testing: As specified in Section 330505.33 - Infiltration and Exfiltration Testing .



2. If tests indicate that Work does not meet specified requirements, remove Work, replace, and retest.

### 3.6 PROTECTION

- A. Section 017000 - Execution and Closeout Requirements: Requirements for protecting finished Work.
- B. Protect pipe and aggregate cover from damage or displacement until backfilling operation is in progress.

END OF SECTION 334200



**SITE LOCATION**  
SCALE: 1"=500'



# ROGER WILLIAMS PARK MOUNTED COMMAND SITE IMPROVEMENTS

1000 ELMWOOD AVENUE  
PLAT 90 LOT 1  
PROVIDENCE, RHODE ISLAND 02905

ISSUED FOR BID

CLIENT:  
PROVIDENCE PARKS DEPARTMENT  
LATEST ISSUED: DECEMBER 17, 2021

JORGE O. ELORZA, MAYOR  
WENDY NILSSON, SUPERINTENDENT OF PARKS



**OVERALL SITE PLAN**  
SCALE: 1"=100'

**INDEX TO SHEETS**

C-1	COVER	12/17/2021
C-2	LEGEND, NOTES, & DETAILS	12/17/2021
C-3	OVERALL SITE PLAN	12/17/2021

**IRONWOOD DESIGN GROUP**

L1.0	SITE PREPARATION PLAN	12/17/2021
L2.0	LAYOUT & MATERIALS PLAN	12/17/2021
L2.1	LAYOUT & MATERIALS PLAN	12/17/2021
L3.0	PLANTING PLAN	12/17/2021
L3.1	PLANTING PLAN	12/17/2021
L4.0	ENLARGEMENTS	12/17/2021
L5.0	LANDSCAPE DETAILS	12/17/2021
L5.1	LANDSCAPE DETAILS	12/17/2021
L5.2	LANDSCAPE DETAILS	12/17/2021

**WATERMAN ENGINEERING CO.**

EX1	PARTIAL TOPOGRAPHIC SURVEY PLAN	07/01/2021
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**LATEST ISSUE**

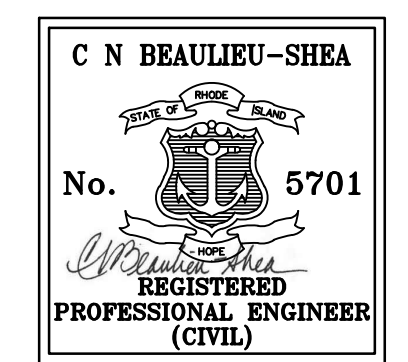
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SEAL:



12/17/2021


REV	DATE	DESCRIPTION

CLIENT:

**PROVIDENCE PARKS DEPARTMENT**  
DALRYMPLE BOATHOUSE, MAPLE AVE.  
PROVIDENCE, RI 02905

PROJECT:

ROGER WILLIAMS  
PARK MOUNTED  
COMMAND SITE  
IMPROVEMENTS  
1000 ELMWOOD AVENUE,  
PROVIDENCE, RI 02905

TITLE:

COVER

ISSUED FOR: BID

DATE: DECEMBER 17, 2021

SCALE: N/A

DRAWN BY: MPS

CHECKED BY: CNB

PROJECT NO: 3652210316

PROPERTY OWNER			
PLAT - LOT	PROPERTY ADDRESS	PROPERTY OWNER NAME	MAILING ADDRESS
90-1	1000 ELMWOOD AVENUE, PROVIDENCE, RI 02905	CITY OF PROVIDENCE	CITY HALL, PROVIDENCE, RI 02903





**GENERAL NOTES**

- THESE PLANS AND THEIR CORRESPONDING ELECTRONIC DOCUMENTS, INCLUDING CAD FILES FOR THE PROJECT, ARE INSTRUMENTS OF PROFESSIONAL SERVICE AND SHALL NOT BE USED IN WHOLE OR IN PART FOR ANY OTHER PURPOSE THAN THE DEVELOPMENT OF THIS PROJECT WITHOUT THE EXPRESSED, WRITTEN CONSENT OF WOOD ENVIRONMENT & INFRASTRUCTURE SOLUTIONS, INC (WOOD). ANY UNAUTHORIZED USE, RE-USE, ALTERATION, OR MODIFICATION OF THIS DATA SHALL BE AT THE USER'S RISK WITH NO LIABILITY ON THE PART OF WOOD.
- UPON AWARD OF THE CONTRACT AND PRIOR TO THE START OF CONSTRUCTION, THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL PERMITS AND PAYING ALL STATE AND LOCAL FEES RELATING TO THE WORK SHOWN ON THESE DRAWINGS, THE CONSTRUCTION SPECIFICATIONS, AND CONTRACT DOCUMENTS.
- THE CONTRACTOR SHALL NOTIFY DIG-SAFE AT LEAST 72 BUSINESS HOURS PRIOR TO INITIATING ANY EXCAVATION WORK.
- ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE APPROVED PLANS AND SPECIFICATIONS. WHERE SITE SPECIFICATIONS ARE NOT PROVIDED, THE CONTRACTOR SHALL ADHERE TO LOCAL MUNICIPAL STANDARDS OR THE RHODE ISLAND DEPARTMENT OF TRANSPORTATION SPECIFICATIONS, AS APPLICABLE. WORK WITHIN LOCAL RIGHTS-OF-WAY SHALL ADHERE TO LOCAL MUNICIPAL STANDARDS; WORK WITHIN STATE RIGHTS-OF-WAY SHALL ADHERE TO STATE HIGHWAY STANDARDS. WHERE A DISCREPANCY EXISTS, THE MORE RESTRICTIVE STANDARD SHALL APPLY.
- REFERENCE MADE TO "STATE HIGHWAY STANDARDS," "STATE STANDARD SPECIFICATIONS," "STANDARD SPECIFICATIONS," OR "RIDOT STANDARDS" SHALL MEAN AND BE DEFINED AS THE "RHODE ISLAND DEPARTMENT OF TRANSPORTATION - STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, LATEST EDITION."
- ANY WORK NOT MEETING THE APPROVED STANDARDS SHALL BE REMOVED IMMEDIATELY AND REPLACED BY THE CONTRACTOR AT NO COST TO THE OWNER.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL SITE SECURITY AND JOB SAFETY AND SHALL CONFORM TO THE RULES AND REGULATIONS OF THE OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA).
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE MAINTENANCE AND PROTECTION OF PEDESTRIAN AND VEHICULAR TRAFFIC INCLUDING ANY REQUIRED POLICE PROTECTION. ANY REQUIRED TEMPORARY CONSTRUCTION SIGNS, BARRICADES AND LANE CLOSURES SHALL BE IN CONFORMANCE WITH THE LATEST "MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES" (MUTCD).
- THE CONTRACTOR SHALL NOT OBSTRUCT PUBLIC ROADWAYS, SIDEWALKS, OR FIRE HYDRANTS WITHOUT FIRST OBTAINING THE NECESSARY PERMITS TO DO SO.
- ACCESSIBLE ROUTES, PARKING SPACES, SIDEWALKS, AND RAMPS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE FEDERAL "AMERICANS WITH DISABILITIES ACT (ADA)" AND LOCAL AND STATE STANDARDS. WHERE A DISCREPANCY EXISTS, THE MORE RESTRICTIVE STANDARD SHALL APPLY.
- THE LIMITS-OF-WORK (A.K.A. "LIMIT OF DISTURBANCE") SHALL BE AS SHOWN ON THESE PLANS. AREAS DISTURBED BEYOND THESE DEFINED LIMITS SHALL BE RESTORED BY THE CONTRACTOR TO THEIR ORIGINAL CONDITION AT THE CONTRACTOR'S EXPENSE. LANDSCAPE AREAS SHALL BE RESTORED WITH 6 INCHES OF LOAM AND SEED.
- UNLESS OTHERWISE NOTED ON THE PLANS, ALL UNPAVED/LANDSCAPE AREAS SHALL RECEIVE FOUR (4) INCHES OF LOAM AND SEED WITHIN THE LIMITS OF WORK SHOWN ON THESE PLANS. LOAM SHALL BE EVENLY SPREAD, SMOOTHED, AND COMPACTED PRIOR TO SEEDING.
- PRIOR TO START OF CONSTRUCTION, THE CONTRACTOR SHALL VERIFY EXISTING PAVEMENT ELEVATIONS AT THEIR PROPOSED INTERFACE WITH PROPOSED PAVEMENTS TO ENSURE PROPER TRANSITIONS BETWEEN EXISTING AND PROPOSED FACILITIES.
- HORIZONTAL AND VERTICAL DATUMS ARE PROVIDED ON THE EXISTING CONDITIONS PLANS.
- ALL TREES TO REMAIN WITHIN LIMIT OF DISTURBANCE (LOD) UNLESS OTHERWISE NOTED. TREES WITHIN LOD SHALL BE PROTECTED WITH SNOW FENCE UNTIL COMPLETION OF WORK OR WHEN HEAVY EQUIPMENT IS NO LONGER REQUIRED.
- WHERE EXISTING DRAINAGE SYSTEMS ARE IMPACTED BY THE PROPOSED CONSTRUCTION, ALL WORK SHALL BE DONE DURING DRY WEATHER, OR WHERE NOT FEASIBLE OR PRACTICAL TO DO SO, CONTRACTOR SHALL EMPLOY STORMWATER DIVERSION MATERIALS TO ENSURE NON-EROSIVE DISCHARGE.

**GENERAL UTILITY NOTES:**

- THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING WITH ALL UTILITY COMPANIES AND WORK TRADES ASSOCIATED WITH THE WORK SHOWN ON THESE PLANS.
- THE CONTRACTOR SHALL KEEP ALL LOCAL AGENCIES INFORMED OF SCHEDULE AS NECESSARY.
- EXISTING UTILITIES ARE SHOWN IN THEIR APPROXIMATE LOCATION BASED ON BEST AVAILABLE INFORMATION. THE CONTRACTOR SHALL BE RESPONSIBLE TO VERIFY THE LOCATION, SIZE, MATERIAL(S), AND ELEVATION OF ALL EXISTING UTILITIES WITHIN THE LIMIT OF WORK PRIOR TO ORDERING OR INSTALLING THESE MATERIALS. THE CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY OF ANY DISCREPANCIES OR UTILITY CONFLICTS PRIOR TO CONSTRUCTION.
- WHERE AN EXISTING UTILITY IS FOUND TO BE IN CONFLICT WITH THE PROPOSED WORK, OR WHERE EXISTING CONDITIONS DIFFER FROM THE INFORMATION SHOWN ON THESE PLANS, SUCH THAT THE WORK CAN NOT BE COMPLETED AS INTENDED, THE CONTRACTOR SHALL IMMEDIATELY IDENTIFY AND PROVIDE THE ENGINEER WITH THE LOCATION, ELEVATION, AND SIZE OF THE UTILITY IN CONFLICT. THE CONTRACTOR SHALL NOT CONTINUE WORK IN THIS AREA UNTIL THE APPROPRIATE REMEDIAL ACTION IS AGREED UPON BY THE OWNER AND ENGINEER.
- THE CONTRACTOR SHALL ASSUME RESPONSIBILITY FOR ANY DAMAGE TO OVERHEAD AND/OR UNDERGROUND UTILITIES, WHETHER OR NOT SHOWN ON THESE PLANS THROUGHOUT WORK ON THIS PROJECT.
- STORM DRAIN PIPING SHALL BE CONSTRUCTED OF HIGH-DENSITY POLYETHYLENE (HDPE) UNLESS OTHERWISE NOTED ON THE PLANS.
- ALL STRUCTURES UNDER PAVED AREAS SHALL BE DESIGNED TO MEET HS-20 TRUCK LOAD.

**LAYOUT AND MATERIALS NOTES**

- THE CONTRACTOR SHALL NOT RELY SOLELY ON ELECTRONIC VERSIONS OF PLANS, SPECIFICATIONS, AND DATA FILES THAT ARE OBTAINED FROM THE DESIGNERS, BUT SHALL VERIFY LOCATION OF PROJECT FEATURES IN ACCORDANCE WITH PAPER COPIES OF THE PLANS AND SPECIFICATIONS THAT ARE SUPPLIED AS PART OF THE CONTRACT DOCUMENTS.
- SYMBOLS AND LEGENDS OF PROJECT FEATURES ARE GRAPHIC REPRESENTATIONS AND ARE NOT NECESSARILY SCALED TO THE ACTUAL DIMENSIONS OR LOCATIONS ON THE DRAWINGS. THE CONTRACTOR SHALL REFER TO THE DETAIL SHEET DIMENSIONS, MANUFACTURERS' LITERATURE, SHOP DRAWINGS AND FIELD MEASUREMENTS OF SUPPLIED PRODUCTS FOR LAYOUT OF THE PROJECT FEATURES.
- DIMENSIONS ARE TO/FROM FACE OF CURB, FACE OF BUILDING, FACE OF WALL, AND CENTER LINE OF PAVEMENT MARKINGS, UNLESS

OTHERWISE NOTED ON THESE PLANS.

- BOUNDS AND ANY OTHER EXISTING PROPERTY LINE MONUMENTATION DISTURBED DURING CONSTRUCTION SHALL BE SET OR RESET BY A PROFESSIONAL LICENSED SURVEYOR.
- THE CONTRACTOR SHALL PROVIDE TEMPORARY BITUMINOUS PATCH FOR ANY TRENCH WORK WITHIN PAVEMENT OR SIDEWALK AREAS IN PUBLIC RIGHTS-OF-WAY UNTIL PERMANENT PATCHING IS INSTALLED.

**DEMOLITION**

- WITHIN THE LIMIT OF WORK/DISTURBANCE, THE CONTRACTOR SHALL CLEAR AND GRUB ALL EXISTING VEGETATION AND STOCKPILE AND SCREEN TOPSOIL FOR RE-USE IN LANDSCAPE AREAS. THE CONTRACTOR SHALL ALSO REMOVE AND DISPOSE OF ALL EXISTING MANMADE FEATURES, INCLUDING BUT NOT LIMITED TO BUILDINGS, STRUCTURES, PAVEMENTS, SLABS, CURBING, WALLS, FENCES, UTILITIES (BOTH OVERHEAD AND UNDERGROUND), SIGNS, ETC., EXCEPT AS OTHERWISE NOTED ON THESE PLANS. THE EXISTING SOIL CAP SHALL NOT BE DISTURBED UNLESS OTHERWISE INDICATED ON THESE PLANS.
- THE CONTRACTOR SHALL DISPOSE OF ALL MATERIALS OFF-SITE IN ACCORDANCE WITH FEDERAL, STATE, AND LOCAL REGULATIONS.
- THE EXTENT OF DEMOLITION DEPICTED ON THESE PLANS IS INTENDED TO AID THE CONTRACTOR IN BIDDING THE PROJECT AND IS NOT NECESSARILY INTENDED TO DEPICT EACH AND EVERY ELEMENT OF DEMOLITION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING THE FULL EXTENTS OF THE DEMOLITION WORK PRIOR TO CONTRACT AWARD AND SHALL NOT BE COMPENSATED FOR UNFORESEEN CONDITIONS ONCE THE WORK HAS COMMENCED.
- UNLESS OTHERWISE SPECIFICALLY PROVIDED ON THESE PLANS, THE ENGINEER HAS NOT PREPARED PLANS FOR THE DISCOVERY, REMOVAL, ABATEMENT, OR DISPOSAL OF ANY HAZARDOUS OR TOXIC MATERIALS FOUND DURING CONSTRUCTION.
- ALL EXISTING TREES ARE TO REMAIN UNLESS OTHERWISE NOTED AND/OR APPROVED IN WRITING BY THE LANDSCAPE ARCHITECT AND THE PROVIDENCE PARKS DEPARTMENT. ANY UNAUTHORIZED DAMAGE OR REMOVAL OF A TREE SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE AND COMPENSATED TO THE PARKS DEPARTMENT.

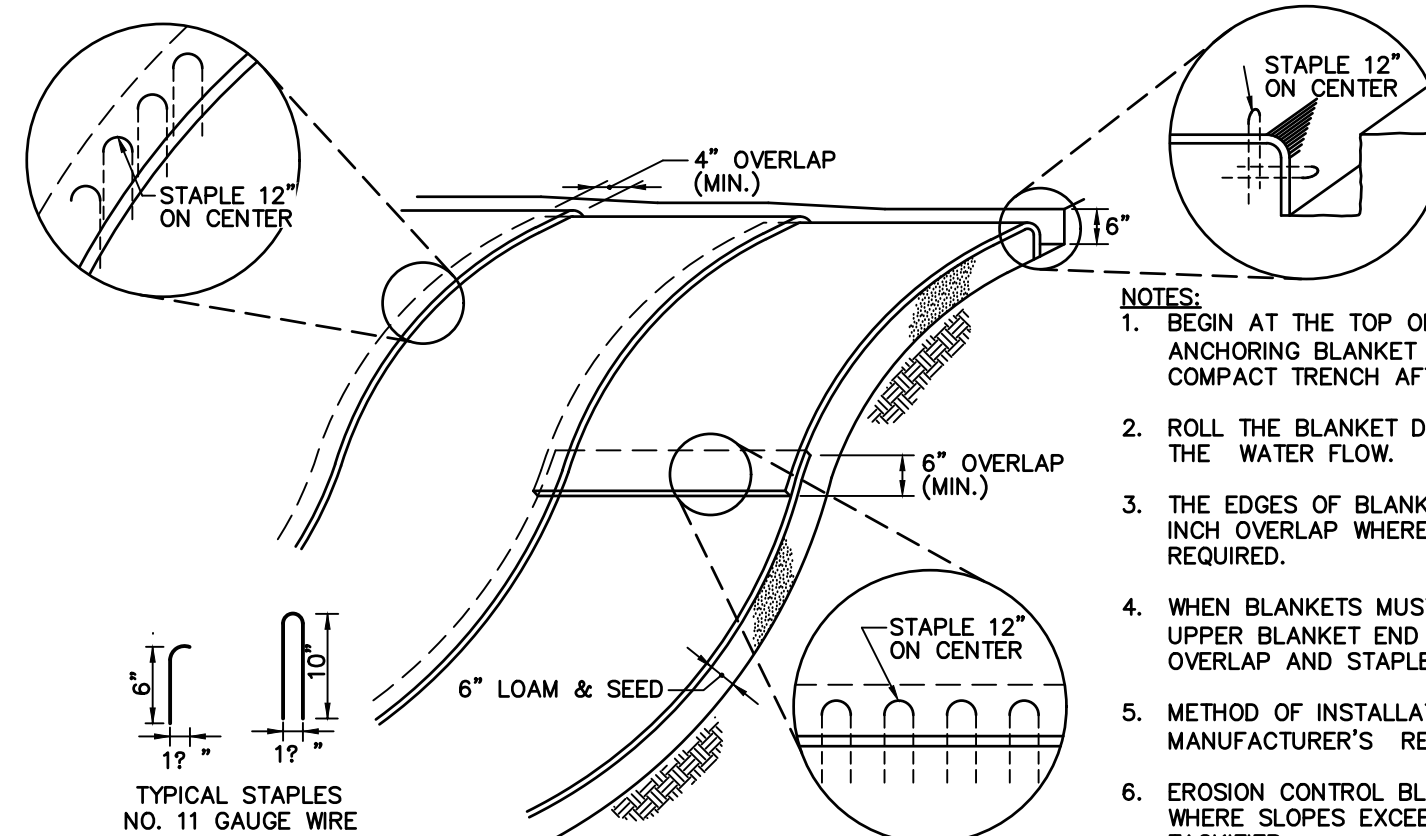
**SITE SPECIFIC DATA**

- TOTAL SITE AREA = 435.0± ACRES
- TOTAL AREA OF PROJECT = 3.47± ACRES
- NATURAL HERITAGE AREA (NHA) IMPACT - N/A
- THREATENED SPECIES OR HABITAT IMPACT - N/A
- WATERSHED = ROGER WILLIAMS PARK PONDS:  
I.D. RI0006017L-05

**EROSION CONTROLS/CONSTRUCTION SEQUENCING**

- THE CONTRACTOR SHALL INSTALL ALL EROSION AND SEDIMENTATION (E&S) CONTROL MEASURES SHOWN ON THE PLAN SET IN ACCORDANCE WITH THE MOST RECENT EDITION OF THE "RHODE ISLAND SOIL EROSION AND SEDIMENT CONTROL HANDBOOK."
- THE CONTRACTOR SHALL BE RESPONSIBLE TO MAINTAIN AND/OR UPGRADE THESE MEASURES, AS NECESSARY, THROUGHOUT CONSTRUCTION, TO MEET THE REQUIREMENTS OF ALL RELATED PERMITS FOR THE PROJECT.
- EROSION CONTROL DEVICES:
  - AT LEAST ONE STABILIZED CONSTRUCTION ENTRANCE/EXIT SHALL BE INSTALLED FOR SELECT STORMWATER PROJECTS FOR ACCESS TO THE PROJECT BY CONSTRUCTION VEHICLES. THE CONSTRUCTION ENTRANCE/EXIT SHALL BE INSTALLED BEFORE CONSTRUCTION VEHICLES ARE ALLOWED TO ENTER THE CONSTRUCTION SITE. ADDITIONAL ENTRANCES/EXITS SHALL BE INSTALLED IF MORE THAN ONE ACCESS POINT ANTICIPATED BY THE CONTRACTOR. A WASH OUT PAD MAY ALSO BE INSTALLED TO WASH CONSTRUCTION VEHICLES EXITING THE SITE.
  - ROADS ADJACENT TO THE CONSTRUCTION SITE SHALL BE CLEAN AT THE END OF EACH WORK DAY.
  - TEMPORARY SEDIMENT BASINS MAY BE EXCAVATED OR BERMED/HAYBALED AND SHALL BE SIZED IN ACCORDANCE WITH THE "RHODE ISLAND STORMWATER DESIGN AND INSTALLATION STANDARDS MANUAL" AND THE "RHODE ISLAND SOIL EROSION AND SEDIMENTATION CONTROL HANDBOOK." THE DISCHARGE LOCATION FROM THESE BASINS SHALL BE STABILIZED TO PREVENT EROSION.
  - STRAW WATTLE AND SILT SACKS SHALL BE INSTALLED AT ALL DOWN-GRADE CATCH BASINS WITHIN THE LIMIT OF WORK TO CONTROL EROSION AND SEDIMENTATION AND TO PROTECT OFF-SITE AREAS. THESE DEVICES SHALL BE INSTALLED AS SHOWN ON THE E&S CONTROL PLAN PRIOR TO INITIATION OF MAJOR SITE WORK ACTIVITIES AND SHALL BE MAINTAINED/REPAIRED UNTIL FINAL STABILIZATION OF ALL DISTURBED AREAS.
  - SILT FENCE SHALL BE INSTALLED AROUND ALL EARTH STOCKPILES. STOCKPILES SHALL BE STABILIZED WITH TEMPORARY SEED ACCORDING TO NOTE 11 BELOW. IF TEMPORARY SEED IS NOT FEASIBLE OR NOT PRACTICAL, STOCKPILES SHALL BE COVERED WITH POLYETHYLENE SHEETING OR SIMILAR PRODUCT AT THE END OF EACH DAY TO MINIMIZE DUST.
  - ALL OTHER EROSION CONTROL DEVICES SHOWN ON THESE PLANS SHALL BE IN ACCORDANCE WITH "RHODE ISLAND STORMWATER DESIGN AND INSTALLATION STANDARDS MANUAL" AND THE "RHODE ISLAND SOIL EROSION AND SEDIMENTATION CONTROL HANDBOOK."

