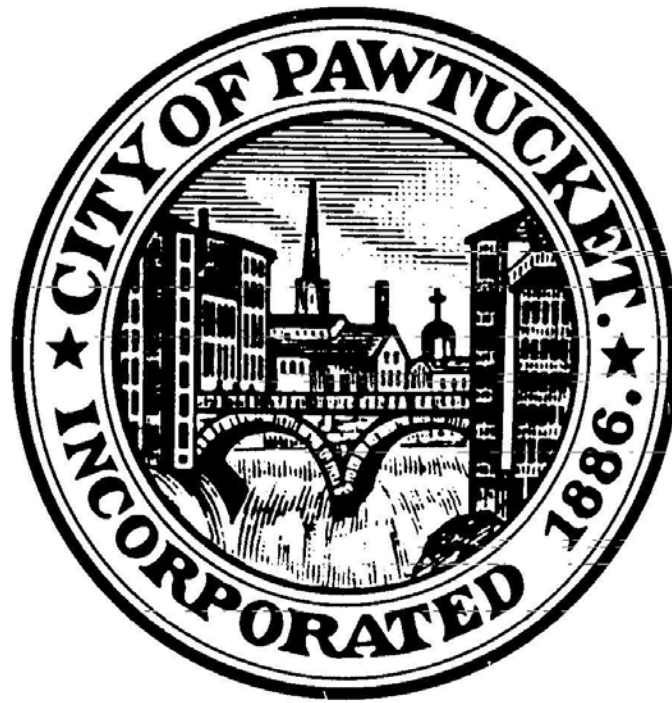


# CITY OF PAWTUCKET

## REQUEST FOR PROPOSALS



<p><b><u>Bid # 23-040</u></b> <b>Blackstone Bikeway 3A-1 Contract 1</b></p>
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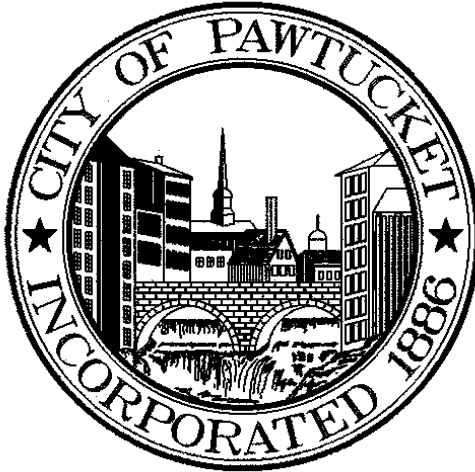
*DISCLOSURE: "Any contract or contracts awarded under the Advertisement for Bids will be funded in part by a grant from the US Department of Commerce - Economic Development Administration (EDA). The total amount of federal funding included in the project financing will be \$ 4,812,600.00 which represents the total project costs to include design, construction, project inspection and management of the project. Neither the United States nor any of its departments, agencies, or employees is or will be a party to this advertisement or any resulting contract. "*

*The funding indicated above for this represents federal grant funding amount for multiple contracts related to the construction of the Blackstone River Bikeway, each with different levels of funding and does not represent the estimated cost of this contract.*

**November 2023**



CITY OF PAWTUCKET  
DEPARTMENT OF PLANNING AND REDEVELOPMENT



BLACKSTONE BIKEWAY 3A-1  
CONTRACT 1

CITY OF PAWTUCKET  
COUNTY OF PROVIDENCE  
RHODE ISLAND

BID # 23-040

**BETA Group, Inc.**  
Engineers & Landscape Architects  
701 George Washington Highway  
Lincoln, RI 02865  
(401) 333-2382

NOVEMBER 2023

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## 1.0 - Bid/Solicitation Information

### Schedule

Pre-Bid/Proposal Conference    No    **X Yes**

The **Non-Mandatory** Pre-Bid Meeting will be held onsite with a site walk to follow.

**Time:**            **November 16, 2023 @ 10:00 AM**

**Location:**

City of Pawtucket  
Veterans Memorial Park  
175 Roosevelt Avenue  
Pawtucket, RI 02860

In case of inclement weather, the meeting will be held at:

Pawtucket City Hall  
Department of Planning and Development  
137 Roosevelt Avenue  
Pawtucket, RI 02860

*Requests for Further Information Due: **November 29, 2023 by 2:00 PM***

Requests for information or clarification must be made electronically and concurrently to the attention of:

Michael Wilcox, Project Engineer  
E-mail: [mwilcox@pawtucketri.com](mailto:mwilcox@pawtucketri.com)

Arek Galle, Project Manager  
[agalle@BETA-inc.com](mailto:agalle@BETA-inc.com)

Please reference the RFP / LOI number on all correspondence. Answers to questions received, if any, will be posted on the internet as an addendum to this bid solicitation.

*RFP Submission Deadline: **December 14<sup>th</sup> at 12:00 pm***

**Late submittals will not be considered.**

Proposals must be mailed or hand-delivered in a sealed envelope **marked with the RFP/Bid # and Project Name** to:

Pawtucket City Hall - Purchasing Office  
137 Roosevelt Avenue  
Pawtucket, RI 02860

***Bids will be publicly opened and read aloud on December 14<sup>th</sup>, 2023 at 4:00 PM during a scheduled Purchasing Board meeting in City Council Chambers, City Hall***

### **Bonds/Surety Required**

*Bid Bond:* ☐ No    ☒ Yes

Bidder is required to provide a bid surety in the form of a bid bond or certified check payable to the City of Pawtucket in an amount not less than five percent (5%) of the bid price.

*Fidelity Bond:* ☒ No    ☐ Yes

*Performance and Payment Bond:* ☐ No    ☒ Yes  
(Submit upon award of contract)

Bidder is required to provide a performance and payment bond as outlined in the City's General Terms & Conditions of Purchase (Appendix B of this RFP) in an amount not less than one hundred percent (100%) of the bid price.

The successful bidder will be required to furnish all insurance documentation as outlined in the attached Purchasing Rules & Regulations and General Terms & Conditions of Purchase.

### **Miscellaneous**

The bid process and resulting contract are subject to the Rules and Regulations and General Terms and Conditions of Purchase. Submission of a bid in response to this solicitation is acknowledgement and acceptance of these Rules and Regulations and General Terms and Conditions of Purchase.

Proposals found to be technically or substantially non-responsive at any point in the evaluation process will be rejected and not considered further.

# **“SHORT ADVERTISEMENT”**

## **CITY OF PAWTUCKET INVITATION TO BID BID #23-040**

### **Blackstone Bikeway 3A-1 Contract 1**

The City of Pawtucket is seeking sealed bids to provide the above-referenced services.

Specifications and details will be available online on November 8<sup>th</sup> by 10 AM at <http://www.pawtucketri.com/purchasing/current-bids> under Purchasing or on the State of Rhode Island’s Purchasing website at [www.ridop.ri.gov](http://www.ridop.ri.gov)

Bidding Entity: City of Pawtucket, RI

**Submission Deadline:**  
12:00 p.m. - Thursday, December 14<sup>th</sup>, 2023

Bids to be Addressed to:  
Peter Wingate, Purchasing Agent  
Pawtucket City Hall  
137 Roosevelt Avenue  
Pawtucket, RI 02860

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## 2.0 - Instructions and Notifications to Bidders