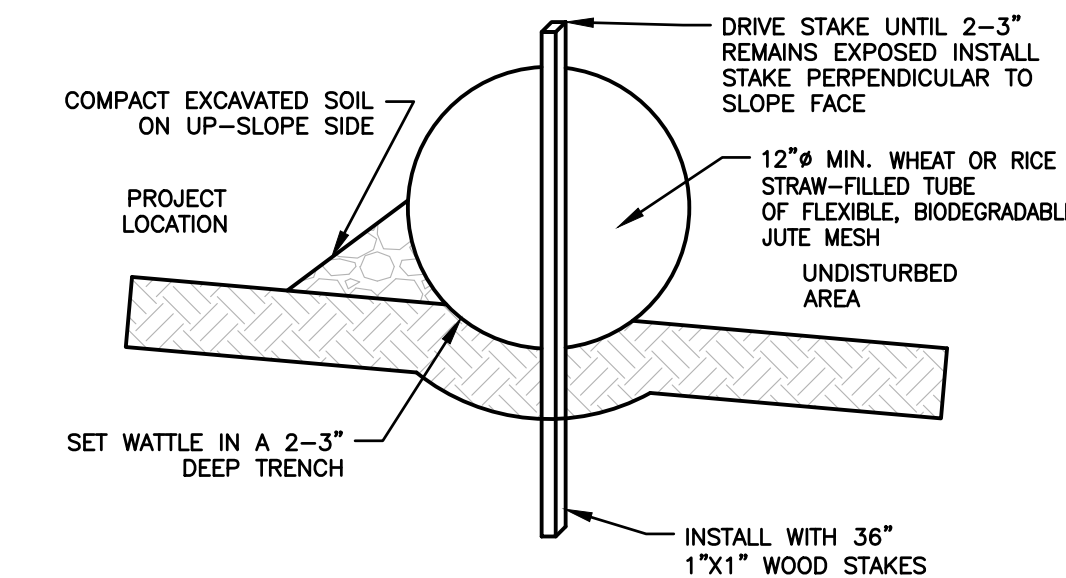
- THE CONTRACTOR SHALL PERFORM A FINAL INSPECTION OF ALL EXISTING CATCH BASINS, DRAINAGE PIPING AND ASSOCIATED DRAINAGE STRUCTURES WITHIN THE PROJECT LIMITS TO ENSURE THAT ALL SEDIMENTS HAVE BEEN REMOVED BEFORE WORK IS DEEMED COMPLETE.
- THE CONTRACTOR SHALL REMOVE AND DISPOSE OF ALL E&S MEASURES ONLY AFTER FINAL PAVEMENT IS PLACED AND VEGETATION IN LANDSCAPE AREAS IS WELL ESTABLISHED.



**EROSION CONTROL BLANKET INSTALLATION - 3H:1V (OR STEEPER)**

NTS wood

SLOPE STEEPNESS	MAXIMUM LENGTH (FT)
2:1	25
3:1	50
4:1	75
5:1 OR FLATTER	100

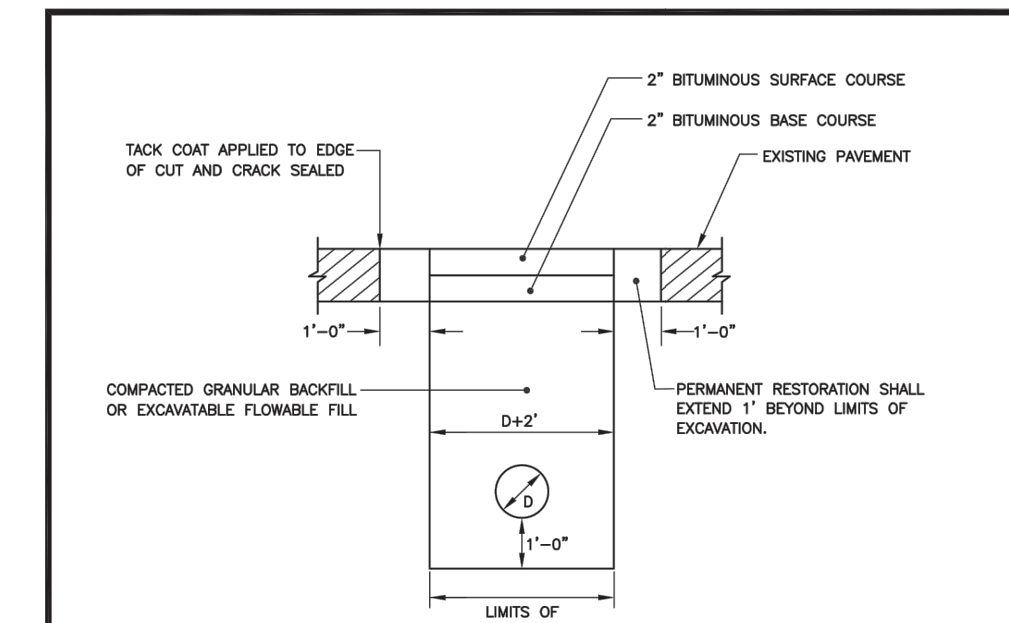


- NOTES:**
- BEGIN AT THE LOCATION WHERE THE WATTLE IS TO BE INSTALLED BY EXCAVATING A 2-3" DEEP X 9" WIDE TRENCH ALONG THE CONTOUR OF THE SLOPE. EXCAVATED SOIL SHALL BE PLACED UP-SLOPE FROM THE ANCHOR TRENCH.
  - PLACE THE WATTLE IN THE TRENCH SO THAT IT CONTOURS TO THE SOIL SURFACE. COMPACT THE SOIL FROM THE EXCAVATED TRENCH AGAINST THE WATTLE ON THE UP-HILL SIDE. ADJACENT WATTLES SHOULD TIGHTLY ABUT.
  - SECURE THE WATTLE WITH 18-24" STAKES EVERY 3-4' WITH A STAKE ON EACH END. STAKES SHALL BE DRIVEN THROUGH THE MIDDLE OF THE WATTLES LEAVING AT LEAST SAMPLE LINE 2-3" OF STAKE EXTENDING ABOVE. THE WATTLE STAKES SHALL BE DRIVEN PERPENDICULAR TO SLOPE FACE.
  - MAX. DRAINAGE AREA ≤ 0.25 ACRES/100 LINEAR FEET.

**STRAW WATTLE**

NTS wood\_9.13

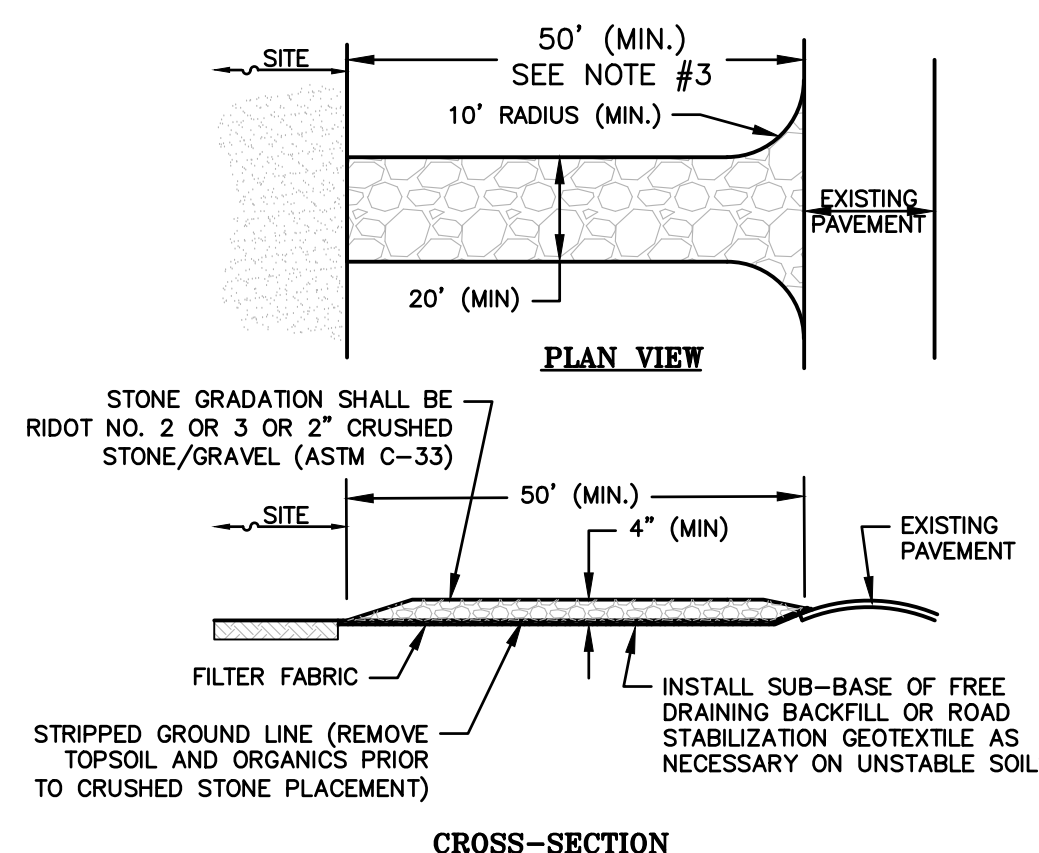
- NOTES:**
- BEGIN AT THE TOP OF BLANKET INSTALLATION AREA BY ANCHORING BLANKET IN A 6" DEEP TRENCH BACKFILL AND COMPACT TRENCH AFTER STAPLING.
  - ROLL THE BLANKET DOWN THE SWALE IN THE DIRECTION OF THE WATER FLOW.
  - THE EDGES OF BLANKETS MUST BE STAPLED WITH APPROX. 4 INCH OVERLAP WHERE 2 OR MORE STRIP WIDTHS ARE REQUIRED.
  - WHEN BLANKETS MUST BE SPICED DOWN THE SWALE, PLACE UPPER BLANKET END OVER LOWER END WITH 6 INCH (MIN.) OVERLAP AND STAPLE BOTH TOGETHER.
  - METHOD OF INSTALLATION SHALL BE AS PER MANUFACTURER'S RECOMMENDATIONS.
  - EROSION CONTROL BLANKETS SHALL BE USED IN ALL AREAS WHERE SLOPES EXCEED 3:1 OR APPROVED HYDROSEED TACKIFIER.



- NOTES:**
- BITUMINOUS CONCRETE SHALL ADHERE TO RIDOT SPECIFICATIONS, SECTION 401.
  - GRANULAR BASE MATERIAL SHALL BE COMPACTED TO 95% OF MODIFIED PROCTOR DENSITY (ASHOT 1180). GRANULAR BASE COURSE SHALL ADHERE TO RIDOT SPECIFICATIONS, SECTION 301.
  - EXCAVATABLE FLOWABLE FILL (CONTROLLED DENSITY FILL (CDF)) SHALL ADHERE TO 95% OF THE MODIFIED PROCTOR DENSITY (ASHOT 1180), ADHERING TO RIDOT SPECIFICATIONS, SECTION 603.
  - PRIOR TO PERMANENT RESTORATION, ALL EDGES OF THE EXCAVATED AREA AND ONE FOOT BEYOND SHALL BE SMOOTH TO A CLEAN, SQUARE EDGE.
  - IF EXCAVATION IS ON A PROTECTED STREET, THE REMAINING ROADWAY OUTSIDE THE TRENCH TO THE NEAREST CURB SHALL BE WIDENED 1.5 INCHES WITH 1.5 INCH BITUMINOUS CONCRETE SURFACE OVERLAY. THE JOINTS SHALL BE SEALED USING INFUSED TECHNOLOGY. THE LENGTH OF THE NEW PAVED AREA MUST BE A MINIMUM OF 10 FEET TO ALLOW FOR PROPER ROLLING.
  - IF EXCAVATION IS ON A NON-PROTECTED STREET, AND THE DISTANCE FROM EDGE OF EXCAVATION TO EDGE OF ROADWAY IS TWO FEET OR LESS, THE REMAINING AREA TO EDGE OF ROADWAY SHALL BE REMOVED AND REPLACED IN CONJUNCTION WITH THE PERMANENT PAVEMENT RESTORATION.

**PERMANENT ROADWAY RESTORATION - GRANULAR BASE**

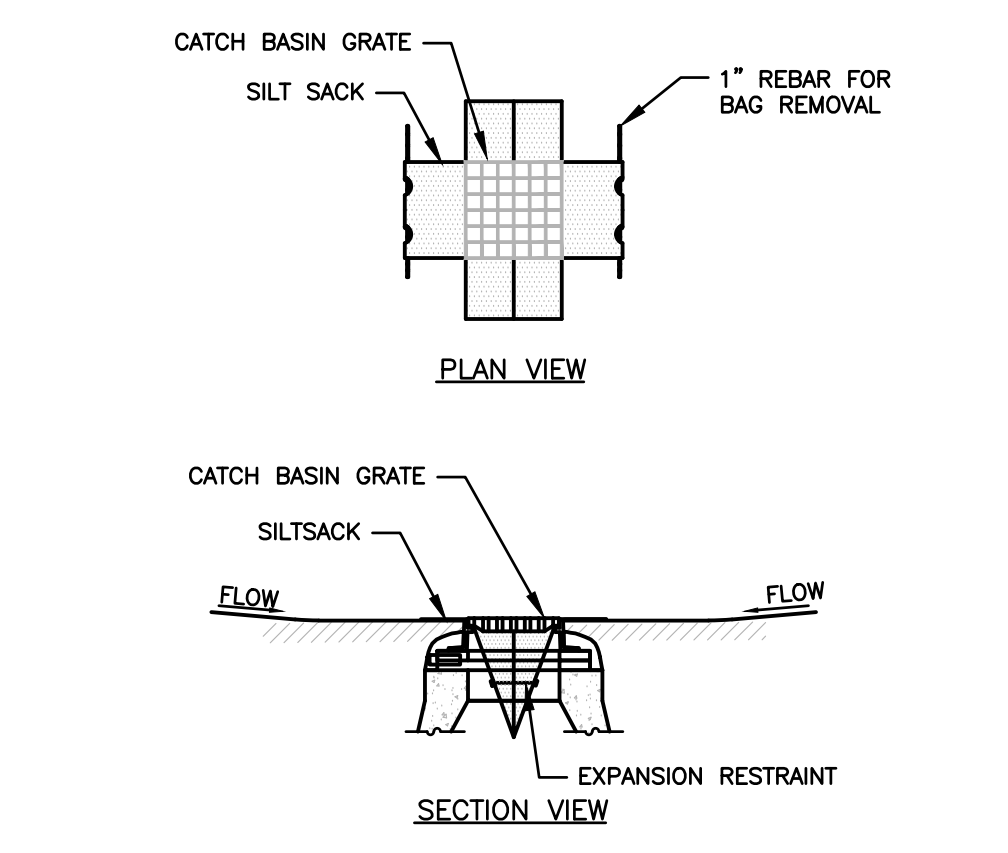
NTS. wood



- NOTES:**
- ENTRANCE WIDTH SHALL BE TWENTY (20) FEET WIDE MINIMUM, BUT NOT LESS THAN THE FULL WIDTH AT POINTS WHERE INGRESS OR EGRESS OCCURS.
  - THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PAVED SURFACES. PROVIDE PERIODIC TOP DRESSING WITH ADDITIONAL STONE OR ADDITIONAL LENGTH AS CONDITIONS DEMAND. REPAIR ANY MEASURES USED TO TRAP SEDIMENT AS NEEDED. IMMEDIATELY REMOVE ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PAVED SURFACES. ROADS ADJACENT TO A CONSTRUCTION SITE SHALL BE LEFT CLEAN AT THE END OF EACH DAY.
  - 50 FEET MINIMUM WHERE THE SOILS ARE SANDS OR GRAVELS OR 100 FEET MINIMUM WHERE SOILS ARE CLAYS OR SILTS, EXPECT WHERE THE TRAVELED LENGTH IS LESS THAN 50 OR 100 FEET RESPECTIVELY.

**TEMPORARY CONSTRUCTION EXIT**

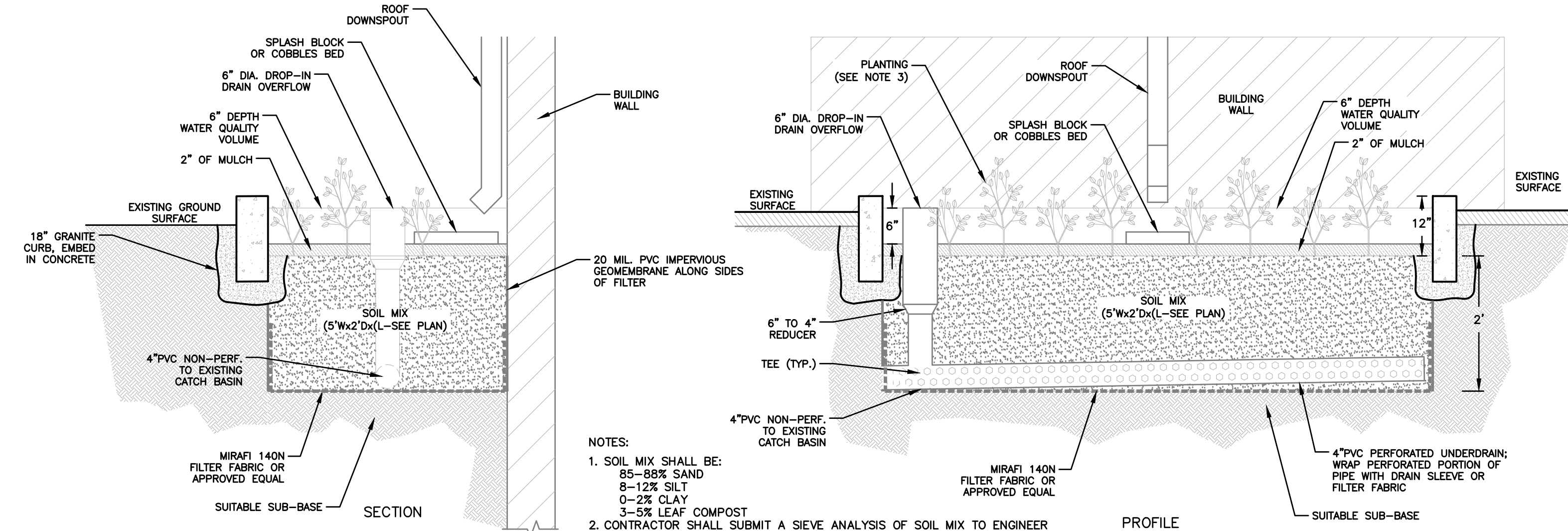
NTS wood\_9.16



- NOTES:**
- INSTALL SILT SACK IN ALL CATCH BASINS WHERE INDICATED ON THE PLAN BEFORE COMMENCING WORK.
  - GRATE TO BE PLACED OVER SILT SACK.
  - SILT SACK SHALL BE INSPECTED PERIODICALLY AND AFTER ALL STORM EVENTS AND CLEANING OR REPLACEMENT SHALL BE PERFORMED PROMPTLY AS NEEDED.
  - MAINTAIN UNTIL UP-GRADE AREAS HAVE BEEN PERMANENTLY STABILIZED.

**SILT SACK SEDIMENT TRAP**

NTS wood\_9.10



**FOUNDATION PLANTER (ADD ALT 4)**

NTS wood\_d.mdf

- NOTES:**
- SOIL MIX SHALL BE:  
85-88% SAND  
8-12% SILT  
0-2% CLAY  
3-5% LEAF COMPOST
  - CONTRACTOR SHALL SUBMIT A SIEVE ANALYSIS OF SOIL MIX TO ENGINEER FOR APPROVAL PRIOR TO CONSTRUCTION.
  - LANDSCAPE PLANTINGS PER RISDISM GUIDANCE (APPENDIX B).

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SEAL:  
C N BEAULIEU-SHHA  
No. 5701  
REGISTERED  
PROFESSIONAL ENGINEER  
(CIVIL)  
12/17/2021

REV	DATE	DESCRIPTION

CLIENT:  
**PROVIDENCE PARKS DEPARTMENT**  
DUALMILE BATHHOUSE, MAPLE AVE.  
PROVIDENCE, RI 02905

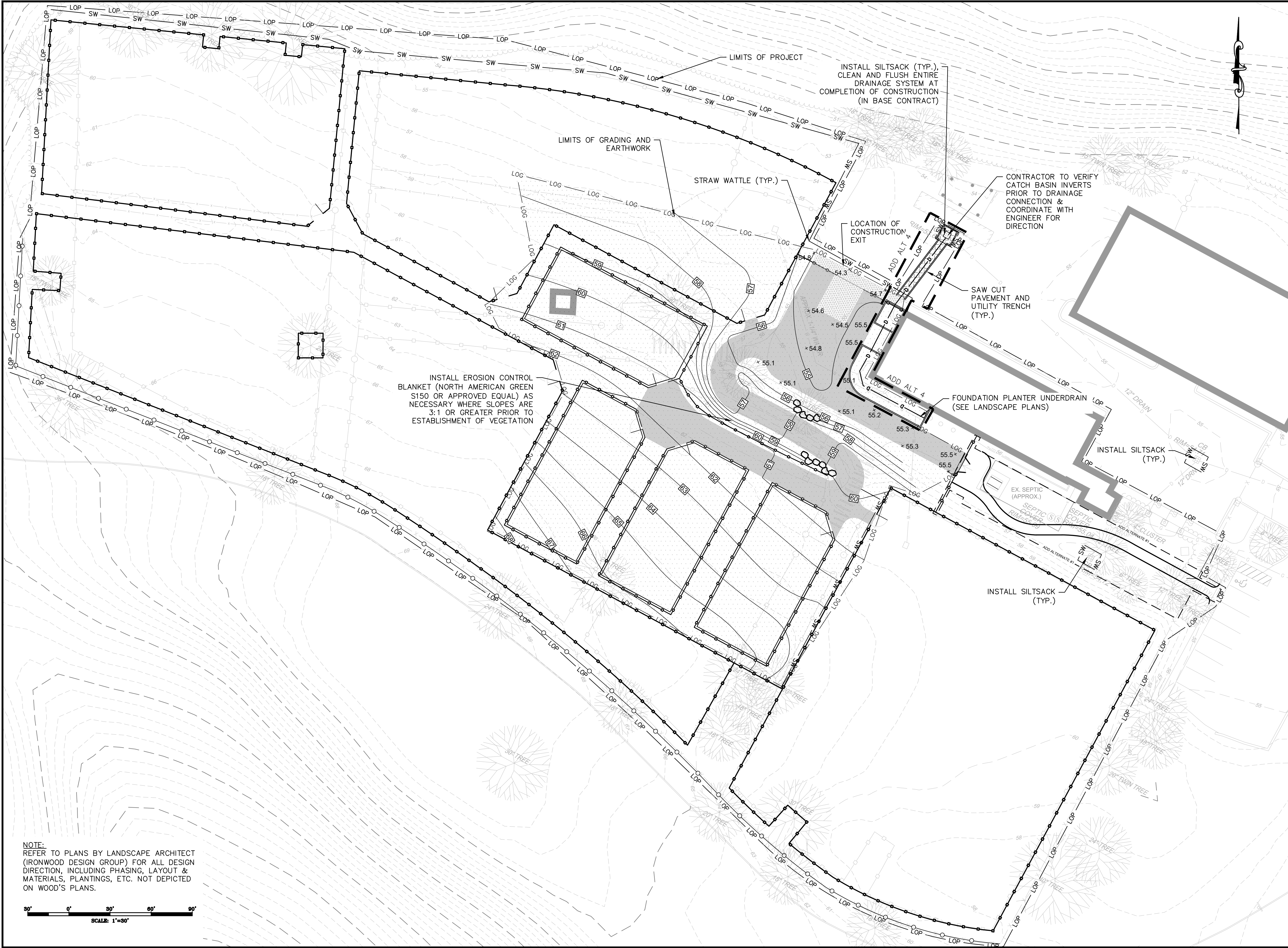
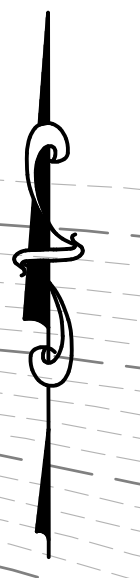
PROJECT:  
**ROGER WILLIAMS PARK MOUNTED COMMAND SITE IMPROVEMENTS**  
1005 ELMWOOD AVENUE,  
PROVIDENCE, RI 02905

TITLE:

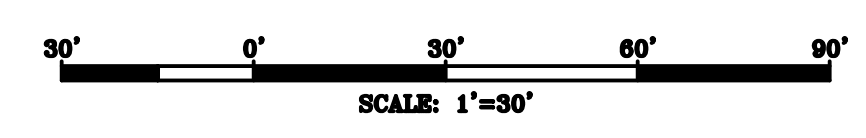
**NOTES & LEGEND**

ISSUED FOR:	80
DATE:	DECEMBER 17, 2021
SCALE:	N/A
DRAWN BY:	MPS
CHECKED BY:	CNB
PROJECT NO.:	3652210316

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NOTE:  
 REFER TO PLANS BY LANDSCAPE ARCHITECT  
 (IRONWOOD DESIGN GROUP) FOR ALL DESIGN  
 DIRECTION, INCLUDING PHASING, LAYOUT &  
 MATERIALS, PLANTINGS, ETC. NOT DEPICTED  
 ON WOOD'S PLANS.



SEAL:

C N BEAULIEU-SHEA  
 No. 5701  
 REGISTERED  
 PROFESSIONAL ENGINEER  
 (CIVIL)  
 12/17/2021

REV	DATE	DESCRIPTION

CLIENT:  
**PROVIDENCE PARKS DEPARTMENT**  
 MULTIPLE BOATHOUSE, MAPLE AVE.  
 PROVIDENCE, RI 02905

PROJECT:  
**ROGER WILLIAMS PARK MOUNTED COMMAND SITE IMPROVEMENTS**  
 1005 ELMWOOD AVENUE,  
 PROVIDENCE, RI 02905

TITLE:  
**SESC AND GRADING PLAN**

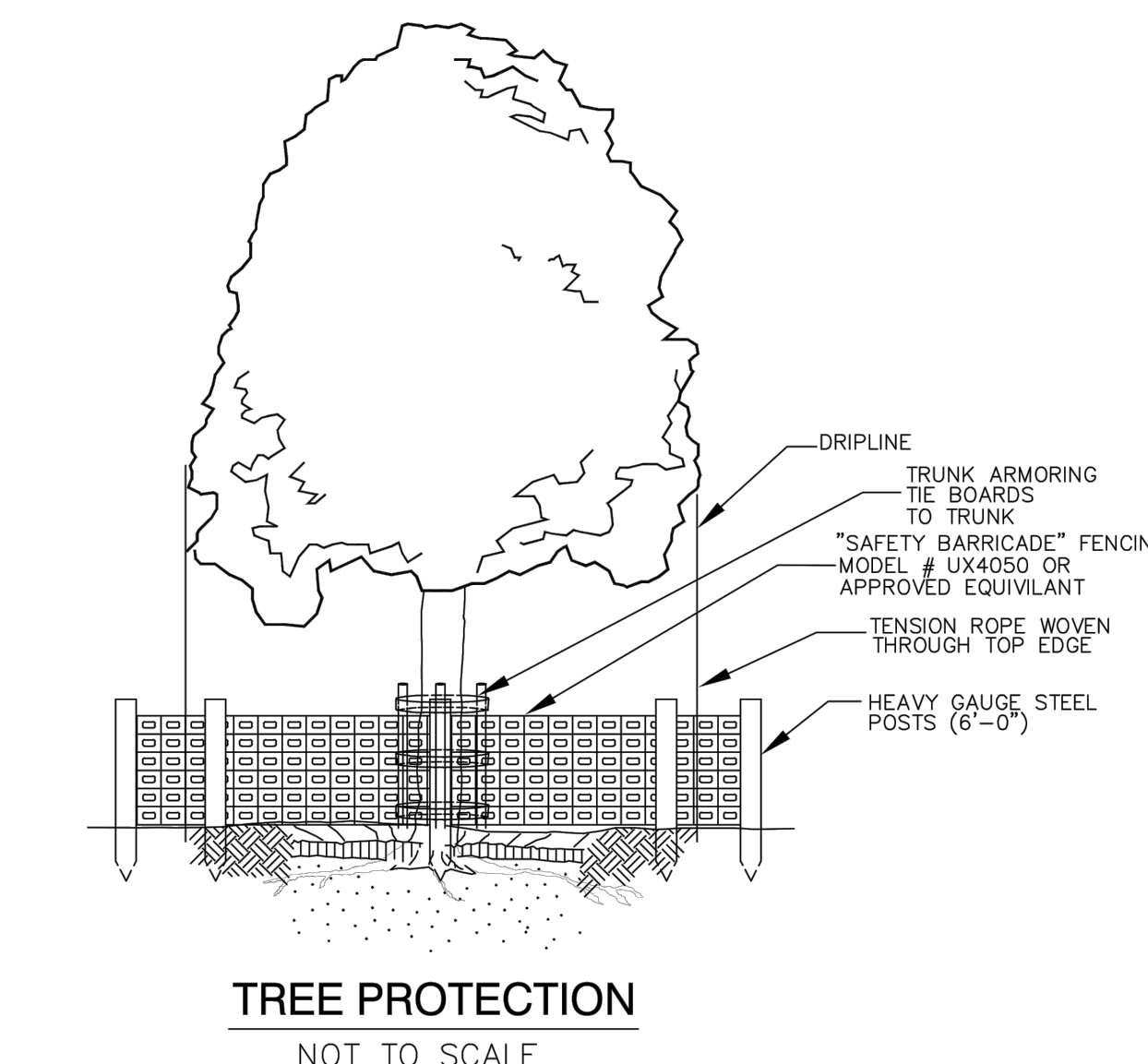
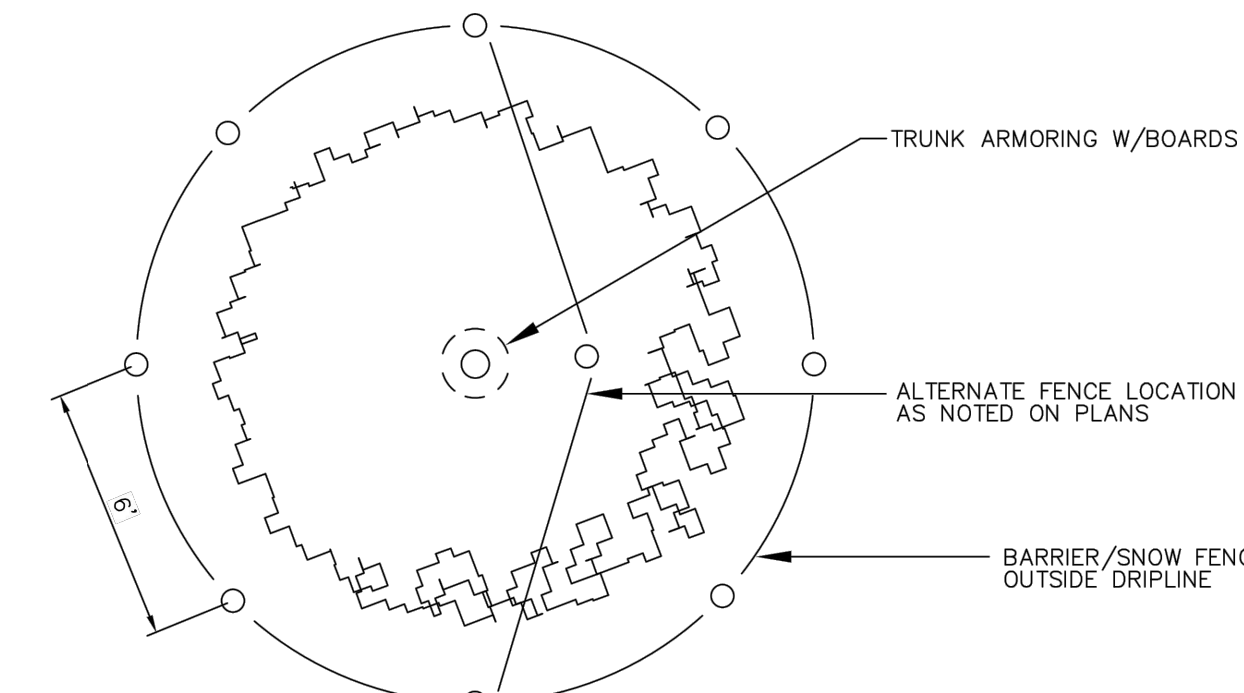
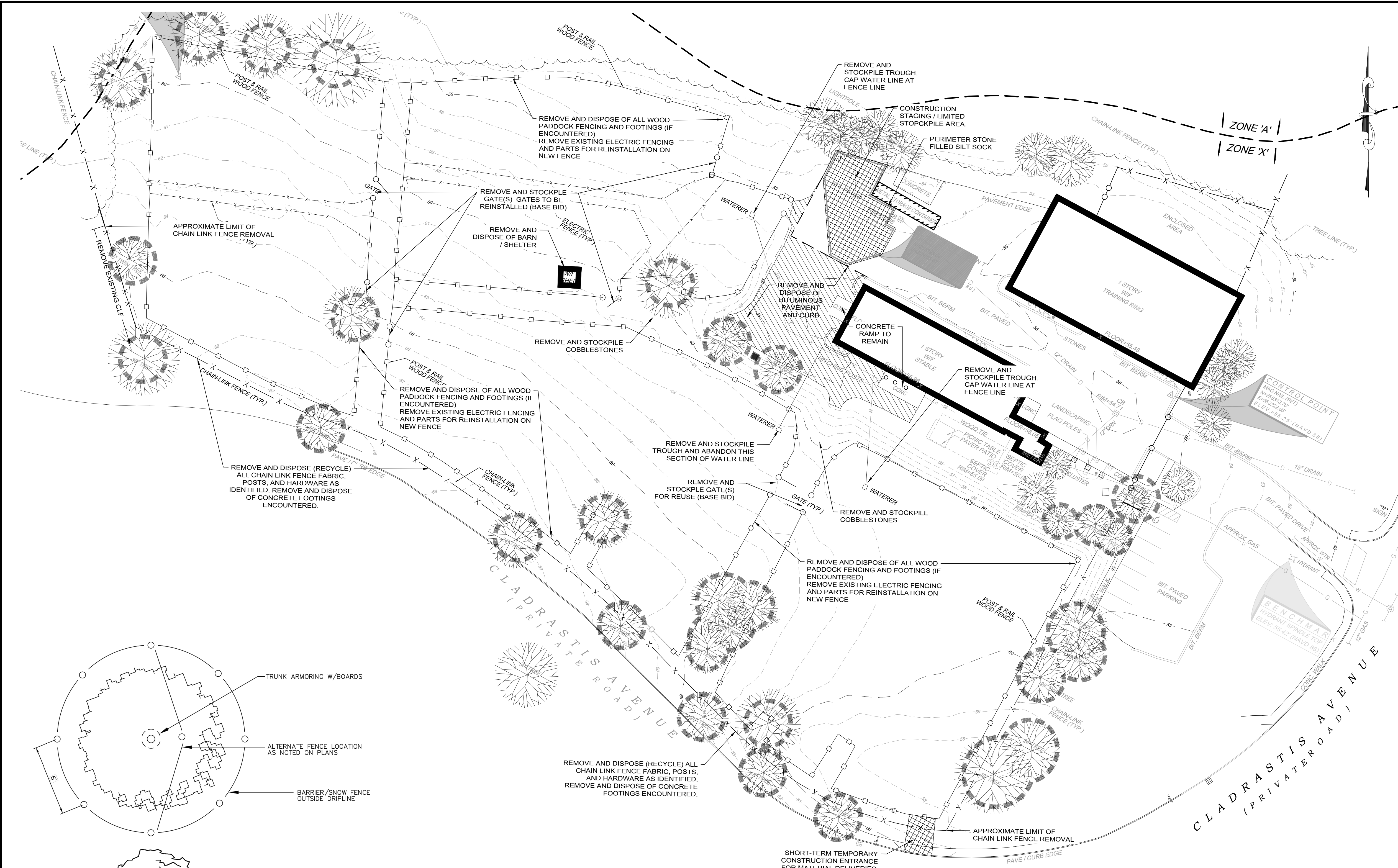
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SCALE:	1" = 30'
DRAWN BY:	MPS
CHECKED BY:	CNB
PROJECT NO:	3652210316

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### Legend

- TREE PROTECTION. SEE DETAIL AND NOTES
- REMOVE AND DISPOSE OF PAVEMENT
- REMOVE AND DISPOSE OF TREE
- CONTRACTOR STAGING AND ACCESS
- SAWCUT PAVEMENT

- GENERAL NOTES:**
- CONSTRUCTION ACTIVITIES SHALL NOT UNNECESSARILY IMPACT FACILITY OPERATIONS.
  - DAILY CONSTRUCTION COORDINATION WITH THE FACILITY COMMANDING OFFICER IS THE RESPONSIBILITY OF THE CONTRACTOR.
  - CONTACT DIGSAFE PRIOR TO BEGINNING WORK.
  - SEE CIVIL DRAWINGS FOR INFORMATION NOT DEPICTED ON THE LANDSCAPE DRAWINGS.
  - WITHIN THE LIMIT OF WORK INVASIVE PLANT SPECIES SHALL BE REMOVED FOLLOWING RHODE ISLAND DEM BEST MANAGEMENT PRACTICES.



**TREE PROTECTION**  
NOT TO SCALE

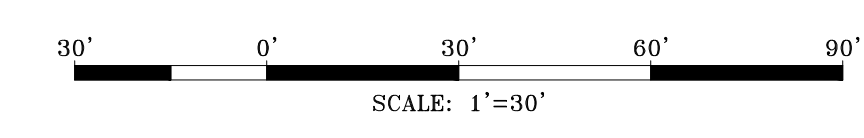
- SITE PREPARATION NOTES:**
- EVERY EFFORT SHALL BE TAKEN TO PRESERVE THE HEALTH OF EXISTING VEGETATION TO BE PROTECTED ON SITE. PRIOR TO BEGINNING ANY WORK THE CONTRACTOR ON SITE SHALL TAKE EFFECTIVE ACTION TO PROTECT ALL EXISTING LANDSCAPING INDICATED TO REMAIN.
  - ALL ELEMENTS IDENTIFIED TO BE PROTECTED SHOULD BE ENCIRCLED WITH AN ORANGE PLASTIC, 4' - HIGH BARRICADE FENCE THAT IS WELL-STAKED AND MAINTAINED FOR THE DURATION OF THE PROJECT.
  - PROTECT TREE TRUNKS FROM SCRAPING AND GOUGING BY VERTICALLY PLACING A SERIES OF EIGHT FOOT, TWO BY FOUR LUMBER AROUND THE TRUNK SPACED 8" APART (MAX) TO ENCIRCLE THE TRUNK. SECURE THE LUMBER WITH AT LEAST THREE 1 1/2" WEBBING RATCHET STRAPS.
  - THE ROOT ZONE OF TREES TO BE PROTECTED REQUIRES ALL EXCAVATION WORK BE DONE WITH AN AIR SPADE AND/OR BY HAND DIGGING. WHEN ROOTS ARE ENCOUNTERED THAT MUST BE CUT IN ORDER TO INSTALL UTILITIES, PAVEMENT, ETC. THEY ARE TO BE PRUNED USING A HAND SAW, LOPPERS, OR HAND PRUNERS. PRUNE AWAY JAGGED ROOTS BACK TO THE TRENCH WALL CLOSEST TO THE TREE.
    - KEEP EQUIPMENT AND EXCAVATED BACKFILL ON THE SIDE FURTHEST FROM THE TREE.
    - REPLACE THE BACKFILL ON THE SAME DAY. IF THIS IS NOT POSSIBLE, COVER THE EXPOSED ROOTS WITH WET BURLAP TO PREVENT THEM FROM DRYING OUT.
    - DO NOT ALLOW CHEMICALS OR FOREIGN DEBRIS TO BECOME MIXED WITH THE BACKFILL.
    - PACK THE BACKFILL TO THE SAME FIRMNESS AS THE SURROUNDING SOIL.
    - WATER THE BACKFILL IF THE OPERATION OCCURS DURING HOT, DRY WEATHER.
  - AVOID THE FOLLOWING ACTIVITIES WITHIN THE ROOT PROTECTION ZONE.
    - STORAGE OF CONSTRUCTION MATERIALS.
    - CONCRETE WASH-OUT OPERATIONS.
    - STOCKPILING OF DEMOLITION DEBRIS.
    - PARKING OF ANY VEHICLES.
    - STOCKPILING OF SOIL AND/OR MULCH.
  - DISPOSAL OF EXISTING VEGETATION MARKED AS INVASIVE SHALL BE CONSISTENT WITH STATE INVASIVE SPECIES BEST MANAGEMENT PRACTICES. THE TRUCK TO COLLECT CHIPPED MATERIALS SHALL BE EMPTY WHEN IT COMES TO SITE AND ONCE THE ALL THE INVASIVE WOODY PLANTS HAVE BEEN CHIPPED THE TRUCK SHALL DISPOSE OF CHIPS IN ACCORDANCE WITH STATE BEST MANAGEMENT PRACTICES.

## Tree Protection

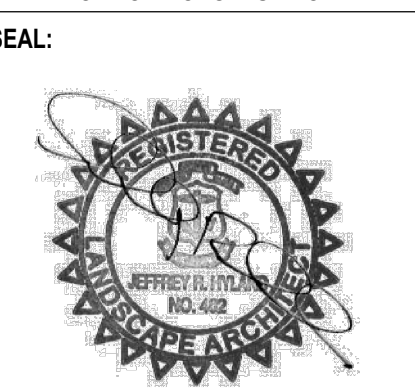
Not to Scale

1  
L1.0

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NOT FOR CONSTRUCTION



REV	DATE	DESCRIPTION

CLIENT:  
**PROVIDENCE PARKS DEPARTMENT**  
DALRYMPLE BOATHOUSE, MAPLE AVE,  
PROVIDENCE, RI 02905

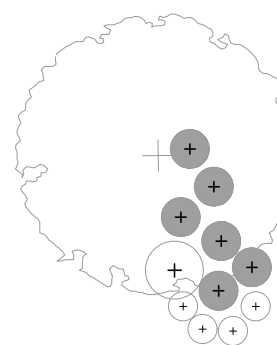

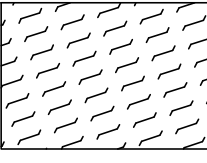
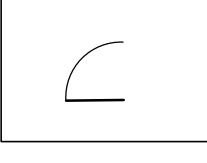
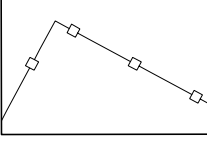
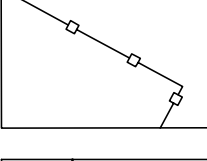
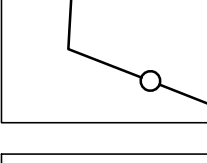
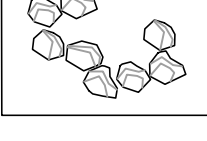
PROJECT:  
**ROGER WILLIAMS PARK MOUNTED COMMAND**  
1000 ELMWOOD AVENUE  
PROVIDENCE, RI 02905

TITLE:  
**SITE PREPARATION PLAN**

ISSUED FOR: CONTRACTOR BIDDING  
DATE: DECEMBER 17, 2021  
SCALE: 1"=30'-0"  
DRAWN BY: S.WRIGHT, K.OSGOOD, J.HYLAND  
CHECKED BY: J.HYLAND, D.JENSEN  
PROJECT NO: 3652219316

**L1.0**  
SHEET 1 OF 9

**Legend**

-  LANDSCAPE PLANTINGS, SEE L3.0-L3.1
-  STONEDUST SURFACE
-  PADDOCK SAND SURFACE
-  STEEL PIPE SWING GATE  
(REINSTALLED FROM STOCKPILE)  
ADD ALTERNATE #3, SEE 2/L5.2
-  3 RAIL PADDOCK FENCE
-  4 RAIL PADDOCK FENCE
-  PERIMETER SECURITY FENCE
-  WEATHERED BOULDER

- GENERAL NOTES:**
- CONSTRUCTION ACTIVITIES SHALL NOT UNNECESSARILY IMPACT FACILITY OPERATIONS.
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  - SEE SHEET L5.0-5.2 FOR LANDSCAPE DETAILS.
  - AN ELECTRONIC FILE OF THIS DRAWING WILL BE PROVIDED FOR CONTRACTOR LAYOUT PURPOSES.