- It is the vendor's responsibility to examine all specifications and site conditions thoroughly and comply fully with specifications and all attached terms and conditions. Vendors must comply with all Federal, State, and City laws, ordinances, and regulations, and meet any and all registration requirements where required for contractors as set forth by the State of Rhode Island. Failure to make a complete submission as described herein may result in a rejection of the proposal.
- All costs associated with developing or submitting a proposal in response to this Request, or to provide oral or written clarification of its content shall be borne by the bidder. The City of Pawtucket assumes no responsibility for these costs.
- A submittal may be withdrawn by written request to the Purchasing Agent by the proposer prior to the stated RFP deadline.
- Prior to the proposal deadline established for this RFP, changes may be made to a proposal already received by the City if that vendor makes a request to the Purchasing Agent, in writing, to do so. No changes to a proposal shall be made after the RFP deadline.
- Proposals are considered to be irrevocable for a period of not less than ninety (90) days following the opening date, and may not be withdrawn, except with the express written permission of the Purchasing Agent. Should any vendor object to this condition, the vendor must provide objection through a question and/or complaint to the Purchasing Agent prior to the proposal deadline.
- All pricing submitted will be considered to be firm and fixed unless otherwise indicated herein.
- The vendor has full responsibility to ensure that the proposal arrives at the Purchasing Division Office prior to the deadline set out herein. The City assumes no responsibility for delays caused by the U.S. Postal Service or any other delivery service. Postmarking by the due date will not substitute for actual receipt of response by the due date. Proposals arriving after the deadline may be returned, unopened, to the vendor, or may simply be declared non-responsive and not subject to evaluation, at the sole discretion of the Purchasing Agent. **For the purposes of this requirement, the official time and date shall be that of the time clock in the City of Pawtucket's Purchasing Office.**
- At the time and place fixed for the opening of Bids, the Owner will cause to be opened and publicly read aloud every Bid received within the time set for receiving Bids, irrespective of any irregularities therein. Bidders and other persons properly interested may be present, in person or by representative.
- It is intended that an award pursuant to this Request will be made to a prime contractor, who will assume responsibility for all aspects of the work. Joint venture and cooperative proposals will not be considered, but subcontracts are permitted, provided that their use is clearly indicated in the bidder's proposal, and the subcontractor(s) proposed to be used are identified in the proposal.
- Bidders are advised that all materials submitted to the City of Pawtucket for consideration in response to this Request for Proposals shall be considered to be public records as defined in Title 38 Chapter 2 of the Rhode Island General Laws, without exception, and may be released for inspection immediately upon request once an award has been made.
- Vendors are responsible for errors and omissions in their proposals. No such error or omission shall diminish the vendor's obligations to the City.
- The City reserves the right to reject any or all proposals, or portions thereof, at any time, with no penalty. The City also has the right to waive immaterial defects and minor

irregularities in any submitted proposal at its sole discretion. All material submitted in response to this RFP shall become the property of the City of Pawtucket upon delivery to the Purchasing Agent.

- Bids will be opened publicly at a regularly scheduled purchasing board meeting, the date of which is the same as the RFP submission deadline provided in Section 1.0.
- Interpretations or Addenda: No oral interpretation will be made to any Bidder as to the meaning of the Contract Documents or any part thereof. Every request for such an interpretation shall be made in writing to the City of Pawtucket (hereinafter called the "Owner"). Any inquiry received before 2:00 PM on November 29, 2023 will be given consideration. Every interpretation made to a Bidder will be in the form of an Addendum to the Contract Documents, and when issued, will be on file in the office of the Owner at least five days before Bids are opened. In addition, all Addenda will be mailed to each person holding Contract Documents, but it shall be the Bidder's responsibility to make inquiry as to the Addenda issued. All such Addenda shall become part of the Contract and all Bidders shall be bound by such Addenda, whether or not received by the Bidders.
- Each Bidder shall, upon request of the Owner, submit a detailed financial statement on a form furnish by the Owner for that purpose. The Owner shall have the right to take such steps as it deems necessary to determine the ability of the Bidder to perform his obligations under the Contract and the Bidder shall furnish the Owner all such information and data for this purpose as it may request. The right is reserved to reject any Bid where an investigation of the available evidence or information does not satisfy the Owner that the Bidder is qualified to carry out properly the terms of the Contract.



## **3.0 - Overview**

### **3.1 Project Overview**

The project involves construction of new segments of the Blackstone River Bikeway connecting segments of work already completed. The project consists of three (3) Project Areas as follows:

Area 1 - Work at the corner of Roosevelt Avenue and Exchange Street, and adjacent work within Veterans Memorial Park. Work within Veterans Memorial Park includes 1) modifications to the existing Veterans Memorial, 2) installation of sidewalks, bikeway surface and curbing, 3) cast-in-place concrete wheelchair ramps and retaining walls, 4) site amenities and 5) landscape plantings, as well as the installation of an irrigation system in the park.

Area 2 - Work narrowing Roosevelt Avenue, adjacent to Wilkinson Mill and the Blackstone River Valley National Historic Park.

Area 3 - Work along an existing segment of Bikeway adjacent to Slater Mill and sidewalk, signage and striping improvements along Leather Avenue.

Other work in this project includes electrical conduit and wiring with handholes for pedestrian crosswalk signals and to feed site lighting in Area 1 and furnishing and installing new park irrigation system, furnishing, and installing new and reset curbing, installation and restoration of sidewalk and limited areas of bikeway and street asphalt paving.

### **3.2 Project Background**

The purpose of the project is to create a continuous bikeway from Main Street north to Exchange Street. New bikeway will be constructed north from Main St. (Area 2) to an existing section of bikeway constructed from 2018-2021 along Roosevelt Avenue, Leather Street (Area 3) and east of City Hall then continuing north through Veterans Memorial Park (Area 1) to the intersection of Exchange Street and Roosevelt Avenue.

These linkages are a key part of the Blackstone Bikeway and is anticipated to be a major attraction within the Blackstone River Valley National Historical Park.

The project will narrow existing streets and re-configure walkways in Veterans Memorial Park. The project results in over one (1) acre of disturbance. Freshwater wetland permits have been filed with the Rhode Island Department of Environmental Management (RIDEM) as an Insignificant Alteration.

The project is made possible by funds from the Federal Economic Development Agency, the City of Pawtucket, RIDEM and other state agencies. The administration of the construction of the project will be managed by the City of Pawtucket.

## **4.0 - Scope of Work**

### **4.1 Location**

The location of the proposed construction activity (“the Project”) is shown on the Site Plans Issued for Bid included in this RFP as Appendix I. In general terms, the location of the Project can be described as follows:

- Work will take place at two separate locations: first location includes curb and sidewalk work at the Exchange St. Roosevelt Ave intersection with site improvements is at the southeast corner of Roosevelt Ave and Exchange Street, Veterans Memorial Park, address is 175 Roosevelt Avenue; and the second location is along east side of Roosevelt Ave from the intersection of Main Street north approx. 250 LF, in Pawtucket, Rhode Island 02860
- Work operations occur on City owned land and City Right-Of-Way, and private land owned by United States, under the National Park Service as well though special license agreement between the City and the Landowner.
- The City will make a portion of the City owned parking lot available for lay-down, as shown on the Plans.
- Work on the following property:
  - # 249 Roosevelt Avenue
  - Assessor’s Plat MAP 43B /0624/0498 PID 12418

### **4.2 General Requirements**

#### **4.2.1 Project Schedule**

- Project Award – January 2024
- Notice to Proceed – February 2024
- Pre-Construction Conference - No later than February 29, 2024
- Start of Construction Area 1 – April 2024
- Start of Construction Areas 2 & 3 – April 2024
- Substantial Completion – October 2024
- Final Completion – November 2024

#### **4.2.2 Hours of Work**

The Contractor shall be permitted to work on-Site from 7:00 AM to 5:30 PM, Monday through Friday. The Contractor may be permitted to work during extended hours outside of this time, but only upon receipt of the Owner’s express written authorization.

### **4.2.3 Pricing**

UNIT PRICES: The unit price for each of the several items in the Proposal of each Bidder shall include its pro rata share of overhead and profit so that the sum of the products obtained by multiplying the quantity shown for each item by the unit price Bid represents the Total Bid. The price submitted for items requiring a lump sum Bid shall also include all overhead and profit and represents the total Bid. Any Bid not conforming to this requirement may be rejected as unresponsive. Special attention of all Bidders is called to this provision, for should conditions make it necessary to revise the quantities or unit price, no limit will be fixed for such increased or decreased quantities nor extra compensation allowed, provided the net monetary value of all such additive and subtractive changes in quantities of such items or work (i.e., difference in cost) shall not increase or decrease the original contract price by more than twenty-five percent (25%) except for work not covered in the Contract Documents.