NOT FOR CONSTRUCTION



REV	DATE	DESCRIPTION

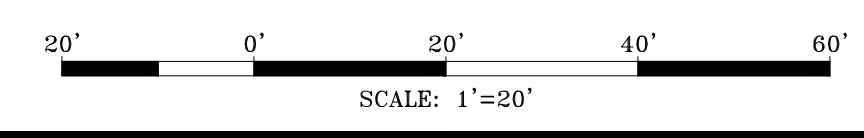
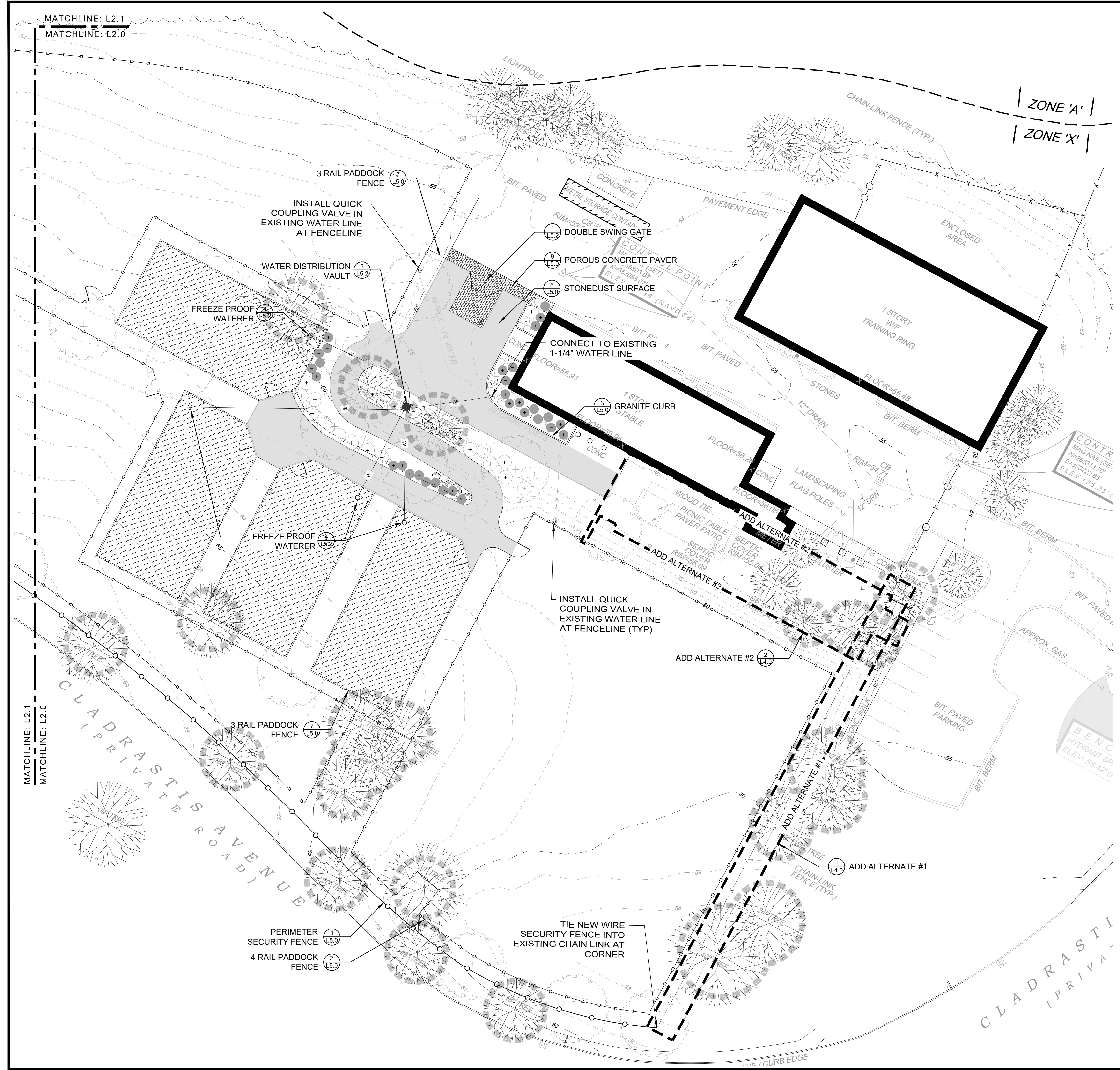
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 PROVIDENCE, RI 02905

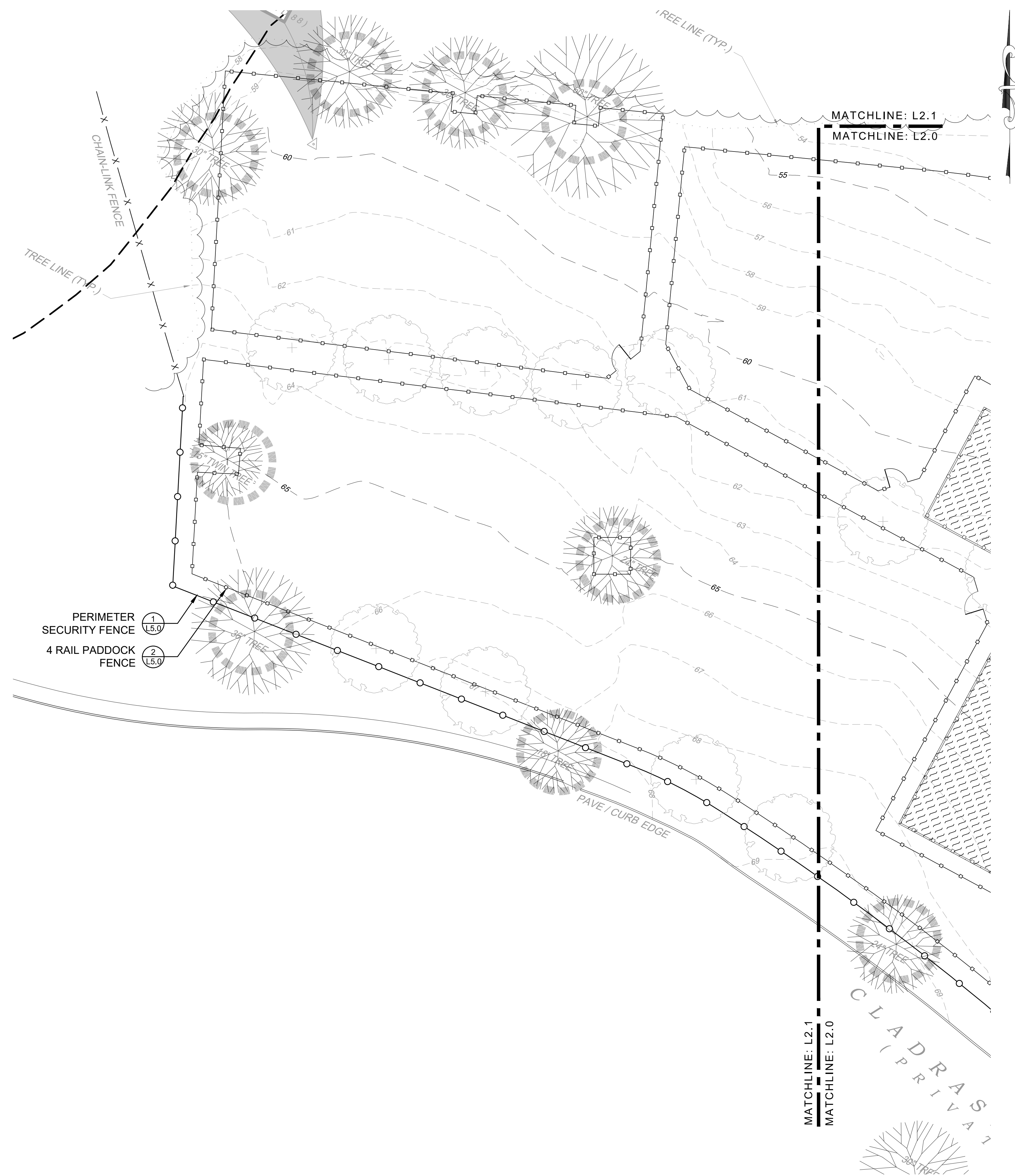
PROJECT:  
**ROGER WILLIAMS PARK MOUNTED COMMAND**  
 1000 ELMWOOD AVENUE  
 PROVIDENCE, RI 02905

TITLE:  
**LAYOUT AND MATERIALS PLAN**

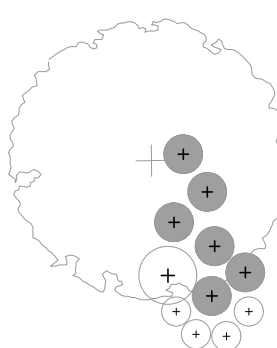

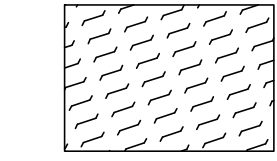
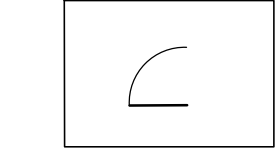
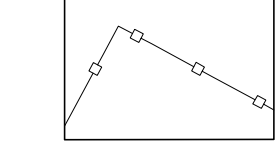
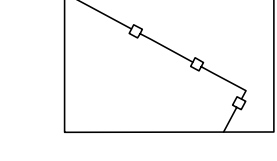
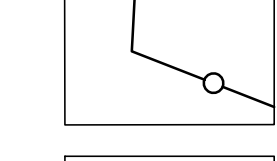
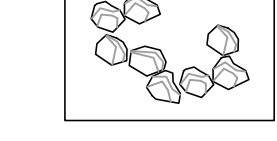
ISSUED FOR: CONTRACTOR BIDDING  
 DATE: DECEMBER 17, 2021  
 SCALE: 1"=20'-0"  
 DRAWN BY: S.WRIGHT, K.OSGOOD, J.HYLAND  
 CHECKED BY: J.HYLAND, D.JENSEN  
 PROJECT NO: 365210316

**L2.0**  
 SHEET 2 OF 9





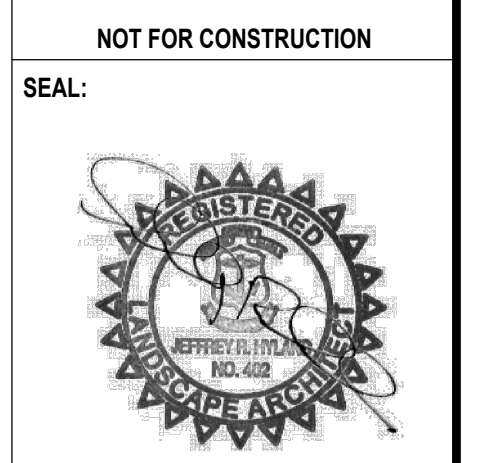
### Legend

-  LANDSCAPE PLANTINGS, SEE L3.0-L3.1
-  STONEDUST SURFACE
-  Paddock SAND SURFACE
-  STEEL PIPE SWING GATE  
(REINSTALLED FROM STOCKPILE)  
ADD ALTERNATE #3, SEE 2/L5.2
-  3 RAIL Paddock FENCE
-  4 RAIL Paddock FENCE
-  PERIMETER SECURITY FENCE
-  WEATHERED BOULDER

- GENERAL NOTES:**
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  - CONTACT DIGSAFE PRIOR TO BEGINNING WORK.
  - SEE CIVIL DRAWINGS FOR INFORMATION NOT DEPICTED ON THE LANDSCAPE DRAWINGS.
  - WITHIN THE LIMIT OF WORK INVASIVE PLANT SPECIES SHALL BE REMOVED FOLLOWING RHODE ISLAND DEM BEST MANAGEMENT PRACTICES.
  - SEE SHEET L5.0-5.2 FOR LANDSCAPE DETAILS.
  - AN ELECTRONIC FILE OF THIS DRAWING WILL BE PROVIDED FOR CONTRACTOR LAYOUT PURPOSES.

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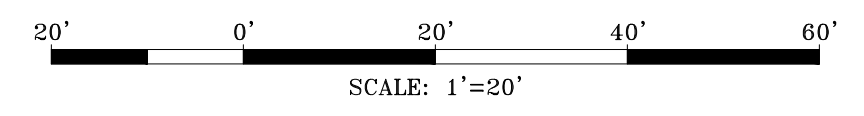
REV	DATE	DESCRIPTION

CLIENT:  
**PROVIDENCE PARKS DEPARTMENT**  
DALRYMPLE BOATHOUSE, MAPLE AVE,  
PROVIDENCE, RI 02905

PROJECT:  
**ROGER WILLIAMS PARK MOUNTED COMMAND**  
1000 ELMWOOD AVENUE  
PROVIDENCE, RI 02905

TITLE:  
**LAYOUT AND MATERIALS PLAN**

ISSUED FOR: CONTRACTOR BIDDING  
DATE: DECEMBER 17, 2021  
SCALE: 1"=20'-0"  
DRAWN BY: S.WRIGHT, K.OSGOOD, J.HYLAND  
CHECKED BY: J.HYLAND, D.JENSEN  
PROJECT NO: 3552210316



**L2.1**  
SHEET 3 OF 9



**PLANTING NOTES:**

- PLEASE REVIEW AND BECOME FULLY ACQUAINTED WITH THESE NOTES, CONSTRUCTION DETAILS, AND THE PLANTING PLAN.
- THE CONTRACTOR SHALL LOCATE AND VERIFY ALL EXISTING AND NEW UTILITY LINE LOCATIONS PRIOR TO PLANTING, AND SHALL REPORT ANY CONFLICT TO THE LANDSCAPE ARCHITECT OR OWNER'S REPRESENTATIVE.
- ALL PLANT MATERIAL SHALL CONFORM TO THE GUIDELINES ESTABLISHED BY THE "AMERICAN STANDARD FOR NURSERY STOCK" PUBLISHED BY THE AMERICAN SOCIETY OF NURSERY MEN, INC. LATEST EDITION.
- THE CONTRACTOR SHALL STAKE THE LOCATION OF ALL THE PROPOSED PLANT MATERIAL FOR APPROVAL BY THE LANDSCAPE ARCHITECT PRIOR TO PLANTING. NO PLANTS SHALL BE PLANTED BEFORE THE ACCEPTANCE OF ROUGH GRADING. THE BASE OF THE FLARE OF THE TREE TRUNK SHALL BE EXPOSED, IF NECESSARY, AND PLACED 2" ABOVE FINISH GRADE.
- ANY PROPOSED SUBSTITUTIONS OF PLANT SPECIES WILL BE PLANTS WITH EQUIVALENT OVERALL FORM, HEIGHT, BRANCHING HABIT, FLOWER COLOR, LEAF COLOR, FRUIT COLOR, AND TIME OF BLOOM, AS APPROVED BY THE LANDSCAPE ARCHITECT.
- EXISTING LOAM: STOCKPILING OF EXISTING LOAM IS SPECIFIED ELSEWHERE. REMOVE CLAY LUMPS, BRUSH, LITTER, ROOTS, STONES 1" AND LARGER, AND OTHER FOREIGN MATERIALS.
- ADDITIONAL LOAM: IF STOCKPILED LOAM QUANTITY IS INSUFFICIENT, PROVIDE LOAM, WHICH IS A "FINE SANDY LOAM" OR A "SANDY LOAM" DETERMINED BY MECHANICAL ANALYSIS AND BASED ON THE "U.S.D.A. CLASSIFICATION SYSTEM." IT SHALL BE OF UNIFORM COMPOSITION, WITHOUT ADMIXTURE OF SUBSOIL. LOAM SHALL HAVE AN ACIDITY RANGE OF PH 5.8 TO PH 7.0 AND SHALL CONTAIN NOT LESS THAN 4% NOR MORE THAN 10% ORGANIC MATTER AS DETERMINED BY THE LOSS OF IGNITION OF OVEN-DRIED SAMPLES. PROVIDE LOAM WHICH IS FERTILE, FRIABLE, NATURAL LOAM FREE FROM SUBSOIL, CLAY LUMPS, BRUSH, LITTER, ROOTS, STONES 1" AND LARGER, AND ANY FOREIGN MATERIALS.
- PINE MULCH: PROVIDE PARTIALLY DECOMPOSED MINIMUM SIX MONTH AGED FINELY SHREDDED PINE BARK MULCH WITH DARK BROWN COLOR AND FREE OF WEEDS, EXCESSIVE FINE PARTICLES, STRINGY MATERIAL, AND CHUNKS OF WOOD THICKER THAN 1/2". PROVIDE BARK MULCH APPROVED BY THE LANDSCAPE ARCHITECT. APPLY TACKIFIED MULCH TO ALL SEEDED AREAS.
- ALL PLANTS SHALL BE PLUM VERTICALLY AFTER SETTLING.
- ALL PLANT MATERIAL SHALL BE MULCHED AFTER PLANTING.
- LESS OTHERWISE INDICATED, DICTATED BY CONDITIONS AT THE SITE, AND DIRECTED BY LANDSCAPE ARCHITECT OR OWNER'S REPRESENTATIVE, BACKFILL SHALL CONSIST OF UNAMENDED SOIL EXCAVATED FROM THE PLANTING PIT, BACKFILL IN 3-4" LAYERS AND CONSOLIDATE EACH LAYER WITH WATER TO ELIMINATE VOIDS AND ARE POCKETS BEFORE PLACING SUBSEQUENT LAYERS. CONTINUE UNTIL BACKFILL HAS REACHED FINISHED GRADE. WATER THOROUGHLY WHEN EXCAVATION IS BACK FILLED AND CONTINUE WATERING UNTIL SATURATED. IF EXISTING UNAMENDED SOIL IS NOT ACCEPTED, PROVIDE PLANTING SOIL MIXTURE CONSISTING OF 7 PARTS LOAM AND 1 PART HUMUS. MIX QUANTITY OF FERTILIZER AND SOIL AMENDMENTS AS RECOMMENDED BY SOIL ANALYSIS AND APPROVED BY THE LANDSCAPE ARCHITECT.
- WATERING: FLOOD ALL PLANTS WITH WATER TWICE WITHIN THE FIRST 24 HOURS AFTER PLANTING.
- LOAMING: LOOSEN SUBGRADE AND EXISTING LOAM AREAS BY DISCING OR ROTOTILLING TO MINIMUM DEPTH OF 6". REMOVE STONES GREATER THAN 1" AND ALL RUBBISH AND DEBRIS. PLACE LOAM IN TWO EQUAL LIFTS MIXING FIRST APPLICATION INTO LOOSENED SUBGRADE THEN PLACE SECOND LIFT TO BRING LOAM AFTER SETTLING AND COMPACTING TO THE LINES AND GRADES SHOWN IN THE CONTRACT DOCUMENTS, 6" DEEP MINIMUM. DO NOT HANDLE LOAM OR SUBSOIL IF IT IS WET OR FROZEN.
- AFTER LOAM HAS BEEN SPREAD, IT SHALL BE CAREFULLY PREPARED BY SCARIFYING AND HAND RAKING. ALL LARGE STIFF CLOUDS, LUMPS, BRUSH, ROOTS, STUMPS, LITTER AND FOREIGN MATTER, AND STONES OVER 1" INCH IN DIAMETER SHALL BE REMOVED FROM THE LOAM. LOAM SHALL ALSO BE FREE OF SMALLER STONES IN EXCESSIVE QUANTITIES AS DETERMINED BY THE LANDSCAPE ARCHITECT.
- FINE GRADING: SET SUFFICIENT GRADE STAKES FOR CHECKING THE FINISHED GRADES. STAKES MUST BE SET AT THE BOTTOM AND TOP OF SLOPES. GRADES SHALL BE ESTABLISHED THAT ARE ACCURATE TO 1/10TH OF A FOOT EITHER WAY. CONNECT CONTOURS AND SPOT ELEVATIONS WITH AN EVEN SLOPE. ALL GRADING WILL INSURE DRAINAGE AWAY FROM STRUCTURES.
- FINE GRADE LAWN AREAS TO SMOOTH, FREE DRAINING, EVEN SURFACES WITH FINE TEXTURE. ROLL, RAKE AND DRAW LAWN AREAS TO FLATTEN RIDGES AND FILL DEPRESSIONS, EXCEPT AT SELECT AREAS SHOWN ON THE DRAWINGS. CONTROL MOISTURE CONTENT TO MAINTAIN OPTIMUM CONDITIONS, BUT DO NOT CREATE A MUDDY CONDITION.
- ROLLING - TYPICAL: ROLL THE ENTIRE AREA WITH A HAND ROLLER WEIGHTING NOT MORE THAN 100 POUNDS. DURING THE ROLLING, ALL DEPRESSIONS CAUSED BY SETTLEMENT OF ROLLING SHALL BE FILLED WITH ADDITIONAL LOAM AND THE SURFACE SHALL BE REGRADED AND ROLLED UNTIL PRESENTING A SMOOTH AND EVEN FINISH TO THE REQUIRED GRADE OR TO THE SHAPES AND CONFIGURATIONS AS SHOWN ON THE DETAILS.
- THE SILT FENCE SHALL BE LIMIT OF SEEDING UNLESS OTHERWISE INDICATED ON THE DRAWINGS. ALL AREAS DISTURBED OUTSIDE THE LIMIT OF WORK SHALL BE SEEDED AS INDICATED ON THE DRAWINGS.
- IN CASE OF DISCREPANCIES BETWEEN THE QUANTITIES SHOWN ON THE PLANT SCHEDULE AND THE QUANTITIES SHOWN ON THE PLANTING PLAN, THE QUANTITIES ON THE PLANTING PLAN SHALL BE PROVIDED BY THE CONTRACTOR.

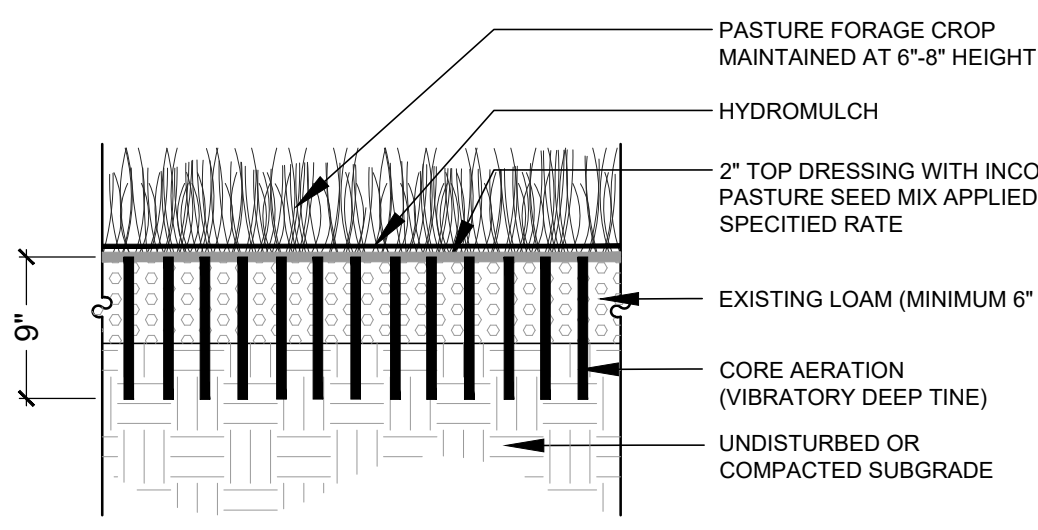


**Legend**

- DECIDUOUS SHADE TREE
- SHRUB PLANTING
- PASTURE REHABILITATION (DEEP TINE VIBRATORY AERATION, COMPOST TOP-DRESSING, SEEDING, AND HYDROMULCHING)
- LOAM AND LAWN SEEDING
- LOAM AND MEADOW SEEDING
- LOAM AND PASTURE SEEDING

**GENERAL NOTES:**

- CONSTRUCTION ACTIVITIES SHALL NOT UNNESECARILY IMPACT FACILITY OPERATIONS.
- DAILY CONSTRUCTION COORDINATION WITH THE FACILITY COMMANDING OFFICER IS THE RESPONSIBILITY OF THE CONTRACTOR.
- CONTACT DIGSAFE PRIOR TO BEGINNING WORK.
- SEE CIVIL DRAWINGS FOR INFORMATION NOT DEPICTED ON THE LANDSCAPE DRAWINGS.
- WITHIN THE LIMIT OF WORK INVASIVE PLANT SPECIES SHALL BE REMOVED FOLLOWING RHODE ISLAND BEST MANAGEMENT PRACTICES.
- SEE SHEET L5.0-5.2 FOR LANDSCAPE DETAILS.
- A REDUCED IMPACT PASTURE RENOVATION PROCESS SHALL BE USED IN AREAS AS DESIGNATED ON L3.0 AND L 3.1. TO QUALIFY FOR RENOVATION EXISTING VEGETATION MUST COVER APPROXIMATELY 50% OF THE SURFACE AND EXISTING LOAM DEPTH MUST AVERAGE 6". THE CONTRACTOR IS RESPONSIBLE FOR CONFIRMING LOAM DEPTH, HAND DUG TEST PITS SHALL BE TAKEN AT SIX (6) LOCATIONS EQUALLY DISTRIBUTED WITHING THE LIMIT OF WORK. THE MATERIAL EXCAVATED CAN BE USED BY THE CONTRACTOR FOR ANALYSIS PURPOSES. PASTURE RENOVATION AREAS THAT MEET THE CRITERIA ABOVE SHALL RECEIVE THE FOLLOWING TREATMENT:
  - HAND DIG TEST PITS AT SIX (6) LOCATIONS EQUALLY DISTRIBUTED WITHING THE LIMIT OF WORK. EXCAVATED MATERIAL CAN BE USED TO OBTAIN SOIL ANALYSIS.
  - DEEP TINE AERATE TO A MINIMUM OF 9" USING EQUIPMENT WITH VIBRATORY CAPABILITIES.
  - AMEND SOIL AS DETERMINED BY SOIL ANALYSIS AND AS DIRECTED BY THE LANDSCAPE ARCHITECT.
  - APPLY A MINIMUM 2" TOP DRESSING OF AN APPROVED COMPOST MIX SPECIFICALLY CREATED FOR TOP DRESSING TURF.
  - SEED AT THE SPECIFIED RATE (SEE 2/L5.1)
  - LIGHTLY RAKE TO MAXIMIZE SEED TO SOIL CONTACT
  - LIGHTLY HYDROMULCH SEEDED AREA
  - MONITOR, WATER, AND MAINTAIN FOR NO LESS THAN 90-DAYS.
  - REFER TO 1/L3.1
- A TYPICAL SEED BED PREPARATION PROCESS SHALL BE USED IN PASTURE AREAS AS DESIGNATED ON L3.0 AND L 3.1. DUE TO THE LACK OF EXISTING SURFACE VEGETATION AND UNEVENNESS IN THIS DESIGNATED AREA, THE FOLLOWING TREATMENT SHALL OCCURE:
  - HAND DIG TEST PITS AT FOUR (4) LOCATIONS EQUALLY DISTRIBUTED WITHING THE LIMIT OF WORK. EXCAVATED MATERIAL CAN BE USED TO OBTAIN SOIL ANALYSIS.
  - AMEND SOIL AS DETERMINED BY SOIL ANALYSIS AND AS DIRECTED BY THE LANDSCAPE ARCHITECT.
  - PLACE LOAM FROM AMENDED STOCKPILE AS NEEDED TO ACHIEVE A UNIFORM 6" LOAM DEPTH.
  - POWER RAKE TO FINISH GRADE, LEVEL, AND PREPARE SEED BED.
  - SEED AT THE SPECIFIED RATE (REFER TO 2/L5.1)
  - LIGHTLY RAKE TO ENSURE MAXIMUM SEED TO SOIL CONTACT
  - HYDROMULCH SEEDED AREA
  - MONITOR, WATER, AND MAINTAIN FOR NO LESS THAN 90-DAYS.
  - REFER TO DETAIL 2/L5.1.
- PLANT LOCATIONS SHOWN ON THE PLANTING PLAN ARE SUBJECT TO FIELD MODIFICATION TO ACCOMMODATE EXISTING CONDITIONS. FIELD ADJUSTMENTS SHALL BE COORDINATED WITH THE LANDSCAPE ARCHITECT.
- AN ELECTRONIC FILE OF THIS DRAWING WILL BE PROVIDED FOR CONTRACTOR LAYOUT PURPOSES.