### **4.2.4 Prevailing Wage Requirements**

Bidders are advised that payment of the local prevailing wage, as established by the Rhode Island Department of Labor and Training, is a requirement of this project, as outlined in Appendix B. A copy of the current prevailing wage decision is included in this document as Appendix C. Bidders are advised that the City will not amend this document prior to the bid due date for the purpose of notifying bidders of a superseding wage decision(s). Bidders are expected to account for the prevailing wage rates applicable to this project in the formulation of their bid.

All contractors and sub-contractors are required to use the Rhode Island Certified Weekly Payroll and the RI Statement of Compliance form. Use of company payroll forms or other state (MA, CT, etc.) forms is not acceptable. Only employees of the contractor should be listed on the RI Certified Weekly Payroll forms. Subcontractors must do their own separate RI Certified Weekly Payroll form listing all of their workers working on the Prevailing Wage job-site.

Federal forms may be used for Department of Transportation projects only. However, if a complaint is being investigated, the DLT will require the contractor under investigation to resubmit the requested payroll information on the Rhode Island Certified Weekly Payroll form for all hours worked on that Department of Transportation project being investigated.

### **4.2.5 Payment Requisitions**

The Contractor shall prepare draft requisitions for payment for the Project Engineer's review and approval and revise the requisitions as necessary prior to submission to the Owner. Payment requisitions shall be prepared using AIA Standard Forms G702 and G703.

The Owner reserves the right to withhold 5% of each progressive request for payment as retainage. The Owner shall release retainage payments per the terms outlined in Section 12.0 of this RFP.

### **4.2.6 Experience**

The City will require all general contractors and subcontractors have a minimum of 5 years' experience doing similar type of work. This experience should be listed in the form supplied in Section 11 and or attach a separate sheet listing your company's experience and that of subcontractors performing work.

### **4.3 Scope Detail**

The scope of work is defined comprehensively in the Specifications and Site Plans issued for bid, which are incorporated into this RFP as Appendices F and I, respectively.

In general terms, the Project includes, but is not limited to, the following construction activities:

- Mobilization for limited demolition and excavation and work.
- Site preparation activities: saw-cutting, removal and legal disposal of materials, salvage & stockpile.
- Removal of bus shelter, brick paving and benches within the bus shelter limits. Disconnection of electrical to bus shelter and removal of conduit and wiring.
- Installation and maintenance of site protection fencing and erosion control measures.
- Soil management activities: excavation, loading, hauling and legal disposal of excavated soils.
- Construction of new cast-in-place concrete sidewalks and walls.
- Modifications to existing walls and railings.
- Furnishing and installing of granite cut-stone pieces related to the memorial.
- Furnishing and installing granite curb, removing, stockpiling, and resetting brick sidewalks, granite curb, sidewalk restoration and bituminous asphalt roadway.
- Installation of ornamental bollards and signage.
- Installation of gutter inlets and modifications to existing catch basins.
- Discontinuance of existing site lighting conduit and wiring inside Fire Dept.
- Installation of new handholes, conduit, wiring and site lighting.
- Installation of new irrigation system.
- Installation of landscape plantings.
- Restoration of impacted surfaces.

### **4.4 Additional General Requirements**

The Economic Development Administration goal for minority participation in each trade is 3.0%. The goals for female participation in each trade is 6.90%. Further reference is made to these requirements under Section 14. Special Conditions for EDA Contracts for detailed information and instructions.

Reference is made to Appendix H DIVISION 1 for detailed specifications regarding job specific requirements such as Measurement and Payment, Temporary Controls, and Contract Closeout.

## **5.0 - Insurance**

The vendor shall maintain and keep in force such comprehensive general liability insurance as shall protect them from claims which may arise from operations under any contract entered into with the City of Pawtucket, whether such operations be by themselves or by anyone directly or indirectly employed by them.

The amounts of insurance shall be not less than \$1,000,000.00 combined single limit for any one occurrence covering both bodily injury and property damage, including accidental death.

The City of Pawtucket shall be named as additional insured on the vendor's General Liability Policy.

The vendor shall maintain and keep in force such Workers' compensation insurance limits as required by the statutes of the State of Rhode Island, and Employer's Liability with limits no less than \$500,000.

The vendor shall also maintain and keep in force such automobile liability insurance with combined single limit not less than \$1,000,000 each occurrence for bodily injury and property damage including non-owned and/or hired vehicle coverage.

## **6.0 - Acknowledgement of Risk & Hold Harmless Agreement**

In addition to the indemnity provisions in the City of Pawtucket's Terms and Conditions of Purchase and to the fullest extent permitted by law, the selected vendor, its officers, agents, servants, employees, parents, subsidiaries, partners, officers, directors, attorneys, insurers, and/or affiliates (Releasors) agree to release, waive, discharge and covenant not to sue the City of Pawtucket, its officers, agents, servants or employees (Releasees) from any and all liability, claims, cross-claims, rights in law or in equity, agreements, promises demands, actions and causes of action whatsoever arising out of or related to any loss, damage, expenses (including without limitation, all legal fees, expenses, interest and penalties) or injury (including death), of any type, kind or nature whatsoever, whether based in contract, tort, warranty, or other legal, statutory, or equitable theory of recovery, which relate to or arise out of the Releasors use of or presence in and/or on City of Pawtucket property. The Releasors agree to defend, indemnify and hold harmless the Releasees from (a) any and all claims, loss, liability, damages or costs by any person, firm, corporation or other entity claiming by, through or under Releasors in any capacity whatsoever, including all subrogation claims and/or claims for reimbursement, including any court costs and attorney's fees, that may incur due to Releasors use of or presence in and on City of Pawtucket property; and (b) any and all legal actions, including third-party actions, cross-actions, and/or claims for contribution and/or indemnity with respect to any claims by any other persons, entities, parties, which relate to or arise out of Releasors use of or presence in and on City of Pawtucket property.

The Releasors acknowledge the risks that may be involved and hazards connected with use of or presence in and on City of Pawtucket property but elect to provide services under any contract with the City of Pawtucket with full knowledge of such risks. Releasors also acknowledge that any loss, damage, and/or injury sustained by Releasors is not covered by Releasees insurance. Releasors agree to become fully aware of any safety risks involved with the performance of services under any contract with the City of Pawtucket and any safety precautions that need to be followed and agree to take all such precautions.

The duty to indemnify and/or hold harmless the City of Pawtucket shall not be limited by the insurance required under the City of Pawtucket Terms and Conditions of Purchase.

## **7.0 - Additional Insurance Requirements**

In addition to the insurance provisions in the City of Pawtucket Terms and Conditions of Purchase, the liability insurance coverage, except Professional Liability, Errors and Omissions or Workers' Compensation insurance required for performance of a contract with the City of Pawtucket shall include the City of Pawtucket, its divisions, officers and employees as Additional Insureds but only with respect to the selected vendor's activities under the contract. The insurance required through a policy or endorsement shall include:

- A. a Waiver of Subrogation waiving any right to recovery the insurance company may have against the City of Pawtucket; and
- B. a provision that the selected vendor's insurance coverage shall be primary with respect to any insurance, self insurance or self retention maintained by the City of Pawtucket and that any insurance, self insurance or self retention maintained by the City of Pawtucket shall be in excess of the selected vendor's insurance and shall not contribute.

There shall be no cancellation, material change, potential exhaustion of aggregate limits or non-renewal without thirty (30) days written notice from the selected vendor or its insurer(s) to the City of Pawtucket's Purchasing Agent. Any failure to comply with the reporting provision of this clause shall be grounds for immediate termination of the contract with the City of Pawtucket.

Insurance coverage required under the contract shall be obtained from insurance companies acceptable to the City of Pawtucket. The selected vendor shall pay for all deductibles, self insured retentions and/or self insurance included hereunder.

The City of Pawtucket's Purchasing Agent reserves the right to consider and accept alternative forms and plans of insurance or to require additional or more extensive coverage for any individual requirement.

## **8.0 - Proposal Content and Organization**

All bids must be submitted on the forms supplied in Section 11.0 and shall be subject to all requirements of the Contract Documents, including these instructions to bidders. All bids must be regular in every respect and no interlineations, excisions or special conditions shall be made or included in the Bid Form by the Bidder. Pricing must include all costs as specified in this solicitation.

The Owner may consider as irregular any Bid on which there is an alteration of or departure from the Bid Form hereto attached and at its option may reject the same.

Bid Documents, including the Bid, the Bid Bond, the Non-Collusion Affidavit, the Anti-Kickback Acknowledgment, and the Statement of Bidder's Qualifications (if requested) shall be enclosed in the same sealed envelope which shall be clearly labeled with the information below:

**“Blackstone Bikeway 3A-1 Contract 1”**

**BID # 23-040**

**Name of Bidder:** \_\_\_\_\_

**Date of bid opening: Dec. 14, 2023**

All Bid Forms must be signed.

If the Contract is awarded, it will be awarded by the Owner to a responsible Bidder on the basis of the lowest qualified bid price.

Vendors must include on the Bid Form a list of at least four (4) references with whom they have contracted to do similar work by including the company name, telephone number, contact person, and number of years they have served this customer. Preferably, references should be municipalities which are of approximate size as the City of Pawtucket, and a website address should be included if available.

Respondents must also include an overview of their company's experience including, but not limited to, the number of years the company has been providing these services, the size of the company (including the number of employees and locations), a description of work undertaken that is similar to what is being requested in this RFP, and, if applicable, certifications that show a knowledge of equipment that would be serviced or provided under this contract.

If any subcontractors are to be used in the performance of any work contracted for under this RFP, please list their name(s), contractor license #, address and phone number, and specific description of the subcontract work to be performed. See Proposed Subcontractors form.

Two (2) copies of your proposal—one (1) original hard copy and one digital (1) copy on flash drive or similar format—must be submitted at the time of submission. Proposals must be in the following format:

Bid Form (Section 11 *“ENTIRE SECTION”*)

Anti-Kickback Acknowledgement (Appendix A)

Non-Collusion Affidavit of Prime Bidder

Certificate of Compliance with Tax Laws

Company overview

Length of time your firm has been in business

Length of time at current address

All licensing (List types and business license number(s)), certification and permits as required in the Scope of Work



Please state any and all additions, deletions, and exceptions, if any, that you are taking to any portion of this proposal. If not addressed specifically, the City of Pawtucket assumes that the vendor will adhere to all terms and conditions listed in this RFP.

Submission of a proposal is acknowledgement and acceptance of the City of Pawtucket's Purchasing Rules and Regulations and General Terms and Conditions of Purchase.

## 9.0 - Evaluation Criteria

The evaluation of proposals will be conducted in a time frame convenient to the City.

The City of Pawtucket reserves the right to award on the basis of cost alone, accept or reject any or all proposals, and to otherwise act in its best interest including, but not limited to, directly negotiating with any Vendor who submits a proposal in response to this RFP and to award a contract based upon the results of those negotiations alone. The City reserves the right to consider as unqualified to do the work of general construction any Bidder who does not habitually perform with his own forces the major portions of the work involved in construction of the Improvements embraced in this Contract.

Further, the City reserves the right to waive irregularities it may deem minor in its consideration of proposals.

Proposals found to be technically or substantially non-responsive at any point in the evaluation process will be rejected and not considered further. The City of Pawtucket may elect to require presentations(s) by vendors in consideration for award.

Proposals will be evaluated in three (3) phases:

1. The first phase is an initial review to determine if the proposal, as submitted, is complete. To be complete, a proposal must meet all the requirements of this RFP.
2. The second phase is an in-depth analysis and review based on criteria below and their associated weights.

<u>Evaluation Criteria</u>	<u>Importance</u>
Experience/Qualifications	20%
References	10%
Price	70%

3. The third is a comparison of each proposal's weighted evaluation relative to the costs proposed.

In the event that the City requires further information and/or a demonstration of any equipment or process offered in any proposal, all vendors asked for same will do so at no cost to the City.

For purposes of evaluating the lowest qualified bid, the basis shall be the Bid Price noted in the Bid Form (Section 11).

## **10.0 - Miscellaneous**

- Vendors shall at all times comply with all federal, state, and local laws, ordinances and regulations and shall defend, indemnify and save harmless the City of Pawtucket against any claims arising from the violation of any such laws, ordinances and regulations, including but not limited to challenges as to the legality of any and all vendor installations.
- The City is exempt from the payment of the Rhode Island State Sales Tax under the 1956 General Laws of the State of Rhode Island, 44-18-30, Paragraph 1, as amended. Further, the City is also exempt from the payment of any excise or federal transportation taxes. The proposal prices submitted must be exclusive of same, and will be so construed.
- The City of Pawtucket reserves the right to cancel an agreement with the Vendor with thirty (30) days written notice and to award the contract to the next highest evaluated bidder.
- The City of Pawtucket reserves the right to renegotiate the terms of this contract with the Vendor for subsequent years provided the Vendor agrees to the contract terms for the renewal period.
- The payment and performance of any obligations under this contract for years beyond the first fiscal year are subject to the availability of funds.
- The City reserves the right to pay the selected Vendor via credit card at its sole discretion.

## 11.0 – Bid Form

### BID # 23-040 Blackstone Bikeway 3A-1 Contract 1

Date: \_\_\_\_\_

Submitted By: \_\_\_\_\_

(Include Name, Address and Telephone No.) \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Name and remittance address that will  
appear on invoices:

Physical address of business:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

#### **General Information**

Is your firm a sole proprietorship doing business under a different name? \_\_\_\_ Yes \_\_\_\_ No

If yes, please indicate sole proprietorship, a name, and the name you are doing business under.

\_\_\_\_\_  
\_\_\_\_\_

Is your firm incorporated? \_\_\_\_ Yes \_\_\_\_ No

Will any of the work spelled out in this bid be outsourced? \_\_\_\_ Yes \_\_\_\_ No

If so, please explain below:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Have you or your firm been subject to suspension, debarment or criminal conviction by the City of Pawtucket, the State of Rhode Island, or any other jurisdiction?

Yes: \_\_\_\_\_ No: \_\_\_\_\_

Have the City of Pawtucket and/or the State of Rhode Island ever terminated contracts with your firm for cause?

Yes: \_\_\_\_\_ No: \_\_\_\_\_

Has your firm ever withdrawn from a contract with the City of Pawtucket and/or the State of Rhode Island during its performance?

Yes: \_\_\_\_\_ No: \_\_\_\_\_

Have you or your firm been involved in litigation against the City of Pawtucket and/or the State of Rhode Island.

Yes: \_\_\_\_\_ No: \_\_\_\_\_

If you answered yes to any of the foregoing, please explain the circumstances below. If you or your firm has been involved in litigation against the City of Pawtucket and/or the State of Rhode Island, please include the case caption, case number and status. (If more space is needed, please attach separate sheet and submit with the bid.)

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Is your company bonded? Yes \_\_\_\_ No \_\_\_\_

Please describe the nature and extent of all insurance coverage:

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## **References**

Please list at least four (4) companies with whom you have contracted to provide similar services. Preferably, references should be municipalities which are of approximate size as the City of Pawtucket, and a website address should be included if available.