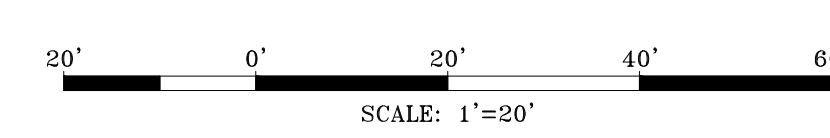


Pasture Seed Mix		
Scientific Name	Common Name	Percent by Weight
<i>Bromopsis biebersteinii</i>	Meadow or Hybrid Bromegrass	25%
<i>Dactylis glomerata</i>	Early Orchardgrass	25%
<i>Lolium perenne</i>	Tetraploid Per. Rye	20%
<i>Phleum pratense</i>	Improved Timoth	15%
<i>Poa pratensis</i>	Forage Bluegrass	10%
<i>Trifolium repens</i>	Ladino Clover	5%

Apply at a rate of 10lbs/ac  
 The above represents a blend NE Premium Horse Pasture Mix and NE Persistent Horse Pasture Mix by Allen's Seed, Exeter, RI

**Pasture Renovation**  
 Not to Scale

©IRONWOOD 2021 **L3.1**



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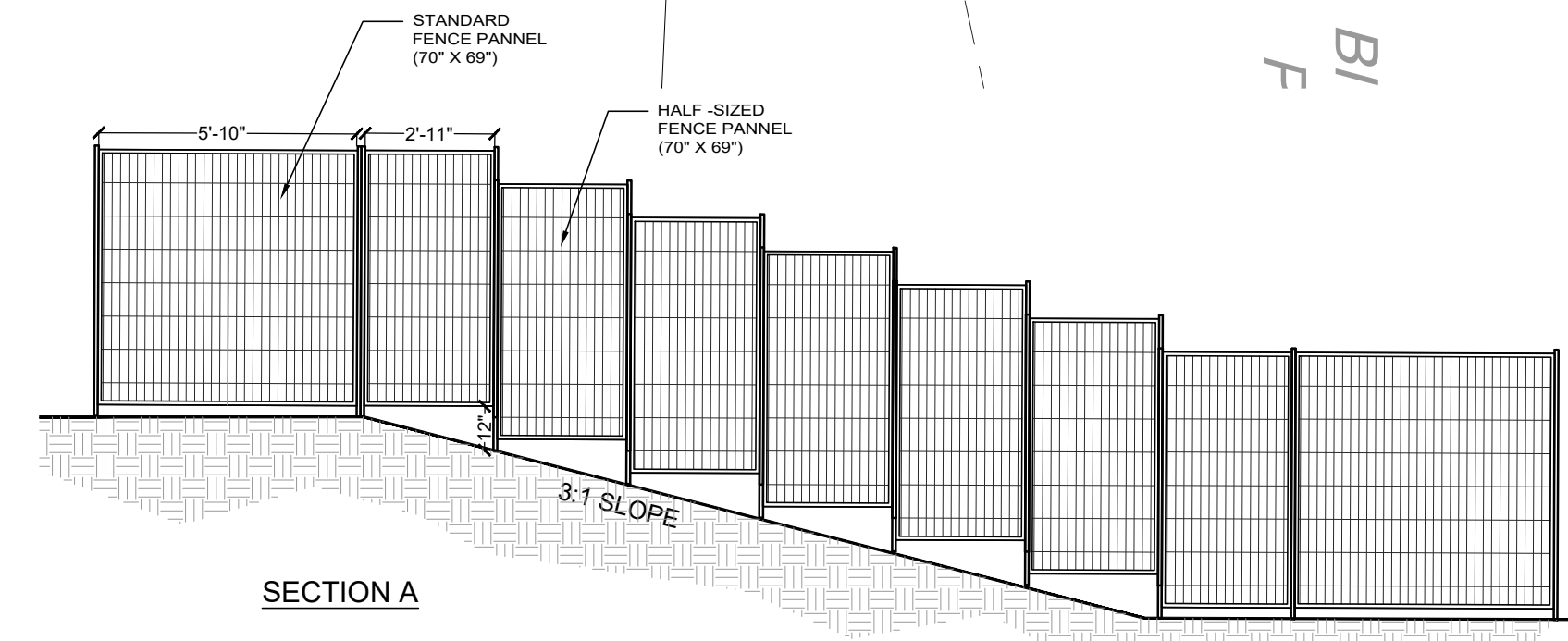
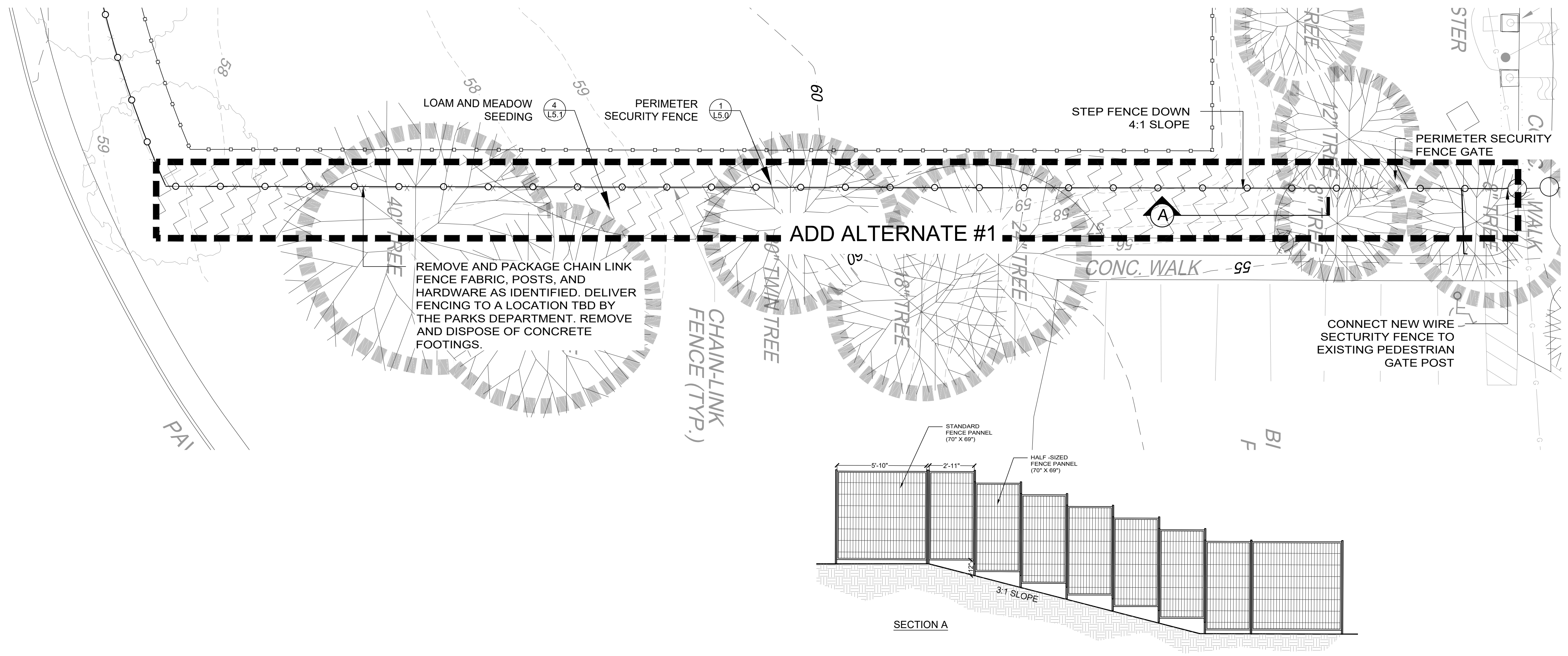
PROJECT:  
**ROGER WILLIAMS PARK MOUNTED COMMAND**  
 1000 ELMWOOD AVENUE  
 PROVIDENCE, RI 02905

TITLE:  
**PLANTING PLAN**

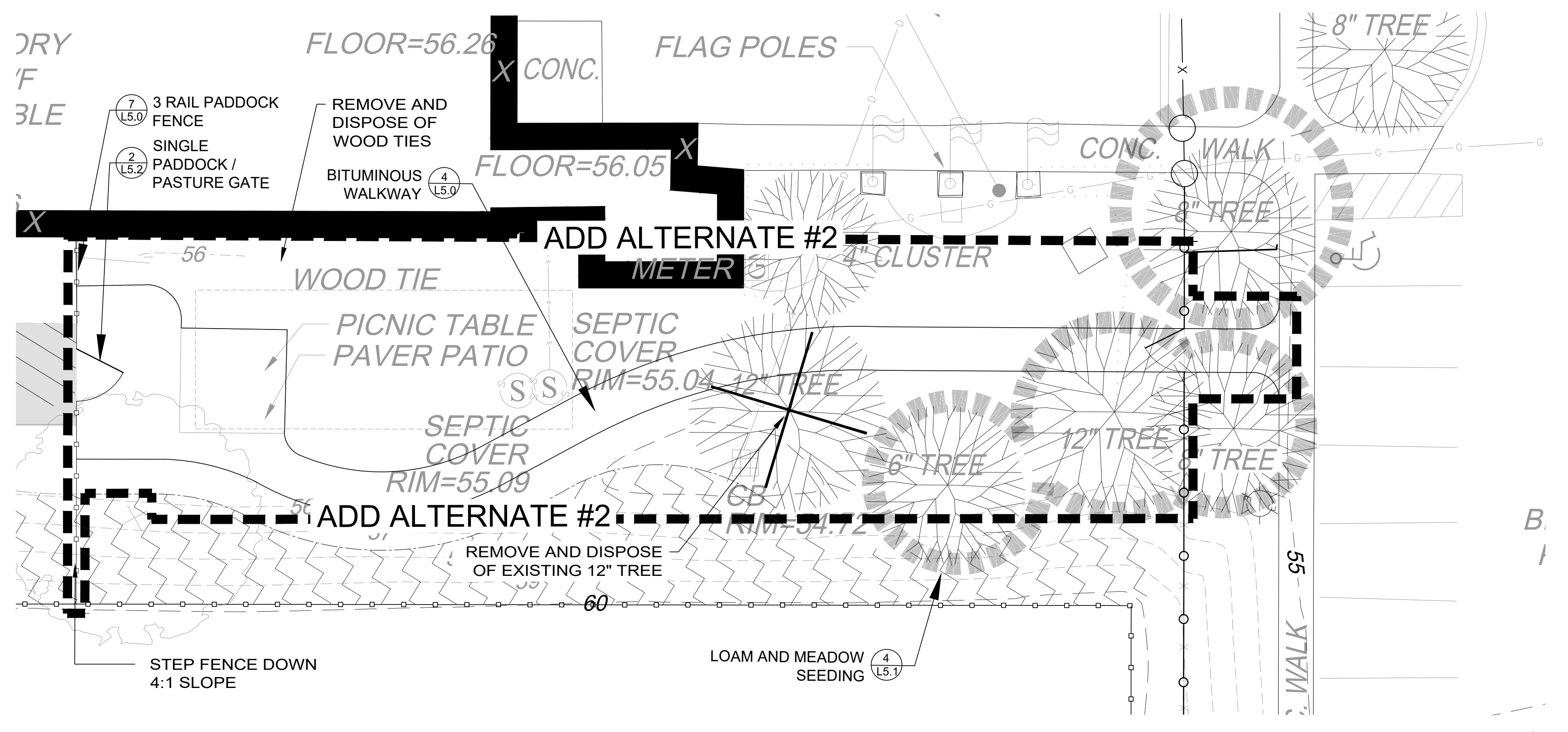
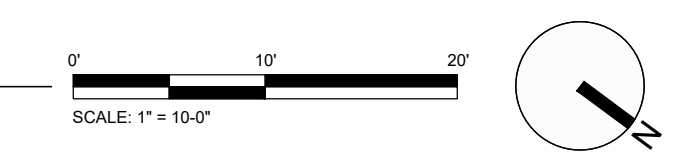
ISSUED FOR: CONTRACTOR BIDDING  
 DATE: DECEMBER 17, 2021  
 SCALE: 1"=20'-0"  
 DRAWN BY: S.WRIGHT, K.OSGOOD, J.HYLAND  
 CHECKED BY: J.HYLAND, D.JENSEN  
 PROJECT NO: 355210316

**L3.1**  
 SHEET 5 OF 9

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1 | ADD ALTERNATE #1  
1"=10'-0"



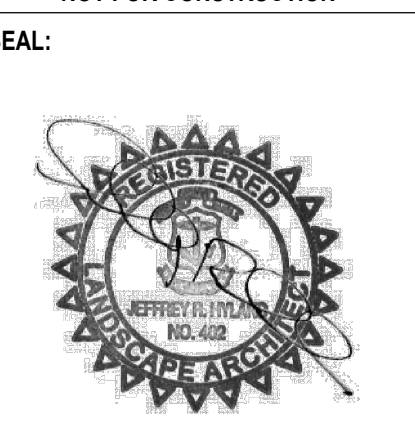
2 | ADD ALTERNATE #2  
1"=10'-0"



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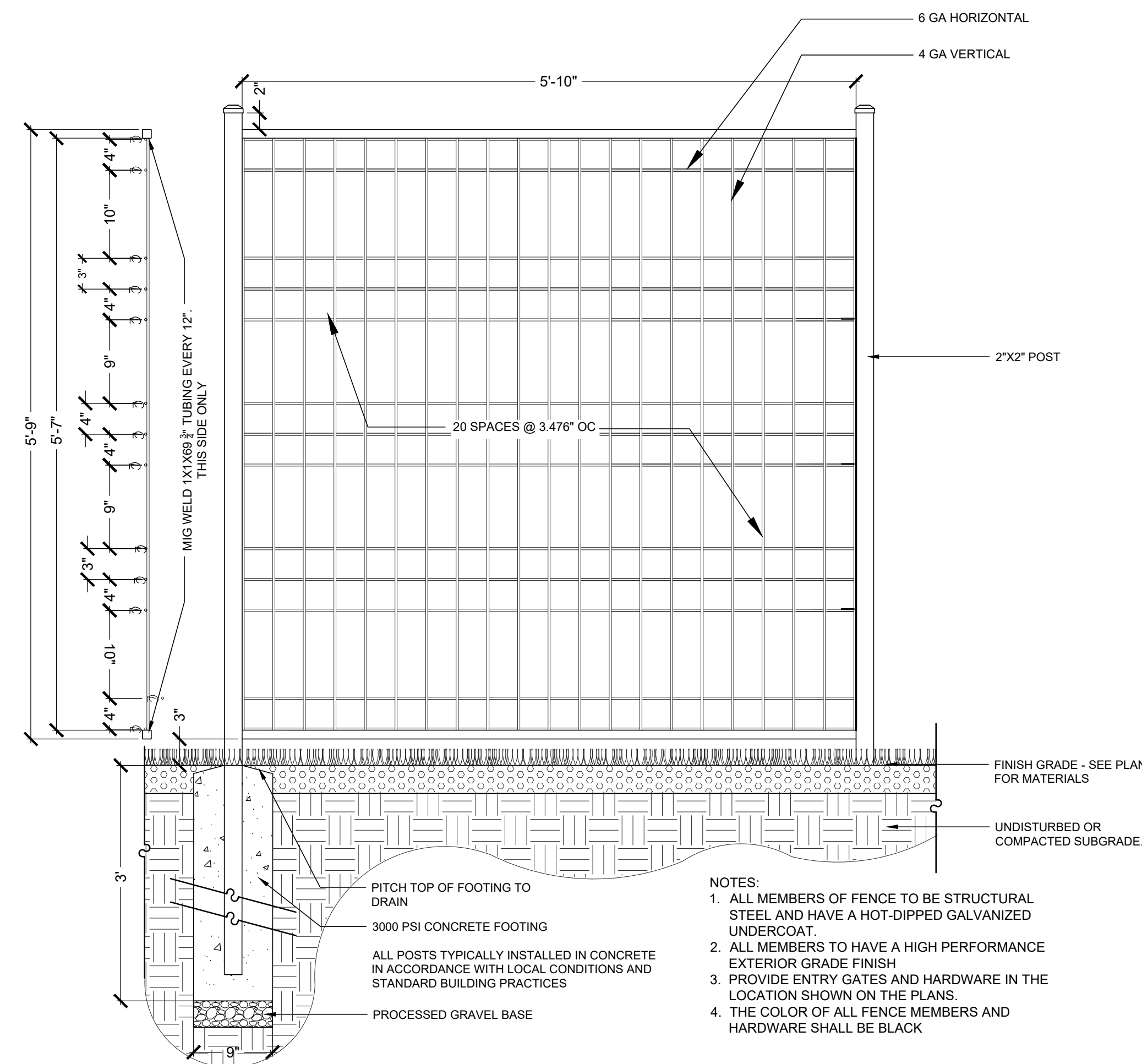
PROJECT:  
**ROGER WILLIAMS PARK MOUNTED COMMAND**  
1000 ELMWOOD AVENUE  
PROVIDENCE, RI 02905

TITLE:  
**PLAN ENLARGEMENTS**

ISSUED FOR: CONTRACTOR BIDDING  
DATE: DECEMBER 17, 2021  
SCALE: AS NOTED  
DRAWN BY: S.WRIGHT, K.OSGOOD, J.HYLAND  
CHECKED BY: J.HYLAND, D.JENSEN  
PROJECT NO: 3552210316

**L4.0**  
SHEET 6 OF 9

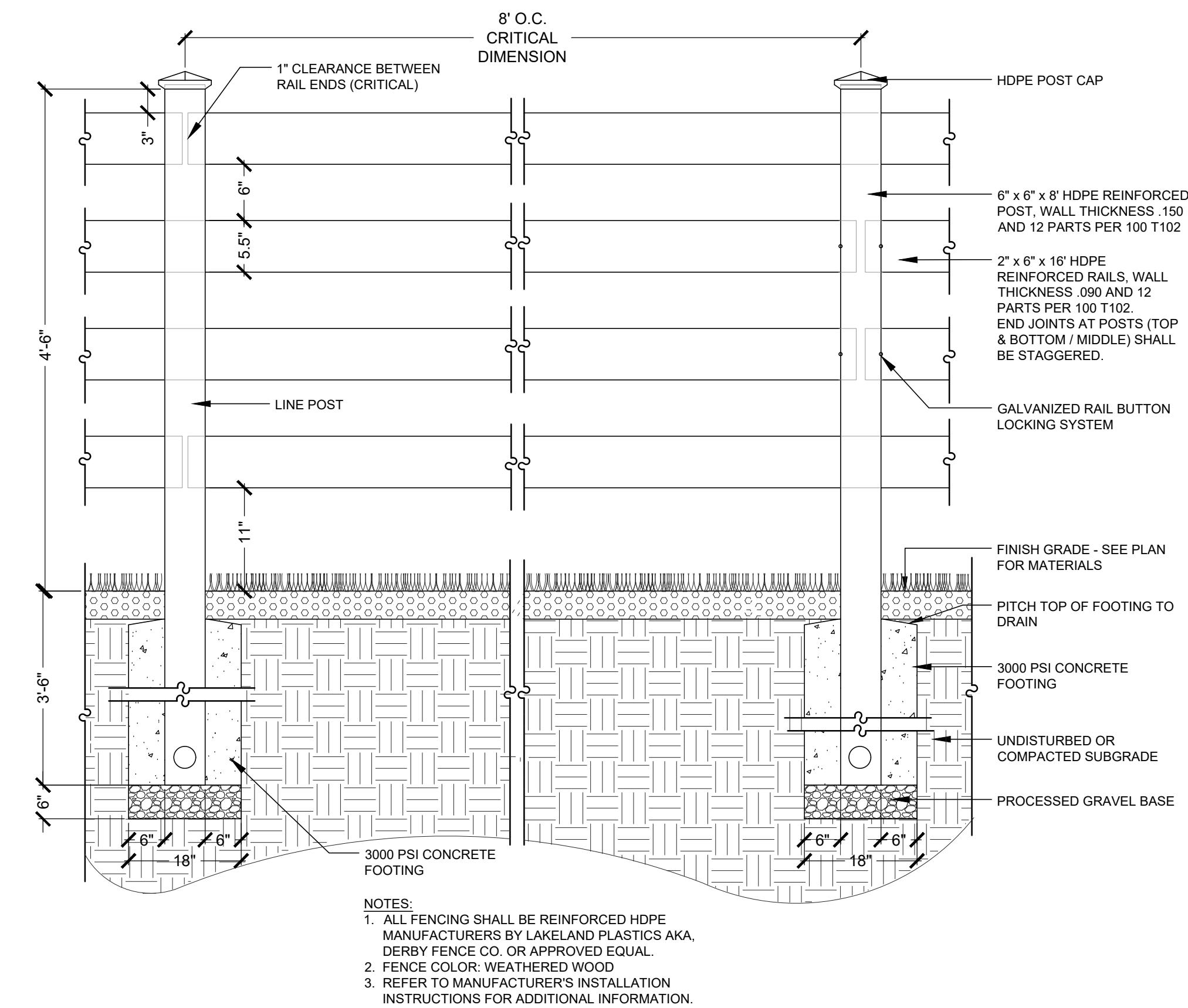




### Perimeter Security Fence

Not to Scale

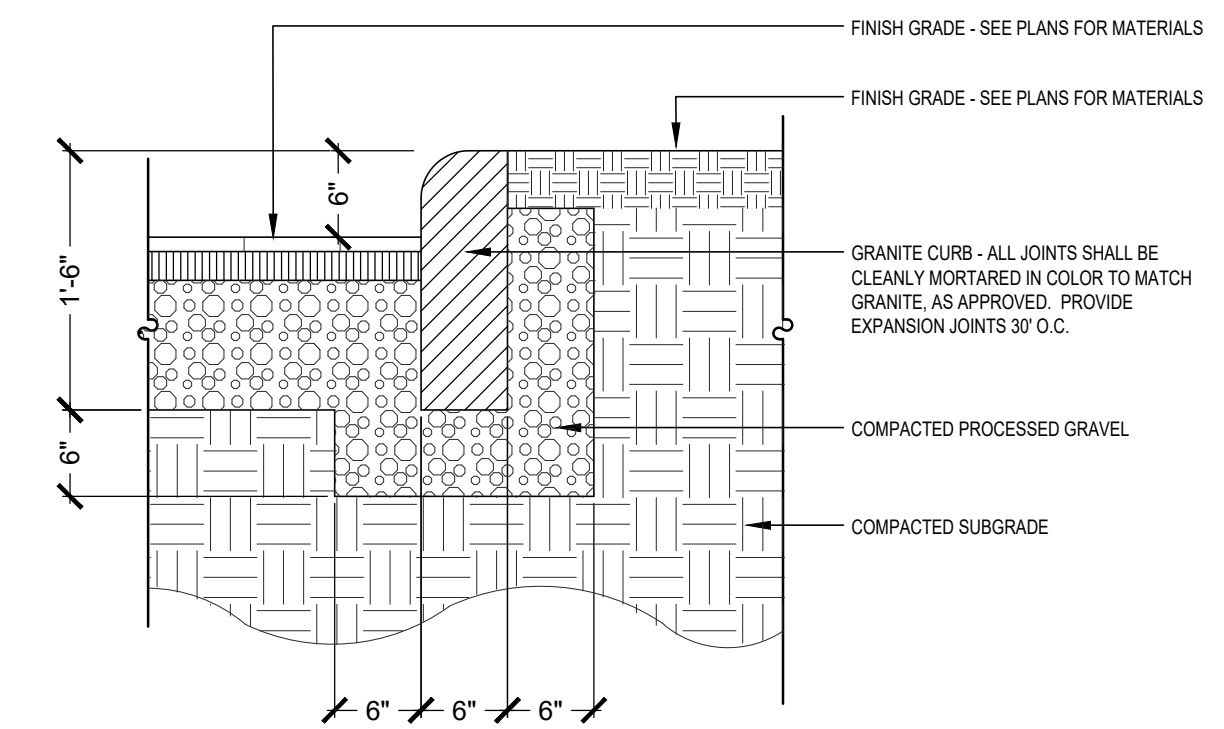
©IRONWOOD 2021 **1** L5.0



### 4 Rail Paddock Fence

Not to Scale

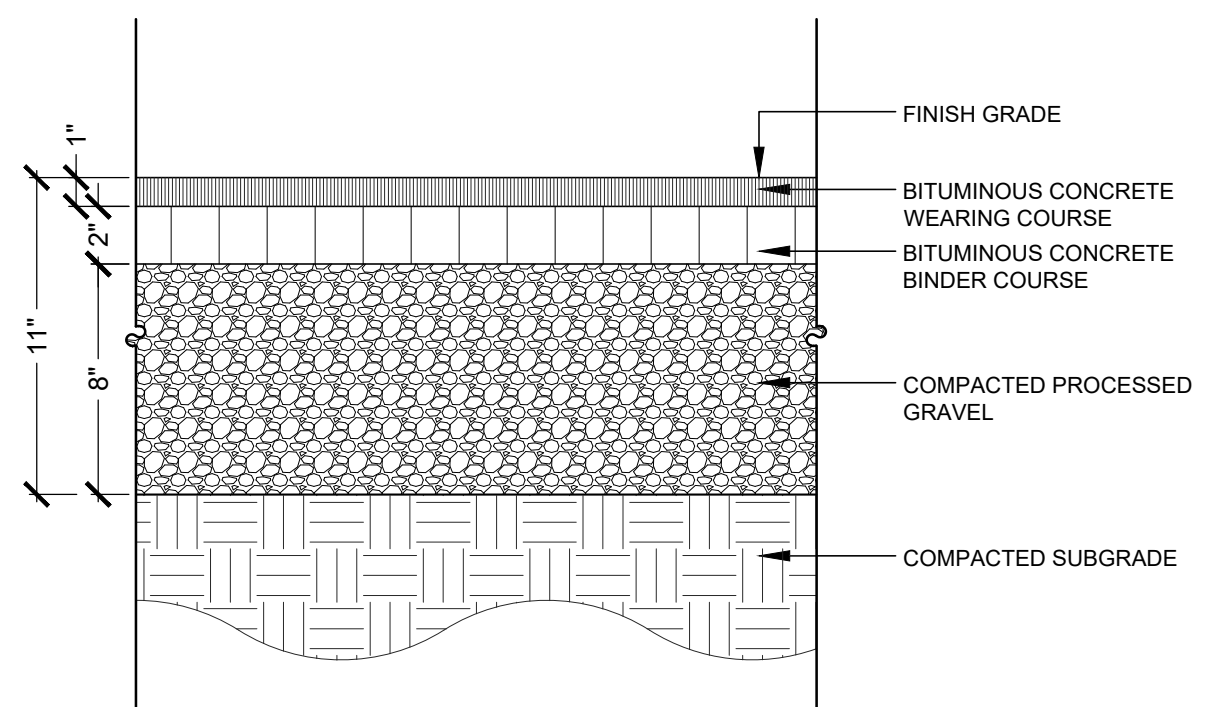
©IRONWOOD 2015 **2** L5.0



### Vertical Granite Curb

Not to Scale

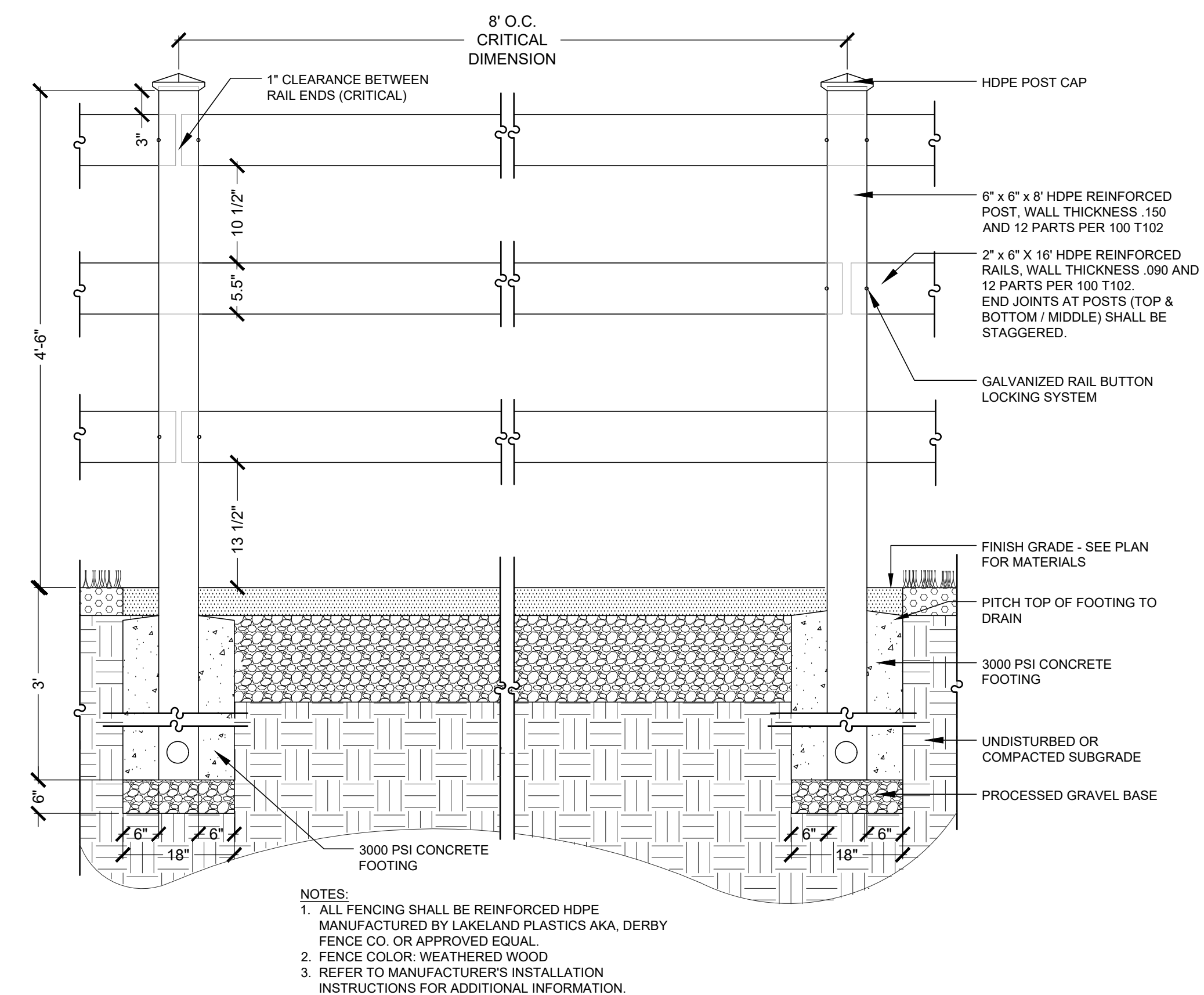
©IRONWOOD 2016 **3** L5.0



### Bituminous Concrete Pavement

Not to Scale

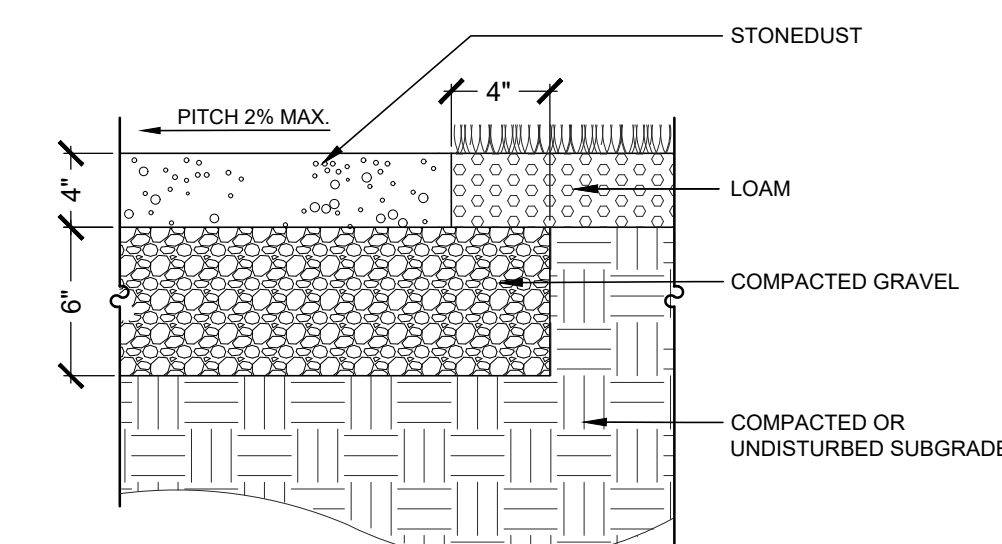
©IRONWOOD 2015 **4** L5.0



### 3 Rail Paddock Fence

Not to Scale

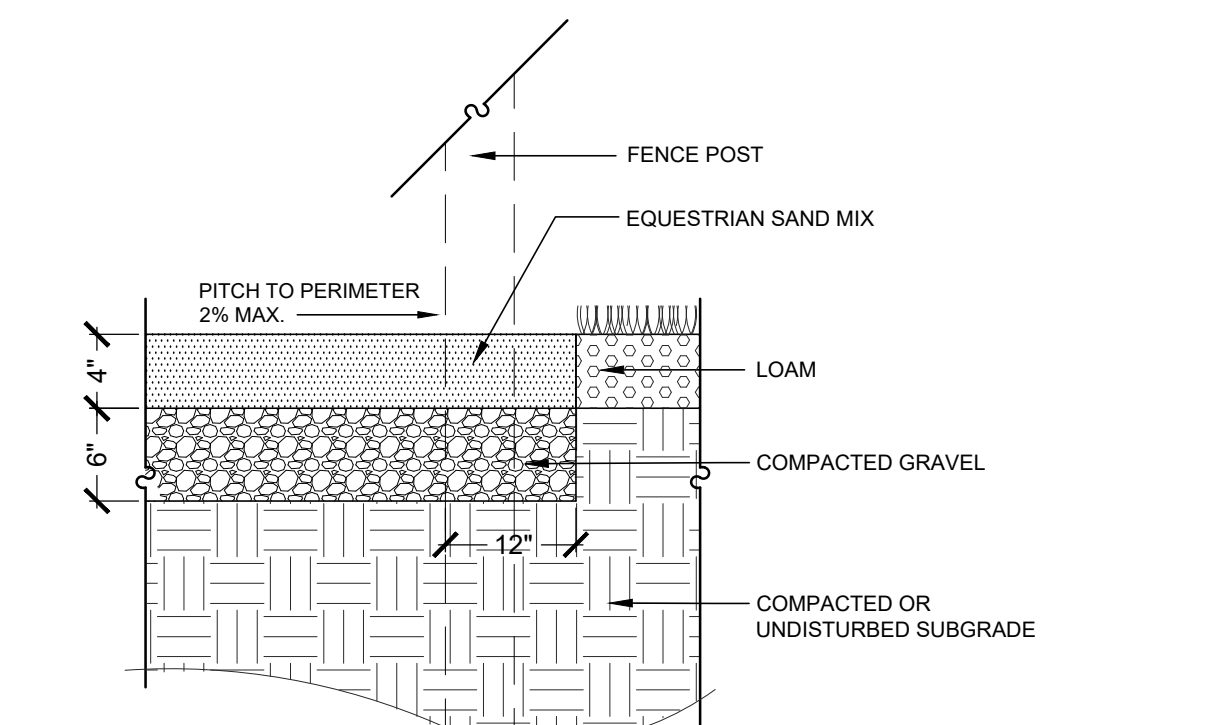
©IRONWOOD 2015 **7** L5.0



### Stonedust Surface

Not to Scale

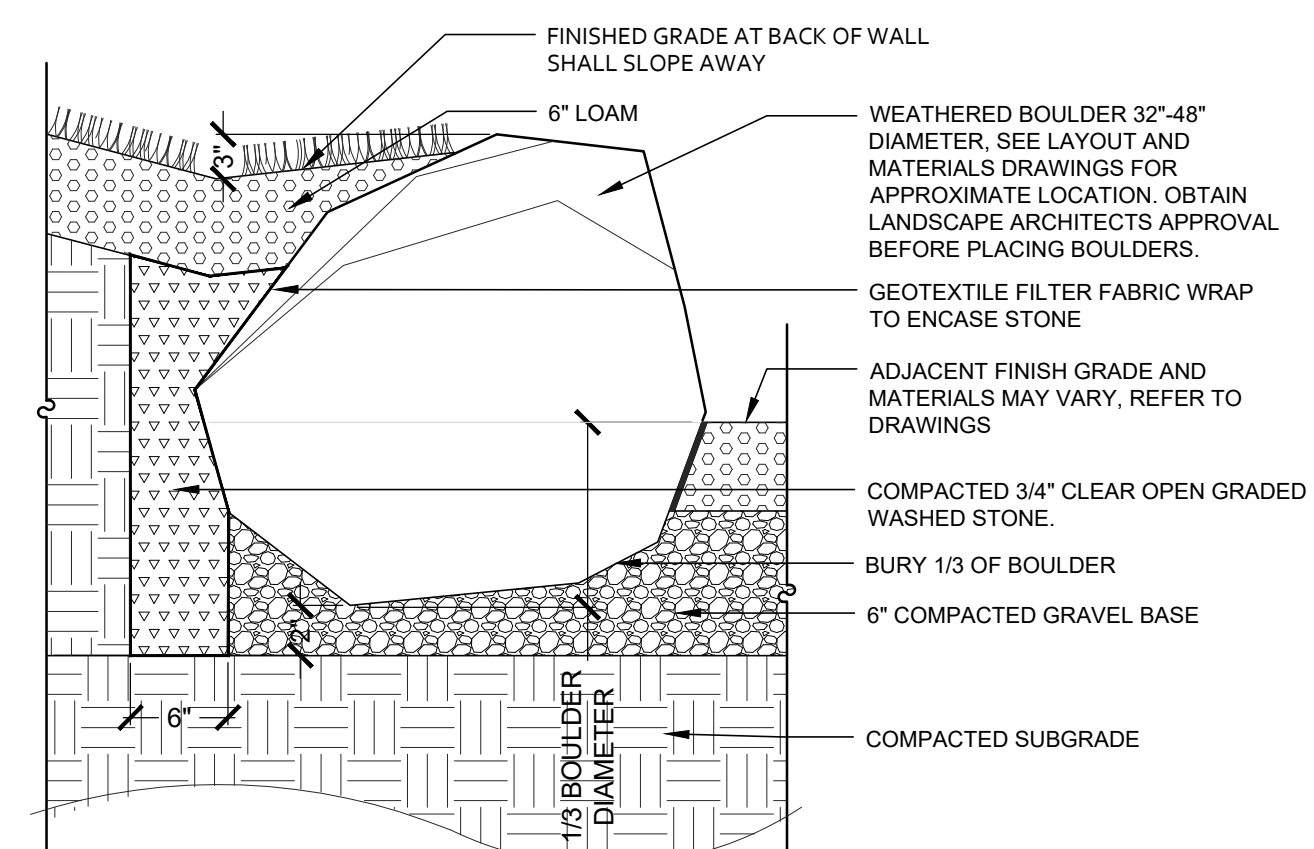
©IRONWOOD 2021 **5** L5.0



### Paddock Sand Surface

Not to Scale

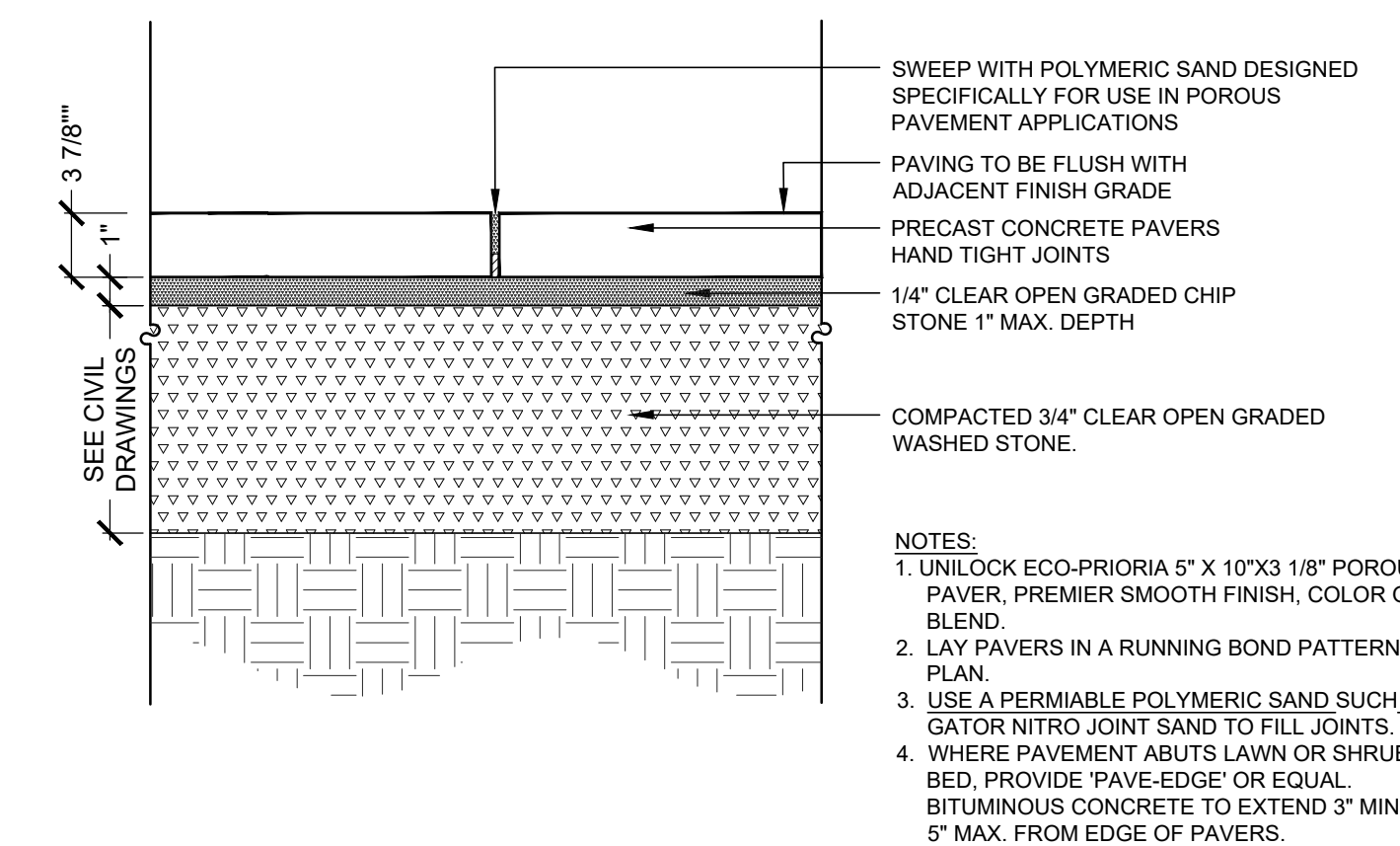
©IRONWOOD 2021 **6** L5.0



### Weathered Retaining Boulder

Not to Scale

©IRONWOOD 2021 **8** L5.0



### Porous Concrete Paver

Not to Scale

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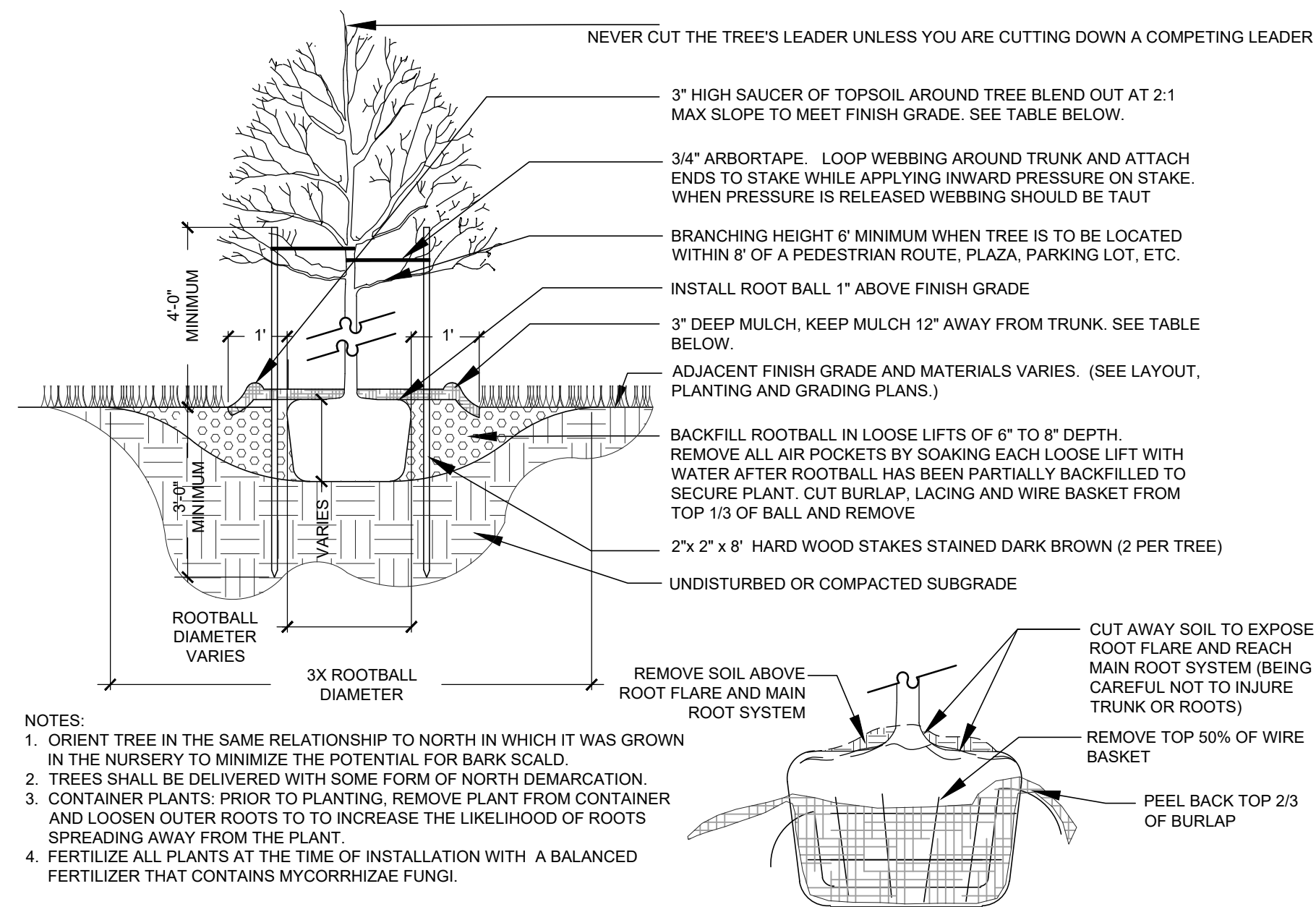
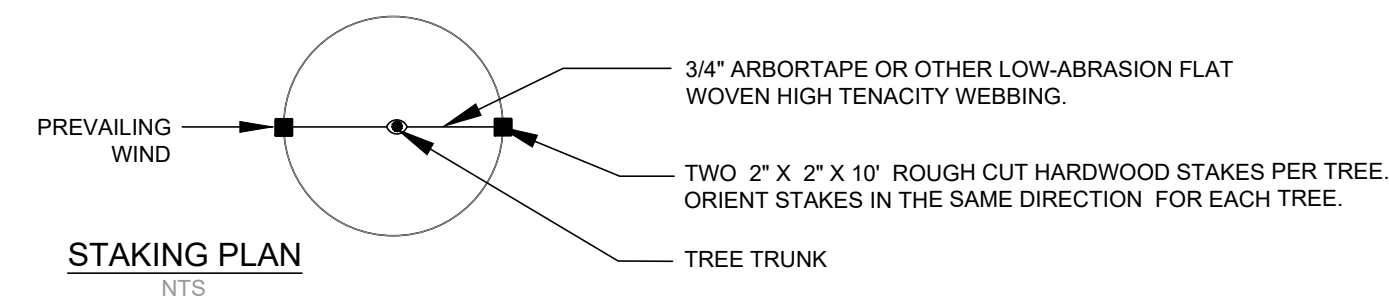
PROJECT:  
**ROGER WILLIAMS PARK MOUNTED AVIAN**  
1000 ELMWOOD AVENUE  
PROVIDENCE, RI 02905