### **Reference #1**

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

Contact Person: \_\_\_\_\_ Telephone #: \_\_\_\_\_

Contract Dates: \_\_\_\_\_ To \_\_\_\_\_

Website Address: \_\_\_\_\_

### **Reference # 2**

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

Contact Person: \_\_\_\_\_ Telephone #: \_\_\_\_\_

Contract Dates: \_\_\_\_\_ To \_\_\_\_\_

Website Address: \_\_\_\_\_

### **Reference # 3**

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

Contact Person: \_\_\_\_\_ Telephone #: \_\_\_\_\_

Contract Dates: \_\_\_\_\_ To \_\_\_\_\_

Website Address: \_\_\_\_\_

### **Reference # 4**

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

Contact Person: \_\_\_\_\_ Telephone #: \_\_\_\_\_

Contract Dates: \_\_\_\_\_ To \_\_\_\_\_

Website Address: \_\_\_\_\_

**Acknowledgement of Addenda**

The Bidder hereby states that he/she has become thoroughly familiar with the site, local conditions affecting the performance and costs of the work, and with the Contract Documents, including the Bid Documents and those forms required to be executed and submitted with this proposal as well as the method of contract award, the terms of the proposal contract, wage rates and employment requirements and reports, the conditions of this contract relating to performance, the technical specifications and drawings, and any noted modifications to the Bidding Documents have been incorporated into addenda thereto as prepared by the Owner as follows:

ADDENDUM NO.

SIGNATURE OF BIDDER

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**Pricing Proposal**

***Bid # 23-040 Blackstone Bikeway Segment 3A-1 Contract 1***

**Part A - Offer:**

- A. Having examined the Place of the Work and all matters referred to in the Instructions to Bidders and the Contract Documents prepared by BETA Group, Inc. (Landscape Architect/Engineer for the above mentioned project) and the City of Pawtucket, we, the undersigned, hereby offer to enter into a Contract to perform the Work, **(Blackstone Bikeway Segment 3A-1 Contract 1)**, for the amount indicated below, subject to the additions and deductions according to the terms of the Contract Documents and as stated below. The undersigned will provide all necessary and proper material, machinery, equipment, facilities, and means to complete the Work.
- B. The undersigned hereby understands that the City of Pawtucket (Owner) has the right to reject any and all bids and to award the contract in the best interests of the Owner. The Owner reserves the right to award the entire project or delete portions of the work to funds available, whichever is in the best interest of the Owner.
- C. The undersigned also understands that the contract must be carried out in strict accordance with the contract documents.
- D. **Total Price below should include BID ITEMS 1.0 – 52.0 and all ALLOWANCES.**

**TOTAL PRICE**

\$.....dollars  
(Amount in words)

(.....)  
(Amount in figures)

in lawful money of the United States of America and,

We have included herewith, the unit price bid forms, information, and the required security deposit or Bid Bond as required by the Instruction to Bidders.



**Note:**

1. The bidder shall specify his bid price in both words and figures. All words and figures shall be in ink or typed. In case of a discrepancy between the written words and those in figures, the written word shall govern. The Bidder is required to submit a bid based upon the products having the level of quality specified in the contract documents.
2. The bidder shall identify and document cost implications involved in all substitution requests. Any and all cost savings shall be returned to the Contract.
3. The bid may be withdrawn prior to the scheduled time for opening of bids or any authorized postponement thereof.

**Part B (Pricing Proposal) – Itemized Pricing:****Blackstone Bikeway 3A-1 Contract 1****BID # \_\_\_\_\_****Item 1.0 Project Mobilization & Demobilization**

\_\_\_\_\_ (\$ Figures) 1 LS  
\_\_\_\_\_ Dollars/Cents

**Item 2.0 Site Preparation Activities – Project Wide**

\_\_\_\_\_ (\$ Figures) 1 LS  
\_\_\_\_\_ Dollars/Cents

**Item 3.0 Area 2 Removal and Disposal Of Bus Shelter**

\_\_\_\_\_ (\$ Figures) 1 LS  
\_\_\_\_\_ Dollars/Cents

**Item 4.0 Site Protection and Maintenance of Site – Project Wide**

\_\_\_\_\_ (\$ Figures) 1 LS  
\_\_\_\_\_ Dollars/Cents

**Item 5.0 Utility Test Pits – Project wide**

\_\_\_\_\_ (\$ Figures) 20 CY  
\_\_\_\_\_ Dollars/Cents

**Item 6.0 Earth Excavation**

\_\_\_\_\_ (\$ Figures) 350 CY  
\_\_\_\_\_ Dollars/Cents

**Item 7.0 Gravel Borrow**

\_\_\_\_\_ (\$ Figures) 140 CY  
\_\_\_\_\_ Dollars/Cents

**Item 8.0 Drop Inlet Drainage Structure & Catch Basin Modifications**

\_\_\_\_\_ (\$ Figures) 2 EA  
\_\_\_\_\_ Dollars/Cents

<b>Item 9.0</b>	<b>Trimming and Fine Grading</b>	_____ (\$ Figures)	2,200	SY
		_____ Dollars/Cents		
<b>Item 10.0</b>	<b>HMA Pavement - Roadway</b>	_____ (\$ Figures)	22	TON
		_____ Dollars/Cents		
<b>Item 11.0</b>	<b>HMA Pavement – Bike Path</b>	_____ (\$ Figures)	38	TON
		_____ Dollars/Cents		
<b>Item 12.0</b>	<b>Granite Curb – Type 1</b>	_____ (\$ Figures)	470	LF
		_____ Dollars/Cents		
<b>Item 13.0</b>	<b>Granite Curb – Type 2</b>	_____ (\$ Figures)	270	LF
		_____ Dollars/Cents		
<b>Item 14.0</b>	<b>Brick Pavers</b>	_____ (\$ Figures)	1770	SF
		_____ Dollars/Cents		
<b>Item 15.0</b>	<b>Cement Concrete - Types A &amp; B</b>	_____ (\$ Figures)	110	CY
		_____ Dollars/Cents		
<b>Item 16.0</b>	<b>Pervious Concrete Pavement</b>	_____ (\$ Figures)	210	SY
		_____ Dollars/Cents		
<b>Item 17.0</b>	<b>Concrete Wheelchair Ramps A-D</b>	_____ (\$ Figures)	16	SY
		_____ Dollars/Cents		

<b>Item 18.0</b>	<b>Detectable Warning Panel – Type 1 (Within Wheelchair Ramp)</b>		
	_____	(\$ Figures)	50 SF
	_____	Dollars/Cents	
<b>Item 19.0</b>	<b>Detectable Warning Panel – Type 2 (Isolated)</b>		
	_____	(\$ Figures)	60 SF
	_____	Dollars/Cents	
<b>Item 20.0</b>	<b>Concrete Seat Wall W-1</b>		
	_____	(\$ Figures)	1 LS
	_____	Dollars/Cents	
<b>Item 21.0</b>	<b>Reconstruction of Existing Concrete Ramp</b>		
	_____	(\$ Figures)	1 LS
	_____	Dollars/Cents	
<b>Item 22.0</b>	<b>Signage</b>		
	_____	(\$ Figures)	30 SF
	_____	Dollars/Cents	
<b>Item 23.0</b>	<b>Sign Post 2 ½” Steel</b>		
	_____	(\$ Figures)	16 EA
	_____	Dollars/Cents	
<b>Item 24.0</b>	<b>Yellow and White Epoxy Resin Pavement Markings</b>		
	_____	(\$ Figures)	680 LF
	_____	Dollars/Cents	
<b>Item 25.0</b>	<b>Crosswalk Type 1 Epoxy Resin Pavement Markings</b>		
	_____	(\$ Figures)	280 SF
	_____	Dollars/Cents	
<b>Item 26.0</b>	<b>Crosswalk Type 2 Epoxy Resin Pavement Markings</b>		
	_____	(\$ Figures)	140 SF
	_____	Dollars/Cents	