TITLE:  
**LANDSCAPE DETAILS**

ISSUED FOR: CONTRACTOR BIDDING  
DATE: DECEMBER 17, 2021  
SCALE: AS NOTED  
DRAWN BY: S.WRIGHT, K.OSGOOD, J.HYLAND  
CHECKED BY: J.HYLAND, D.JENSEN  
PROJECT NO: 3652210316

**L5.0**

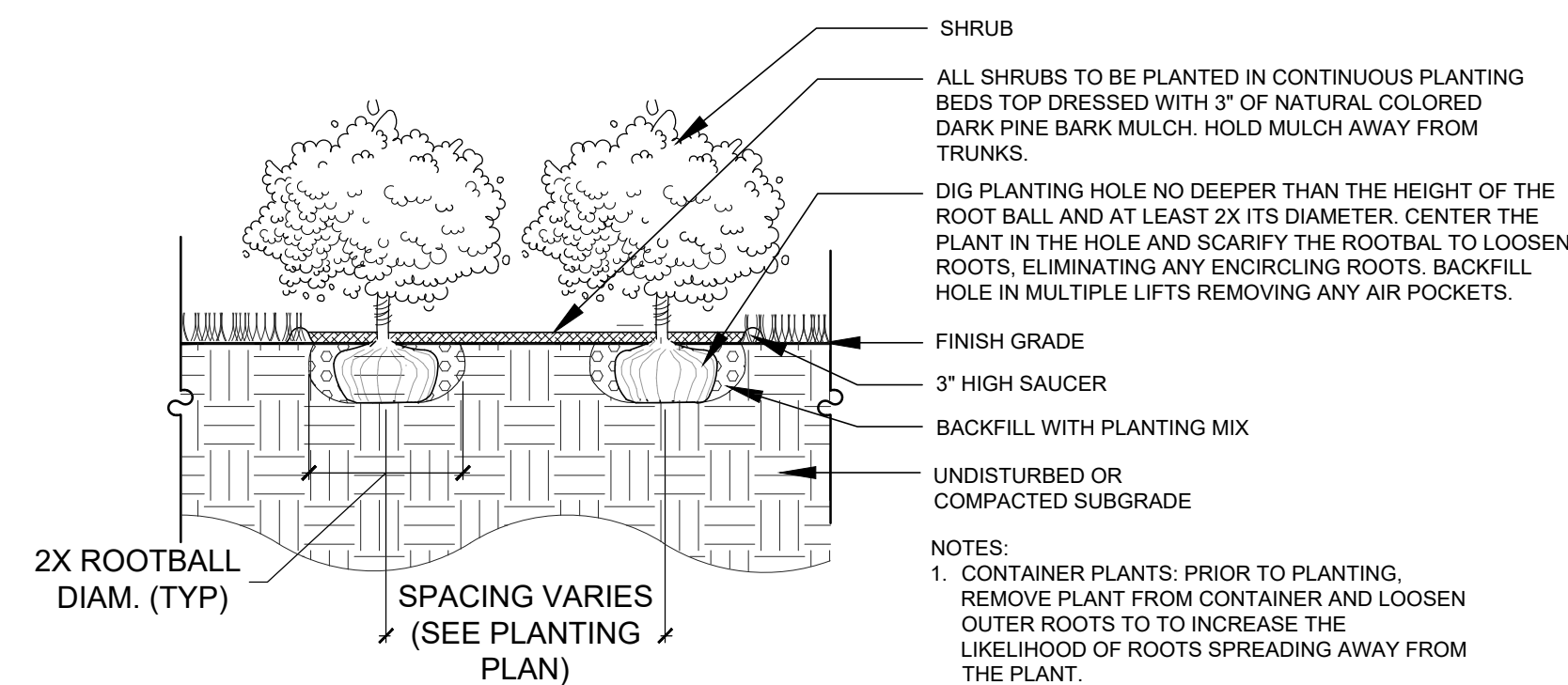
SHEET 7 OF 9



### Deciduous Single-Stemmed Tree Planting

Not to Scale

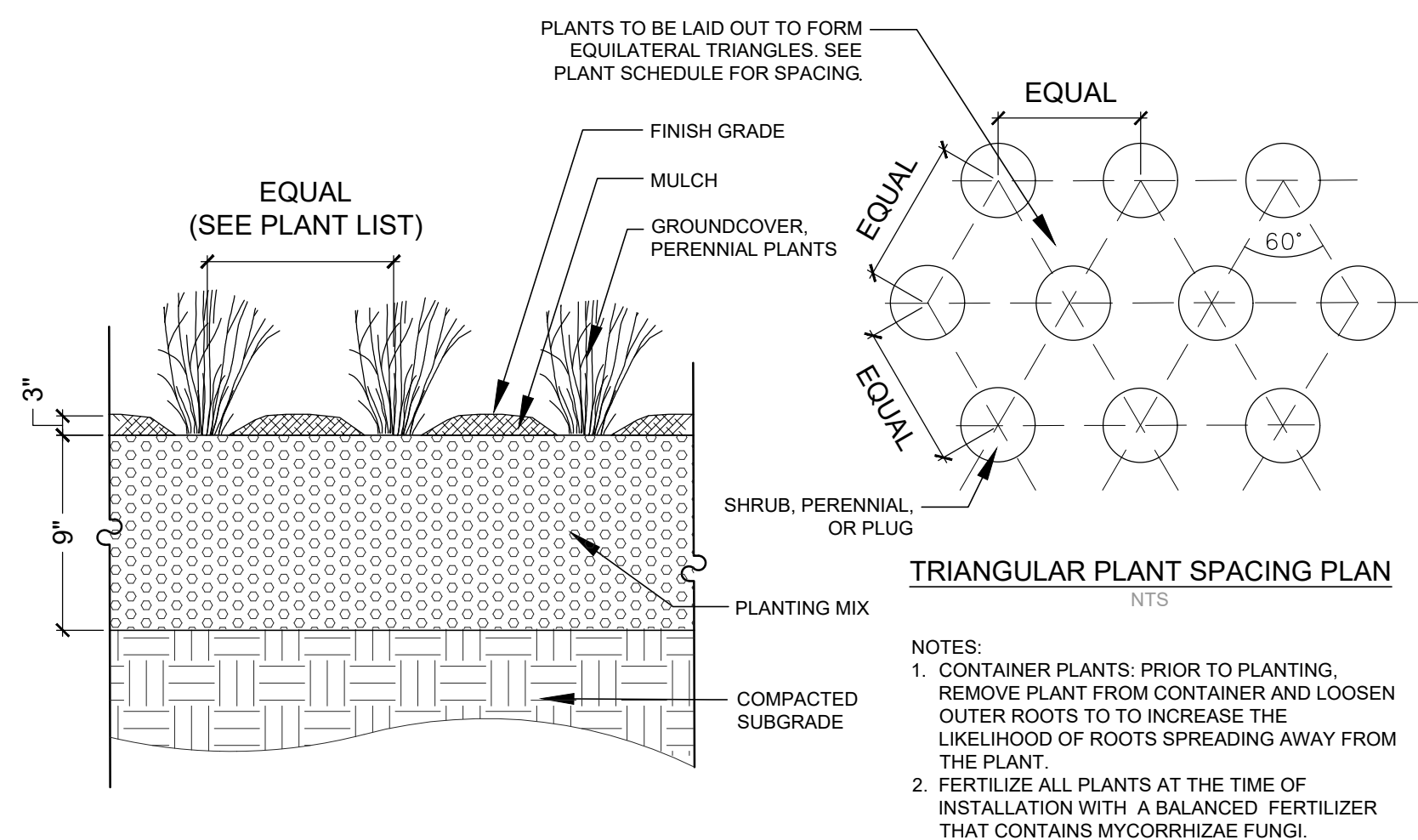
1  
L5.1



### Shrub Planting

Not to Scale

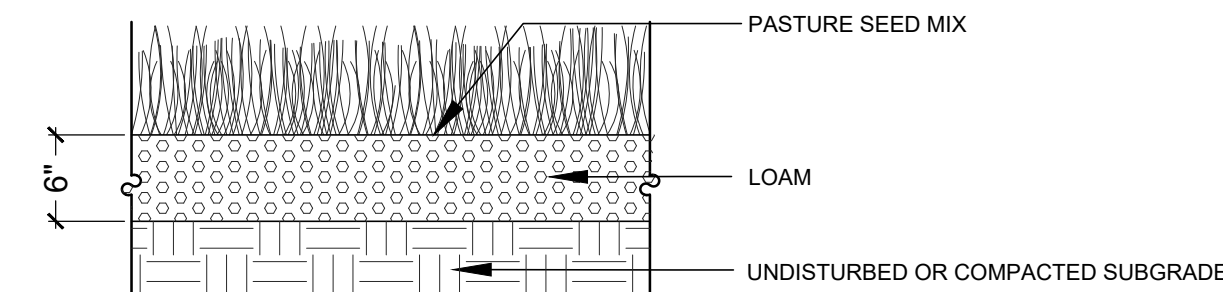
3  
L5.1



### Perennial / Ornamental Grass Planting

Not to Scale

5  
L5.1



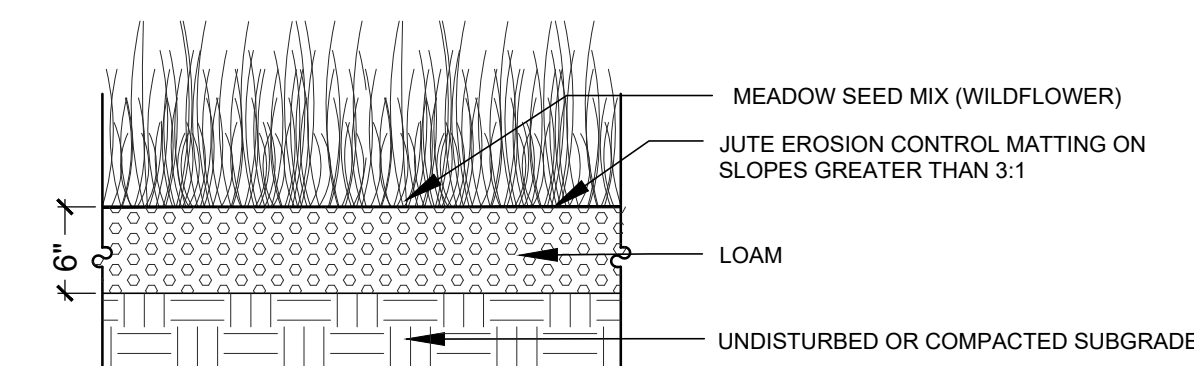
Scientific Name	Common Name	Percent by Weight
<i>Bromopsis biebersteinii</i>	Meadow or Hybrid Bromegrass	25%
<i>Dactylis glomerata</i>	Early Orchardgrass	25%
<i>Lolium perenne</i>	Tetraploid Per. Rye	20%
<i>Phleum pratense</i>	Improved Timoth	15%
<i>Poa pratensis</i>	Forage Bluegrass	10%
<i>Trifolium repens</i>	Ladino Clover	5%

- NOTES:
- REFER TO NOTES AND SPECIFICATIONS FOR LOAM AND SEEDING REQUIREMENTS AND MAINTENANCE.
  - AREAS TO BE SEEDED SHALL HAVE A UNIFORM DEPTH OF 6" AFTER COMPACTION.(SEE LANDSCAPE PLANS AND CIVIL DETAILS FOR ADDITIONAL INFORMATION).
  - DEPRESSIONS OR UNDESIRED UNDULATIONS SHALL BE ELIMINATED PRIOR TO SEEDING.
  - SEED BED SHALL BE PROPERLY PREPARED TO PROMOTE MAXIMUM GERMINATION.
  - SEE PLANS FOR AREAS DESIGNATED AS PASTURE.
  - REFER TO DETAIL 1/L3.1 FOR PASTURE RENOVATION.
- THE SEED MIX ABOVE REPRESENTS A BLEND AVAILABLE THRU ALLENS SEED - EXETER, RI - WWW.ALLENSEED.COM
- APPLY AT SEED SUPPLIER'S RECOMMENDED RATE.

### Loam and Pasture Seeding

Not to Scale

2  
L5.1



Botanical Name	Common Name	Indicator
<i>Schizachyrium scoparium</i>	Little Bluestem	FACU
<i>Sorghastrum nutans</i>	Indian Grass	UPL
<i>Chamaecrista fasciculata</i>	Partridge Pea	FACU
<i>Elymus virginicus</i>	Virginia Wild Rye	FACW-
<i>Elymus canadensis</i>	Canada Wild Rye	FACU+
<i>Festuca rubra</i>	Red Fescue	FACU
<i>Asclepias tuberosa</i>	Butterfly Milkweed	NI
<i>Vernonia noveboracensis</i>	New York Ironweed	FACW+
<i>Oenothera biennis</i>	Evening Primrose	FACU-
<i>Aster novae-angliae (Symphyotrichum novae-angliae)</i>	New England Aster	FACW-
<i>Rudbeckia hirta</i>	Black Eyed Susan	FACU-
<i>Solidago juncea</i>	Early Goldenrod	FACU
<i>Eupatorium fistulosum (Eutrochium fistulosum)</i>	Hollow-Stem Joe Pye Weed	FACW
<i>Aster lateriflorus (Symphyotrichum lateriflorum)</i>	Starved/Calico Aster	FACW

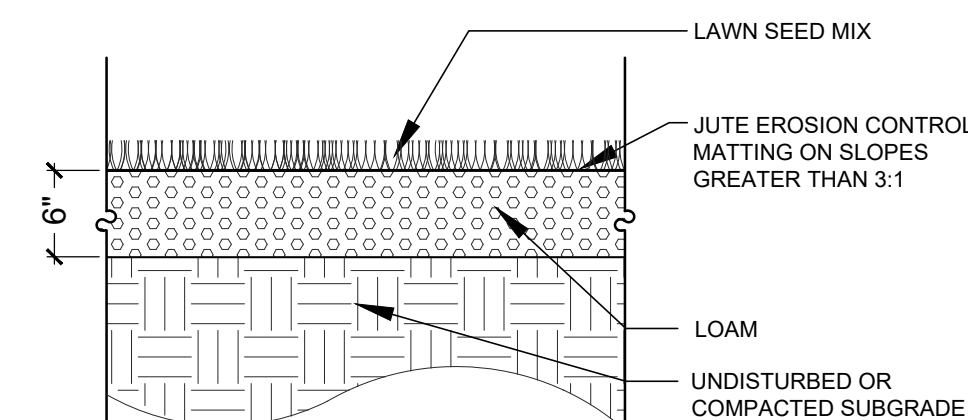
• THE SEED MIX ABOVE REPRESENTS A BLEND AVAILABLE THRU NEW ENGLAND WETLAND PLANTS - SOUTH HADLEY, MA - WWW.NEWP.COM

• APPLY AT RECOMMENDED RATE.

### Loam and Meadow Seeding

Not to Scale

4  
L5.1



Common Name	Scientific Name	Percent by weight
Celmfine, Rebel II or Tribute Tall Fescue		40%
Palmer II Perennial Ryegrass		15%
Jamestown Chewings Fescue		10%
Reliant Hard Fescue		10%
Birdsfoot Trefoil	<i>Arvenis</i> variety	10%
Switchgrass		5%
White Clover		5%
Redtop	<i>Streaker</i> variety	5%

Apply at a rate of 265 lbs/acre

- NOTES:
- REFER TO NOTES AND SPECIFICATIONS FOR LOAM AND SEEDING REQUIREMENTS AND MAINTENANCE.
  - AREAS TO BE SEEDED SHALL HAVE A UNIFORM DEPTH OF 6" AFTER COMPACTION.(SEE LANDSCAPE PLANS AND CIVIL DETAILS FOR ADDITIONAL INFORMATION).
  - DEPRESSIONS OR UNDESIRED UNDULATIONS SHALL BE ELIMINATED PRIOR TO SEEDING.
  - SEED BED SHALL BE PROPERLY PREPARED TO PROMOTE MAXIMUM GERMINATION.
  - SEE PLANS FOR AREAS DESIGNATED AS LAWN.

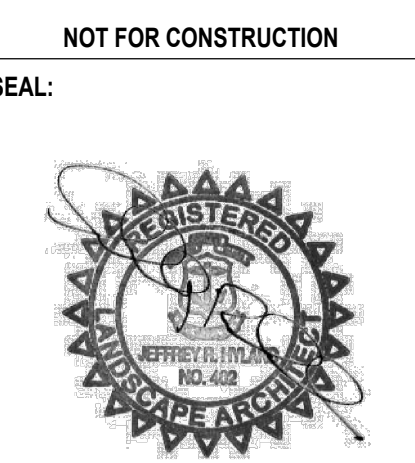
### Loam and Lawn Seeding

Not to Scale

6  
L5.1

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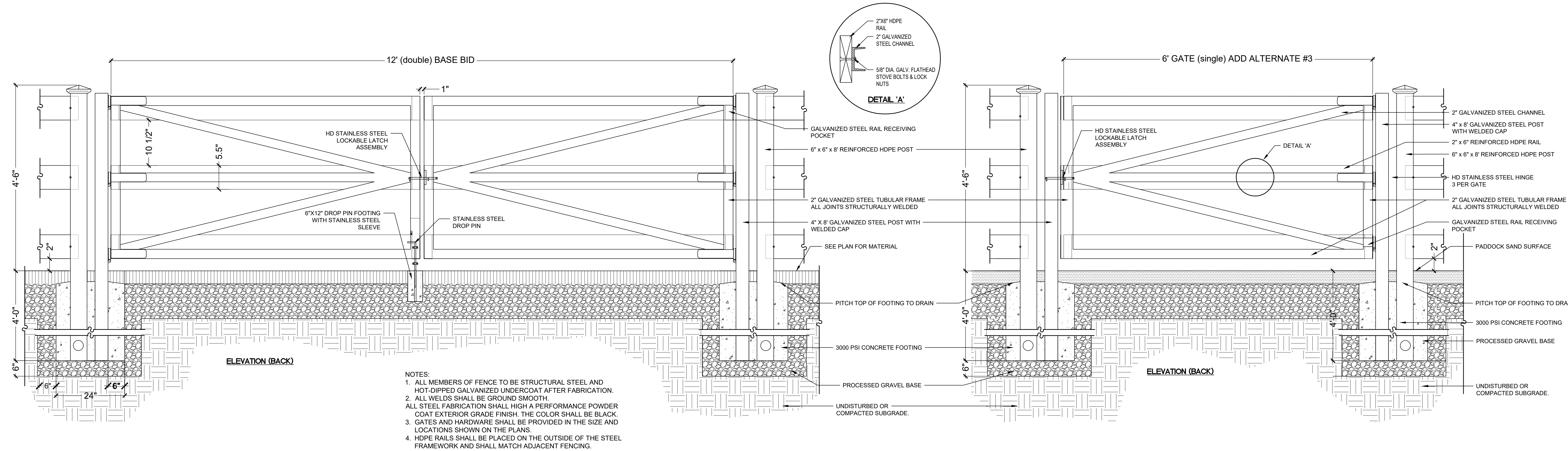
PROJECT:  
**ROGER WILLIAMS PARK MOUNTED COMMAND**  
1000 ELMWOOD AVENUE  
PROVIDENCE, RI 02905

TITLE:  
**LANDSCAPE DETAILS**

ISSUED FOR: CONTRACTOR BIDDING  
DATE: DECEMBER 17, 2021  
SCALE: AS NOTED  
DRAWN BY: S.WRIGHT, K.OSGOOD, J.HYLAND  
CHECKED BY: J.HYLAND, D.JENSEN  
PROJECT NO: 362210316

**L5.1**  
SHEET 8 OF 9

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**Double Swing Gate**

Not to Scale

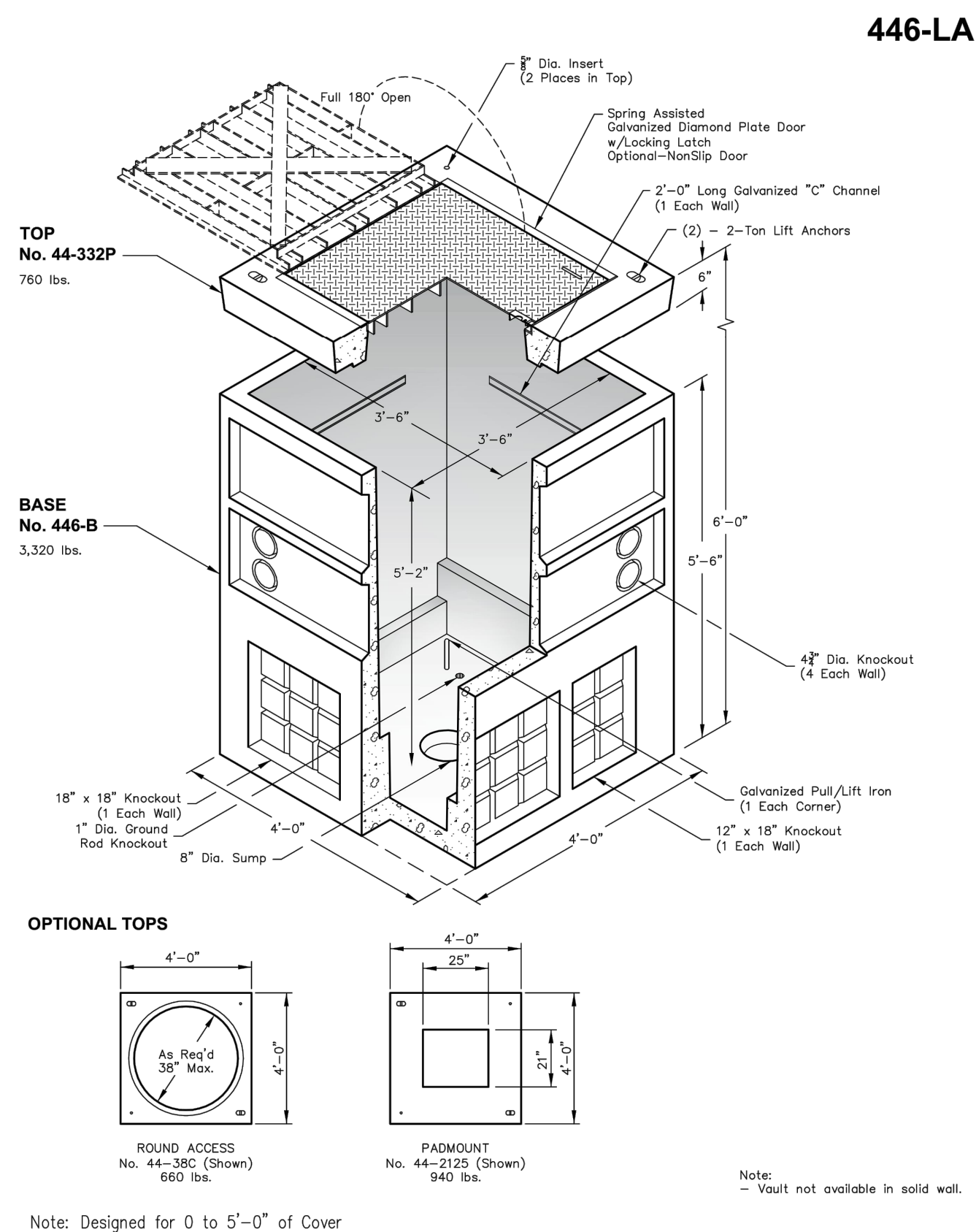
**Single Paddock / Pasture Gate (Add Alternate #3)**

Not to Scale

- NOTES:
1. ALL MEMBERS OF FENCE TO BE STRUCTURAL STEEL AND HOT-DIPPED GALVANIZED UNDERCOAT AFTER FABRICATION.
  2. ALL WELDS SHALL BE GROUND SMOOTH.
  3. ALL STEEL FABRICATION SHALL HAVE A HIGH PERFORMANCE POWDER COAT EXTERIOR GRADE FINISH. THE COLOR SHALL BE BLACK.
  4. GATES AND HARDWARE SHALL BE PROVIDED IN THE SIZE AND LOCATIONS SHOWN ON THE PLANS.
  5. HDPE RAILS SHALL BE PLACED ON THE OUTSIDE OF THE STEEL FRAMEWORK AND SHALL MATCH ADJACENT FENCING.

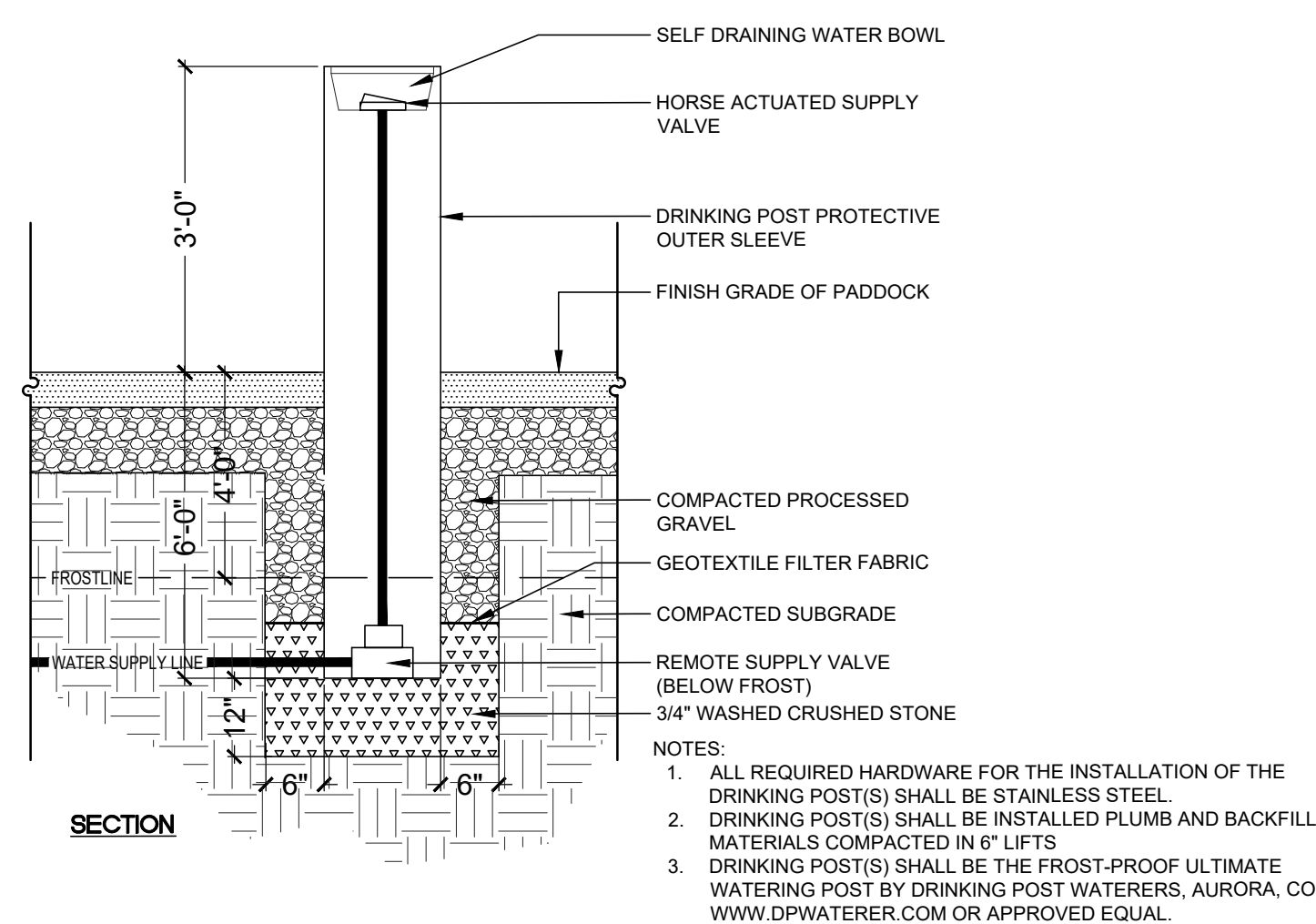
**Water Line Distribution Vault**

Not to Scale



**Freeze Proof Waterer**

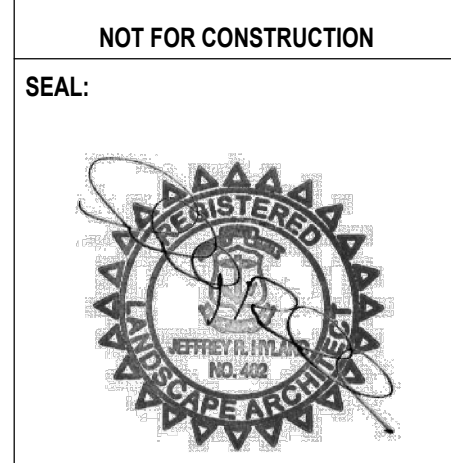
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1  
L5.2

2  
L5.2



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DALRYMPLE BOATHOUSE, MAPLE AVE,  
PROVIDENCE, RI 02905

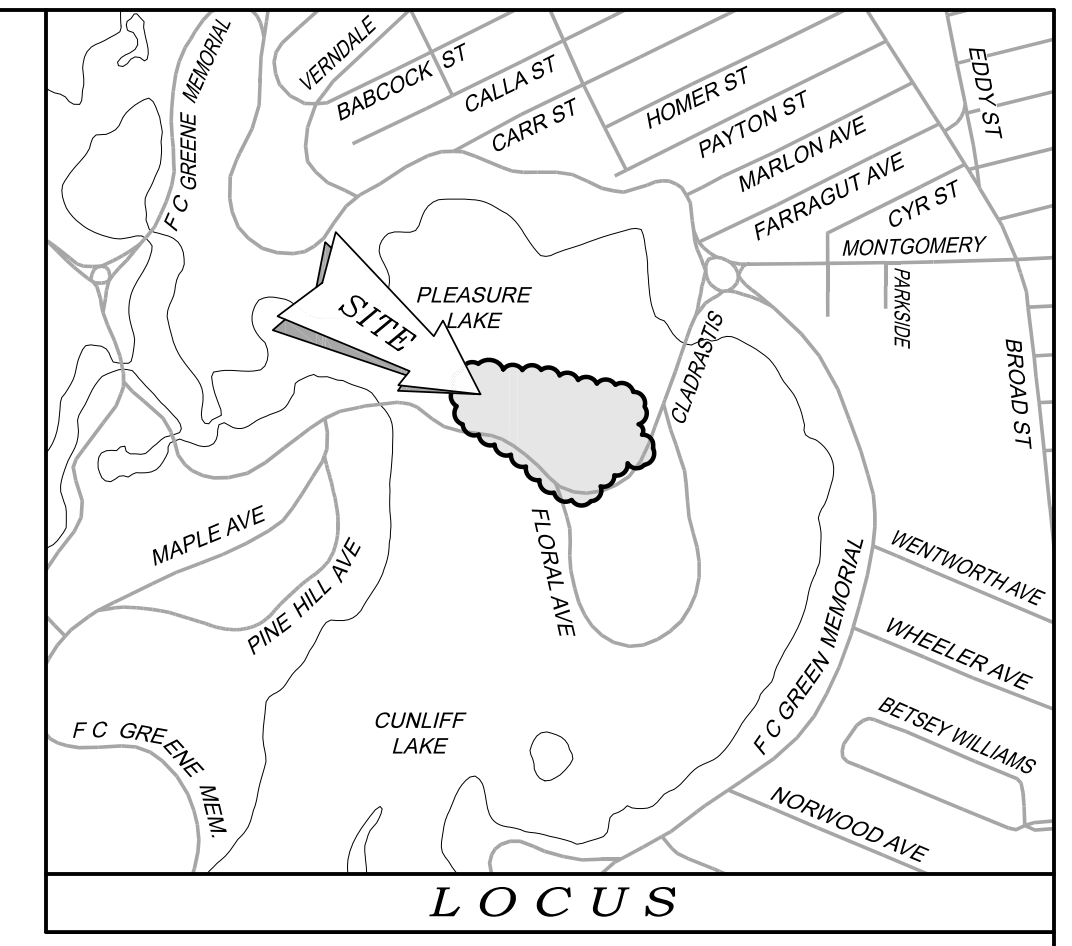
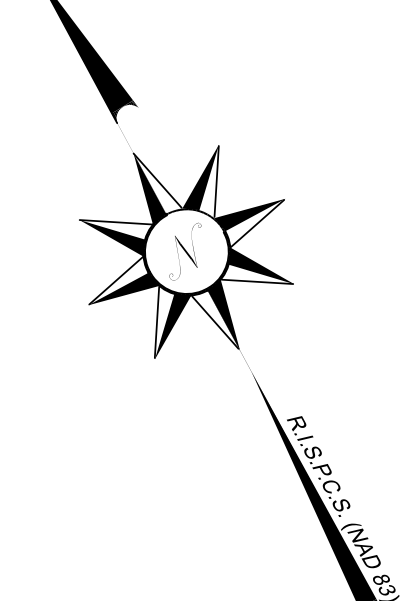
PROJECT:  
**ROGER WILLIAMS PARK MOUNTED COMMAND**  
1000 ELMWOOD AVENUE  
PROVIDENCE, RI 02905

TITLE:  
**LANDSCAPE DETAILS**

ISSUED FOR: CONTRACTOR BIDDING  
DATE: DECEMBER 17, 2021  
SCALE: AS NOTED  
DRAWN BY: S.WRIGHT, K.OSGOOD, J.HYLAND  
CHECKED BY: J.HYLAND, D.JENSEN  
PROJECT NO: 362210316

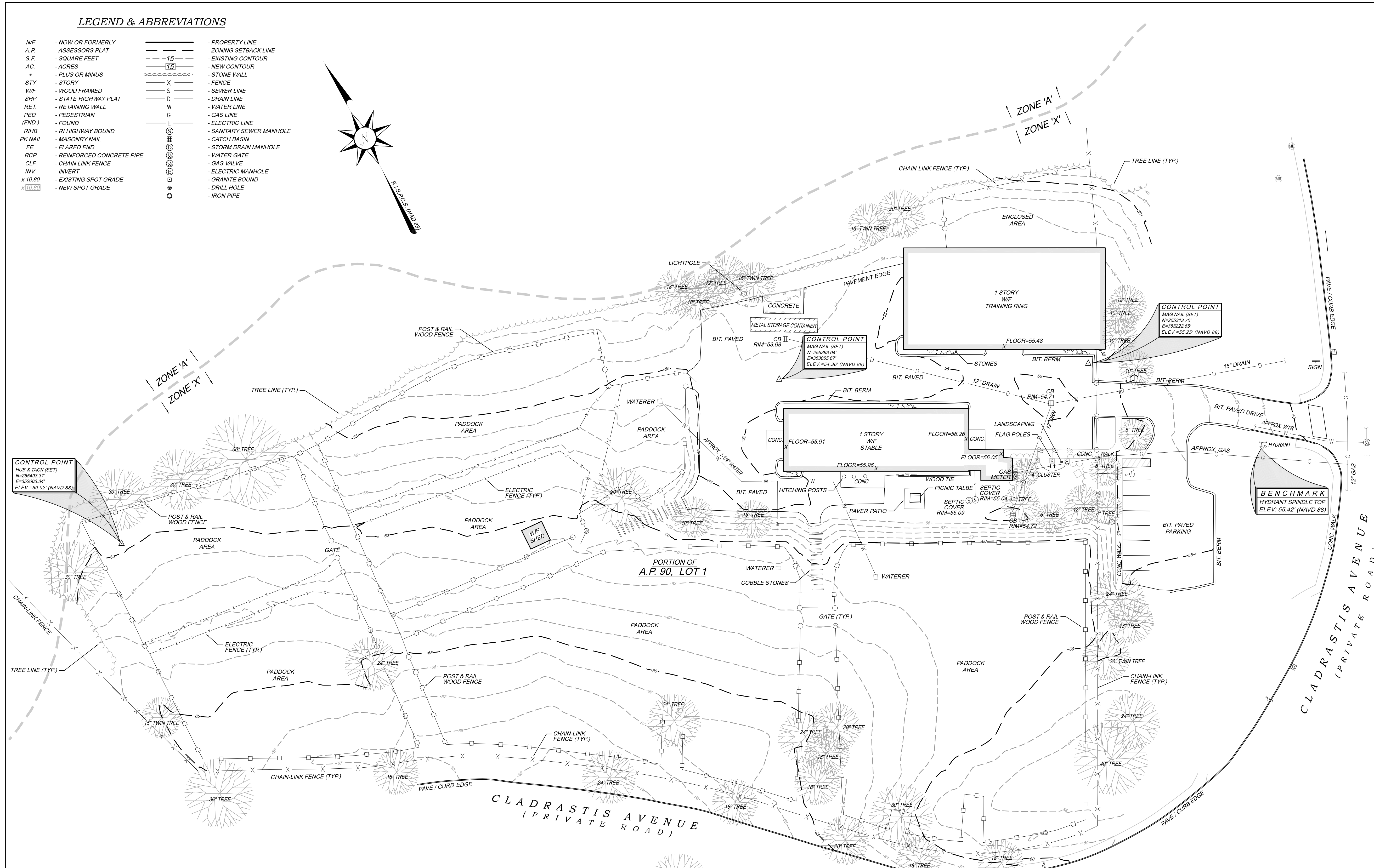
**LEGEND & ABBREVIATIONS**

NF	- NOW OR FORMERLY	---	- PROPERTY LINE
A.P.	- ASSESSORS PLAT	---	- ZONING SETBACK LINE
S.F.	- SQUARE FEET	---	- EXISTING CONTOUR
AC.	- ACRES	---	- NEW CONTOUR
±	- PLUS OR MINUS	---	- STONE WALL
STY	- STORY	X	- FENCE
WF	- WOOD FRAMED	S	- SEWER LINE
SHP	- STATE HIGHWAY PLAT	D	- DRAIN LINE
RET.	- RETAINING WALL	W	- WATER LINE
PED.	- PEDESTRIAN	G	- GAS LINE
(FND.)	- FOUND	E	- ELECTRIC LINE
R/HB	- RI HIGHWAY BOUND	SM	- SANITARY SEWER MANHOLE
PK NAIL	- MASONRY NAIL	CB	- CATCH BASIN
FE	- FLARED END	SDM	- STORM DRAIN MANHOLE
RCP	- REINFORCED CONCRETE PIPE	WG	- WATER GATE
CLF	- CHAIN LINK FENCE	GV	- GAS VALVE
INV	- INVERT	EM	- ELECTRIC MANHOLE
x 10.80	- EXISTING SPOT GRADE	GB	- GRANITE BOUND
□ 10.80	- NEW SPOT GRADE	OH	- DRILL HOLE
		IR	- IRON PIPE



**NOTES / REFERENCES**

1. THE DEPICTED AREA IS SITUATED IN A ZONE 'X' (AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN AS DESIGNATED ON THE NATIONAL FLOOD INSURANCE PROGRAM FIRM FLOOD INSURANCE RATE MAP PROVIDENCE COUNTY, RHODE ISLAND (ALL JURISDICTIONS) PANEL 316 OF 451 CITY OF PROVIDENCE, MAP NUMBER 44007C0316G, EFFECTIVE DATE: MARCH 2, 2009, FEDERAL EMERGENCY MANAGEMENT AGENCY.)
2. ANY UTILITIES SHOWN ON THIS PLAN HAVE BEEN LOCATED FROM FIELD SURVEY INFORMATION AND EXISTING PLANS. THE SURVEYOR MAKES NO GUARANTEE THAT THE UTILITIES SHOWN COMPRISE ALL SUCH OR ABANDONED. THE SURVEYOR DOES NOT WARRANT THAT THE UTILITIES SHOWN ARE IN THE EXACT LOCATION INDICATED ALTHOUGH THEY ARE LOCATED AS ACCURATELY AS POSSIBLE FROM ALL AVAILABLE INFORMATION. (PLEASE CONTACT DIG SAFE 72 HOURS PRIOR TO CONSTRUCTION AT PHONE NO. 1-888-DIG-SAFE AND/OR ALL LOCAL UTILITY COMPANIES.)
3. THE HORIZONTAL DATUM FOR THIS PROJECT IS R.I.S.P.C.S. (NAD 83) AND THE VERTICAL DATUM FOR THIS PROJECT IS NAVD 88. THE PROJECT DATUMS WERE ESTABLISHED FROM REFERENCE STATIONS AND GNSS CORRECTIONS RECEIVED FROM THE LEICA SMARTNET NORTH AMERICA RTK NETWORK VIA CARLSON BRX6 GNSS ANTENNAS / RECEIVERS.
4. A WETLAND DELINEATION WAS NOT PERFORMED AS PART OF THIS PROJECT. A SITE INSPECTION BY A PROFESSIONAL BIOLOGIST IS RECOMMENDED TO VERIFY THE EXISTENCE / NONEXISTENCE OF ANY FRESHWATER WETLANDS PRESENT, IF NECESSARY.
5. THE FLOODPLAIN BOUNDARY'S AND THE COASTAL BARRIER DEPICTED HAVE BEEN OVERLAIN & APPROXIMATED USING FEMA'S ONLINE NATIONAL FLOOD HAZARD LAYER (NFHL) DATASET.

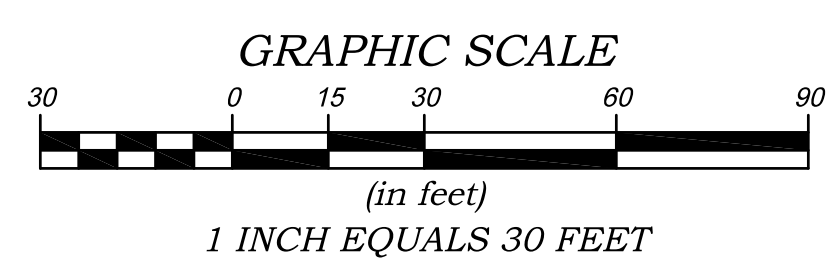


**CONTROL POINT**  
MAG NAIL (SET)  
N=255493.37'  
E=532963.34'  
ELEV=58.02' (NAVD 88)

**CONTROL POINT**  
MAG NAIL (SET)  
N=255389.04'  
E=533058.67'  
ELEV=54.36' (NAVD 88)

**CONTROL POINT**  
MAG NAIL (SET)  
N=255313.70'  
E=533222.65'  
ELEV=55.25' (NAVD 88)

**BENCHMARK**  
HYDRANT SPINDLE TOP  
ELEV: 55.42' (NAVD 88)



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© THESE DRAWINGS ARE THE PROPERTY OF THE ENGINEER/SURVEYOR AND HAVE BEEN PREPARED FOR THE OWNER FOR THIS PROJECT AT THIS SITE AND ARE NOT TO BE USED FOR ANY OTHER PURPOSE. LOCATION OR OWNER WITHOUT WRITTEN CONSENT OF THIS OWNER OR ONE OF ITS DIRECTORS.  
WATERMAN ENGINEERING CO.  
CIVIL ENGINEERS & SURVEYORS  
46 SUTTON AVENUE  
EAST PROVIDENCE, RI 02914-2096

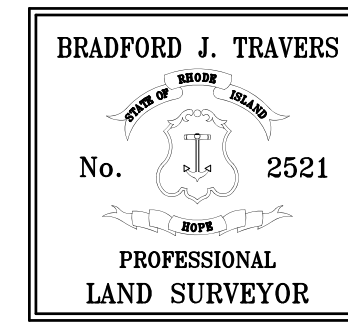
\*\* SIGNATURES MUST BE IN BLUE INK TO CONSTITUTE AN ORIGINAL PLAN

**CERTIFICATION**

THIS SURVEY HAS BEEN CONDUCTED AND THE PLAN HAS BEEN PREPARED PURSUANT TO 435-RICR-00-00-1.9 OF THE RULES AND REGULATIONS ADOPTED BY THE RHODE ISLAND STATE BOARD OF REGISTRATION FOR PROFESSIONAL LAND SURVEYORS ON APRIL 28, 2018, AS FOLLOWS:

<b>TYPE OF BOUNDARY SURVEY:</b>	<b>MEASUREMENT / ACCURACY SPECIFICATION:</b>
NOT A BOUNDARY SURVEY	N/A
<b>OTHER TYPE OF SURVEY:</b>	
DATA ACCUMULATION SURVEY	III
TOPOGRAPHIC SURVEY	T-1

THE PURPOSE FOR CONDUCTING THIS SURVEY AND FOR THE PREPARATION OF THE PLAN IS AS FOLLOWS:  
EXISTING CONDITIONS PLAN & TOPOGRAPHIC SURVEY TO ASSIST WITH THE POTENTIAL FUTURE DEVELOPMENT OF THE SUBJECT PROPERTY.



BY: *Bradford J. Travers* 2521 07/02/2021  
BRADFORD J. TRAVERS, P.L.S. REG. NO. DATE  
WATERMAN ENGINEERING COMPANY (COA NO. LS.0004483)

NO.	DATE	REVISION	CHECKED BY

PROJECT NO: 21-032  
SCALE: 1" = 30'  
DATE: 07/01/2021  
DRAWN BY: EBP  
CHECKED BY: BJT  
FILENAME: 21-032.5\_EX1  
SHTS: 1 of 1  
DRAWING #: EX1

**PARTIAL TOPOGRAPHIC SURVEY PLAN**  
PORTION OF A.P. 90, LOT 1  
ROGER WILLIAMS PARK  
PROVIDENCE, RHODE ISLAND

**WOOD ENVIRONMENT & INFRASTRUCTURE SOLUTIONS, INC.**  
275 PROMENADE STREET, SUITE 100  
PROVIDENCE, RHODE ISLAND 02908

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