<b>Item 27.0</b>	<b>Modifications to Existing Memorial</b>			
	_____ (\$ Figures)	1	LS	
	_____ Dollars/Cents			
<b>Item 28.0</b>	<b>CS-1 Granite Stair Tread at Existing Memorial</b>			
	_____ (\$ Figures)	2	EA	
	_____ Dollars/Cents			
<b>Item 29.0</b>	<b>CS-2 Granite Edging</b>			
	_____ (\$ Figures)	332	LF	
	_____ Dollars/Cents			
<b>Item 30.0</b>	<b>CS-3 Granite Curb Transition</b>			
	_____ (\$ Figures)	4	EA	
	_____ Dollars/Cents			
<b>Item 31.0</b>	<b>CS-4 Granite Bike Rack Base</b>			
	_____ (\$ Figures)	1	EA	
	_____ Dollars/Cents			
<b>Item 32.0</b>	<b>CS-5 Granite Bench Base</b>			
	_____ (\$ Figures)	10	EA	
	_____ Dollars/Cents			
<b>Item 33.0</b>	<b>Railing System Modifications &amp; Railing Type 1</b>			
	_____ (\$ Figures)	1	LS	
	_____ Dollars/Cents			
<b>Item 34.0</b>	<b>Ornamental Bollard &amp; Chain System</b>			
	_____ (\$ Figures)	1	LS	
	_____ Dollars/Cents			
<b>Item 35.0</b>	<b>Bike Rack</b>			
	_____ (\$ Figures)	1	EA	
	_____ Dollars/Cents			

<b>Item 36.0</b>	<b>Bench</b>			
	_____ (\$ Figures)	5	EA	
	_____ Dollars/Cents			
<b>Item 37.0</b>	<b>Loam 4 " Deep and Seed for Turfgrass</b>			
	_____ (\$ Figures)	600	SY	
	_____ Dollars/Cents			
<b>Item 38.0</b>	<b>Tree &amp; Shrub Conservation Measures</b>			
	_____ (\$ Figures)	1	LS	
	_____ Dollars/Cents			
<b>Item 39.0</b>	<b>Area 1 PB-A (Plant Bed) Landscape Plantings</b>			
	_____ (\$ Figures)	1	LS	
	_____ Dollars/Cents			
<b>Item 40.0</b>	<b>Area 1 PB-B (Plant Bed) Landscape Plantings</b>			
	_____ (\$ Figures)	1	LS	
	_____ Dollars/Cents			
<b>Item 41.0</b>	<b>Area 1 PB-C (Plant Bed) Landscape Plantings</b>			
	_____ (\$ Figures)	1	LS	
	_____ Dollars/Cents			
<b>Item 42.0</b>	<b>Area 1 PB-D (Plant Bed) Landscape Plantings</b>			
	_____ (\$ Figures)	1	LS	
	_____ Dollars/Cents			
<b>Item 43.0</b>	<b>Area 2 PB-A (Plant Bed) Landscape Plantings</b>			
	_____ (\$ Figures)	1	LS	
	_____ Dollars/Cents			
<b>Item 44.0</b>	<b>Area 2 PB-B (Plant Bed) Landscape Plantings</b>			
	_____ (\$ Figures)	1	LS	
	_____ Dollars/Cents			

Item 45.0	Area 1 Irrigation System		
	_____ (\$ Figures)	1	LS
	_____ Dollars/Cents		
Item 46.0	Relocate Pedestrian Crosswalk Signal		
	_____ (\$ Figures)	1	LS
	_____ Dollars/Cents		
Item 47.0	Pedestrian Crosswalk Push Button Actuator Extension		
	_____ (\$ Figures)	1	EA
	_____ Dollars/Cents		
Item 48.0	Remove & Reset Existing Light Poles		
	_____ (\$ Figures)	2	EA
	_____ Dollars/Cents		
Item 49.0	Bollard Light		
	_____ (\$ Figures)	6	EA
	_____ Dollars/Cents		
Item 50.0	Uplight		
	_____ (\$ Figures)	4	EA
	_____ Dollars/Cents		
Item 51.0	Area 1 Interior & Exterior Electrical Equip, Conduit, & Wiring	1	LS
	_____ (\$ Figures)		
	_____ Dollars/Cents		
Item 52.0	Flag Persons	500	HRS
	_____ (\$ Figures)		
	_____ Dollars/Cents		

### **Part C (Pricing Proposal) - Allowances**

As part of the Base Bid (Total Bid), the Bidder agrees to carry quantities of materials below in the base bid of the contract. The Owner reserves the right to remove these items from the contract totally or in part and to adjust the contract sum to reflect the actual costs of the construction authorized by the Owner. Unit prices reflect replacement with suitable materials.

#### **ALLOWANCE NO. 1 Allowance for Removal of Unsuitable Material**

The Base Bid Price listed in the Bid Proposal shall include the removal of a quantity of 20 cubic yards of unsuitable material, such as defective gravel base, brick, stone mortar, blocks, cobblestone, curbing, concrete footing and other waste debris that is not scheduled for removal under the other sections of the specifications. The Contractor shall contact the Engineer in the event unsuitable material is encountered. Unsuitable material shall not be removed from the site without inspection and approval by the engineer. Removal requires certification of quantities by the Contractor. Un-used allowances for unsuitable material removal shall be reimbursed to the Owner at the Contract Unit Price stated below.

Unit Price for the Removal of Unsuitable Material, 20 Cubic Yards:

\$ \_\_\_\_\_ \$ \_\_\_\_\_  
Cost per Cubic Yard In Words Per Cy

\$ \_\_\_\_\_  
Total Cost Removal of 20 Cubic Yards of Unsuitable Material

#### **ALLOWANCE NO. 2 Allowance for Removal of Boulders over 3 feet in diameter**

The Base Bid Price listed in the Bid Proposal shall include the removal and disposal of a quantity of 5 cubic yards of boulders over 3 feet in diameter (considered unclassified excavation). The Contractor shall contact the Engineer in the event boulders are encountered. Boulders shall not be removed from the site without inspections by the Engineer. Certification of quantities are required. Unused allowances for boulder removal shall be reimbursed to the Owner at the Contract Unit Price.

Unit Price for the Removal and Disposal of Boulders over 3 feet in diameter, 5 Cubic Yards:

\$ \_\_\_\_\_ \$ \_\_\_\_\_  
Cost per Cubic Yard In Words Per Cy

\$ \_\_\_\_\_  
Total Cost 5 CY Removal and Disposal of Boulders

**ALLOWANCE NO. 3 Allowance for Removal and Disposal of Concrete Foundations and Footings requiring jackhammer demolition:** The Base Bid Price listed in the Bid Proposal shall include the removal and disposal of the quantity of five (5) cubic yards of unclassified concrete requiring jackhammer demolition (considered Unclassified Excavation) The Contractor shall contact the Engineer in the unclassified foundations or footings are encountered. The concrete rubble may not be removed from the site without inspections by the Engineer. Certification of quantities is required. Unused allowances for Concrete Foundations and Footing Removal and Disposal shall be reimbursed to the Owner at the Contract Unit Price.



Unit Price for the Removal and Disposal of Concrete Foundations and Footings requiring jackhammer demolition, 10 Cubic Yards:

\$ \_\_\_\_\_      \$ \_\_\_\_\_  
Cost per Cubic Yard      In Words      Per Cy

\$ \_\_\_\_\_  
Total Cost 5 CY Removal and Disposal of Concrete Footings and Foundations

**ALLOWANCE NO. 4 Permit Fees:** A permit allowance of Four-Thousand Dollars (\$4,000.00) shall be provided to address this item. The Contractor shall be responsible for payment of all permit fees and shall request reimbursement thru payment requisitions. The Contractor shall provide documentation that the permit fees have been paid prior to reimbursement. The amount reimbursed will be the amount that is stated on the permit receipt(s). Unused allowances not expended for permitting shall be reimbursed to the Owner.

\$ 4,000.00      Four Thousand Dollars  
Lump Sum      In Words

**ALLOWANCE NO 5. Materials Testing Services:** An allowance of Eight-Thousand Dollars (\$8,000.00) shall be provided to address this item. The Contractor shall be responsible for reviewing proposed work operations with the Engineer and shall coordinate and ensure the Owner the ability to request or conduct tests of materials utilized on the site. The amount reimbursed will be the amount that is stated on the testing receipt(s). Unused allowances not expended for Materials Testing Services shall be reimbursed to the Owner.

\$ 8,000.00      Eight Thousand dollars  
Lump Sum      In Words

**ALLOWANCE NO 6. Police Detail for Traffic Protection:** An allowance of Fifty-Thousand Dollars (\$50,000.00) shall be provided to address this item. The Contractor shall be responsible for reviewing proposed work operations with the Engineer and shall coordinate and ensure the proper police detail is present to maintain orderly traffic flow and provide the necessary traffic protection. The Contractor shall provide documentation of the days and manhours required. The amount reimbursed will be the amount that is stated on the time slip (s). Unused allowances not expended for Police Detail for Traffic Protection shall be reimbursed to the Owner.

\$ 50,000.00      Fifty-Thousand dollars  
Lump Sum      In Words

**END OF ALLOWANCES**

**Part D (Pricing Proposal) - Bid Add Alternates**

Part D not used as part of this Contract.

**Bid Acceptance:**

If this Bid is accepted within the time stated in the contract documents, and we fail to commence the Work, the Bid Bond shall be forfeited as damages to the Owner by reason of our failure, limited in amount to the lesser of the face value of the Bid Bond or the difference between this Bid and the Bid upon which the Contract is executed.

In the event our Bid is not accepted within the time stated in the contract documents, the required Bid Bond shall be returned to the undersigned, in accordance with the provisions of the Instructions to Bidders; unless a mutually satisfactory arrangement is made for its retention and validity for an extended period of time.

The undersigned understands that the City of Pawtucket has the right to increase or decrease the quantities stated in the bid at the unit prices quoted.

**Bid Signature:**

The Bidder, in compliance with the invitation for bids for construction of the BLACKSTONE BIKEWAY SEGMENT 3A-1 CONTRACT 1, Pawtucket, Rhode Island, having examined the Contract Documents and related specifications and plan, and being familiar with the site and with all the conditions surrounding the proposed construction including the availability of materials, labor and equipment, hereby proposed to construct the Project in accordance with the contract documents within the time set forth to cover all expenses incurred in performing the work required under the Contract Documents in which this proposal is a part.

The prices that are herein quoted will be the price to the Owner

Company Name: \_\_\_\_\_ Telephone \_\_\_\_\_

Company Address: \_\_\_\_\_

Bidder's Signature: \_\_\_\_\_

Title: \_\_\_\_\_ Date \_\_\_\_\_



**NON-COLLUSION AFFIDAVIT OF PRIME BIDDER**

State of \_\_\_\_\_ )  
County of \_\_\_\_\_ ) .ss

\_\_\_\_\_  
,  
being first duly sworn, deposes and says that;

(1) He is \_\_\_\_\_ (owner, partner, officer, representative or agent) \_\_\_\_\_ of \_\_\_\_\_, the BIDDER that has submitted the attached bid;

(2) He is fully informed respecting the preparation and contents of the attached Bid and all pertinent circumstances respecting such Bid;

(3) Such Bid is genuine and is not a collusive or sham Bid;

(4) Neither the said BIDDER nor any of its officers, partners, owners, agents, representatives, employees, or parties in interest, including the affiant, has in any way colluded, conspired or agreed, directly or indirectly, with any other BIDDER, firm or person to submit a collusive or sham bid in connection with the Contract for which the attached Bid has been submitted or to refrain from bidding in connection with such a contract, or has in any manner, directly or indirectly, sought by agreement or collusion or communication or conference with any other BIDDER, firm or person to fix the price or prices in the attached Bid or of any other Bidder, or to fix any overhead, profit or cost element of the Bid price or the Bid price of any other BIDDER, or to secure through any collusion, conspiracy, connivance or unlawful agreement any advantage against the Local Government or any person interested in the proposed Contract; and

(5) The price or prices quoted in the attached Bid are fair and proper and are not tainted by any collusion, conspiracy, connivance or unlawful agreement on the part of the BIDDER or any of its agents, representatives, owners, employees or parties in interest including this affiant.

(Signed) \_\_\_\_\_

\_\_\_\_\_  
(Title)

Subscribed and sworn to before me

This \_\_\_\_\_ Day of \_\_\_\_\_, 20\_\_\_\_

\_\_\_\_\_  
My Commission Expires \_\_\_\_\_

## CERTIFICATE OF COMPLIANCE WITH TAX LAWS

I, \_\_\_\_\_ of \_\_\_\_\_,  
 certify under  
 (principal) (corporation)  
 pains and penalties of perjury that said corporation has complied with all the laws of the State of Rhode Island  
 and Providence Plantations relating to taxes.

Date	Signature
	Title
	Federal Tax Identification Number

END OF SECTION

THE BIDDER SHALL STATE THE NAMES OF ALL THE SUBTRACTORS THAT THE  
CONTRACTOR PROPOSES TO USE

**PROPOSED SUBCONTRACTORS**

If none, write "None" \_\_\_\_\_

\*Description of Work \_\_\_\_\_

Proposed Subcontractor, Name: \_\_\_\_\_

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

Fed Tax ID#: \_\_\_\_\_

DUNS #: \_\_\_\_\_

\*Description of Work \_\_\_\_\_

Proposed Subcontractor, Name: \_\_\_\_\_

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

Fed Tax ID#: \_\_\_\_\_

DUNS #: \_\_\_\_\_

\*Description of Work \_\_\_\_\_

Proposed Subcontractor, Name: \_\_\_\_\_

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

Fed Tax ID#: \_\_\_\_\_

DUNS #: \_\_\_\_\_

\*Description of Work \_\_\_\_\_

Proposed Subcontractor, Name: \_\_\_\_\_

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

Fed Tax ID#: \_\_\_\_\_

DUNS #: \_\_\_\_\_

\*Insert description of work and subcontractors' names as may be required.

This is to certify that all names of the above-mentioned subcontractors are submitted with full  
knowledge and consent of the respective parties.

**END SECTION 11**

## 12 – General Conditions – AIA Document A201

### GENERAL CONDITIONS

#### AIA DOCUMENT A201, 2007 EDITION

### PART I – GENERAL

#### DESCRIPTION

- A. AIA Document A201, General Conditions of the Contract for Construction, Sixteenth Edition, 2007.

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for the following PROJECT:  
(Name and location or address)

<< ->>  
<< >>

THE OWNER:  
(Name, legal status and address)

<< >><< >>  
<< >>

THE ARCHITECT:  
(Name, legal status and address)

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- 8 TIME
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## **ARTICLE 1 GENERAL PROVISIONS**

### **§ 1.1 BASIC DEFINITIONS**

#### **§ 1.1.1 THE CONTRACT DOCUMENTS**

The Contract Documents are enumerated in the Agreement between the Owner and Contractor (hereinafter the Agreement) and consist of the Agreement, Conditions of the Contract (General, Supplementary and other Conditions), Drawings, Specifications, Addenda issued prior to execution of the Contract, other documents listed in the Agreement and Modifications issued after execution of the Contract. A Modification is (1) a written amendment to the Contract signed by both parties, (2) a Change Order, (3) a Construction Change Directive or (4) a written order for a minor change in the Work issued by the Architect. Unless specifically enumerated in the Agreement, the Contract Documents do not include the advertisement or invitation to bid, Instructions to Bidders, sample forms, other information furnished by the Owner in anticipation of receiving bids or proposals, the Contractor's bid or proposal, or portions of Addenda relating to bidding requirements.

#### **§ 1.1.2 THE CONTRACT**

The Contract Documents form the Contract for Construction. The Contract represents the entire and integrated agreement between the parties hereto and supersedes prior negotiations, representations or agreements, either written or oral. The Contract may be amended or modified only by a Modification. The Contract Documents shall not be construed to create a contractual relationship of any kind (1) between the Contractor and the Architect or the Architect's consultants, (2) between the Owner and a Subcontractor or a Sub-subcontractor, (3) between the Owner and the Architect or the Architect's consultants or (4) between any persons or entities other than the Owner and the Contractor. The Architect shall, however, be entitled to performance and enforcement of obligations under the Contract intended to facilitate performance of the Architect's duties.

#### **§ 1.1.3 THE WORK**

The term "Work" means the construction and services required by the Contract Documents, whether completed or partially completed, and includes all other labor, materials, equipment and services provided or to be provided by the Contractor to fulfill the Contractor's obligations. The Work may constitute the whole or a part of the Project.

#### **§ 1.1.4 THE PROJECT**

The Project is the total construction of which the Work performed under the Contract Documents may be the whole or a part and which may include construction by the Owner and by separate contractors.

#### **§ 1.1.5 THE DRAWINGS**

The Drawings are the graphic and pictorial portions of the Contract Documents showing the design, location and dimensions of the Work, generally including plans, elevations, sections, details, schedules and diagrams.

#### **§ 1.1.6 THE SPECIFICATIONS**

The Specifications are that portion of the Contract Documents consisting of the written requirements for materials, equipment, systems, standards and workmanship for the Work, and performance of related services.

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#### § 1.1.7 INSTRUMENTS OF SERVICE

Instruments of Service are representations, in any medium of expression now known or later developed, of the tangible and intangible creative work performed by the Architect and the Architect's consultants under their respective professional services agreements. Instruments of Service may include, without limitation, studies, surveys, models, sketches, drawings, specifications, and other similar materials.

#### § 1.1.8 INITIAL DECISION MAKER

The Initial Decision Maker is the person identified in the Agreement to render initial decisions on Claims in accordance with Section 15.2 and certify termination of the Agreement under Section 14.2.2.

#### § 1.2 CORRELATION AND INTENT OF THE CONTRACT DOCUMENTS

§ 1.2.1 The intent of the Contract Documents is to include all items necessary for the proper execution and completion of the Work by the Contractor. The Contract Documents are complementary, and what is required by one shall be as binding as if required by all; performance by the Contractor shall be required only to the extent consistent with the Contract Documents and reasonably inferable from them as being necessary to produce the indicated results.

§ 1.2.2 Organization of the Specifications into divisions, sections and articles, and arrangement of Drawings shall not control the Contractor in dividing the Work among Subcontractors or in establishing the extent of Work to be performed by any trade.

§ 1.2.3 Unless otherwise stated in the Contract Documents, words that have well-known technical or construction industry meanings are used in the Contract Documents in accordance with such recognized meanings.

#### § 1.3 CAPITALIZATION

Terms capitalized in these General Conditions include those that are (1) specifically defined, (2) the titles of numbered articles or (3) the titles of other documents published by the American Institute of Architects.

#### § 1.4 INTERPRETATION

In the interest of brevity the Contract Documents frequently omit modifying words such as "all" and "any" and articles such as "the" and "an," but the fact that a modifier or an article is absent from one statement and appears in another is not intended to affect the interpretation of either statement.

#### § 1.5 OWNERSHIP AND USE OF DRAWINGS, SPECIFICATIONS AND OTHER INSTRUMENTS OF SERVICE

§ 1.5.1 The Architect and the Architect's consultants shall be deemed the authors and owners of their respective Instruments of Service, including the Drawings and Specifications, and will retain all common law, statutory and other reserved rights, including copyrights. The Contractor, Subcontractors, Sub-subcontractors, and material or equipment suppliers shall not own or claim a copyright in the Instruments of Service. Submittal or distribution to meet official regulatory requirements or for other purposes in connection with this Project is not to be construed as publication in derogation of the Architect's or Architect's consultants' reserved rights.

§ 1.5.2 The Contractor, Subcontractors, Sub-subcontractors and material or equipment suppliers are authorized to use and reproduce the Instruments of Service provided to them solely and exclusively for execution of the Work. All copies made under this authorization shall bear the copyright notice, if any, shown on the Instruments of Service. The Contractor, Subcontractors, Sub-subcontractors, and material or equipment suppliers may not use the Instruments of Service on other projects or for additions to this Project outside the scope of the Work without the specific written consent of the Owner, Architect and the Architect's consultants.

#### § 1.6 TRANSMISSION OF DATA IN DIGITAL FORM

If the parties intend to transmit Instruments of Service or any other information or documentation in digital form, they shall endeavor to establish necessary protocols governing such transmissions, unless otherwise already provided in the Agreement or the Contract Documents.

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## ARTICLE 2 OWNER

### § 2.1 GENERAL

§ 2.1.1 The Owner is the person or entity identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The Owner shall designate in writing a representative who shall have express authority to bind the Owner with respect to all matters requiring the Owner's approval or authorization. Except as otherwise provided in Section 4.2.1, the Architect does not have such authority. The term "Owner" means the Owner or the Owner's authorized representative.

§ 2.1.2 The Owner shall furnish to the Contractor within fifteen days after receipt of a written request, information necessary and relevant for the Contractor to evaluate, give notice of or enforce mechanic's lien rights. Such information shall include a correct statement of the record legal title to the property on which the Project is located, usually referred to as the site, and the Owner's interest therein.

### § 2.2 INFORMATION AND SERVICES REQUIRED OF THE OWNER

§ 2.2.1 Prior to commencement of the Work, the Contractor may request in writing that the Owner provide reasonable evidence that the Owner has made financial arrangements to fulfill the Owner's obligations under the Contract. Thereafter, the Contractor may only request such evidence if (1) the Owner fails to make payments to the Contractor as the Contract Documents require; (2) a change in the Work materially changes the Contract Sum; or (3) the Contractor identifies in writing a reasonable concern regarding the Owner's ability to make payment when due. The Owner shall furnish such evidence as a condition precedent to commencement or continuation of the Work or the portion of the Work affected by a material change. After the Owner furnishes the evidence, the Owner shall not materially vary such financial arrangements without prior notice to the Contractor.

§ 2.2.2 Except for permits and fees that are the responsibility of the Contractor under the Contract Documents, including those required under Section 3.7.1, the Owner shall secure and pay for necessary approvals, easements, assessments and charges required for construction, use or occupancy of permanent structures or for permanent changes in existing facilities.

§ 2.2.3 The Owner shall furnish surveys describing physical characteristics, legal limitations and utility locations for the site of the Project, and a legal description of the site. The Contractor shall be entitled to rely on the accuracy of information furnished by the Owner but shall exercise proper precautions relating to the safe performance of the Work.

§ 2.2.4 The Owner shall furnish information or services required of the Owner by the Contract Documents with reasonable promptness. The Owner shall also furnish any other information or services under the Owner's control and relevant to the Contractor's performance of the Work with reasonable promptness after receiving the Contractor's written request for such information or services.

§ 2.2.5 Unless otherwise provided in the Contract Documents, the Owner shall furnish to the Contractor one copy of the Contract Documents for purposes of making reproductions pursuant to Section 1.5.2.

### § 2.3 OWNER'S RIGHT TO STOP THE WORK

If the Contractor fails to correct Work that is not in accordance with the requirements of the Contract Documents as required by Section 12.2 or repeatedly fails to carry out Work in accordance with the Contract Documents, the Owner may issue a written order to the Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, the right of the Owner to stop the Work shall not give rise to a duty on the part of the Owner to exercise this right for the benefit of the Contractor or any other person or entity, except to the extent required by Section 6.1.3.

### § 2.4 OWNER'S RIGHT TO CARRY OUT THE WORK

If the Contractor defaults or neglects to carry out the Work in accordance with the Contract Documents and fails within a ten-day period after receipt of written notice from the Owner to commence and continue correction of such default or neglect with diligence and promptness, the Owner may, without prejudice to other remedies the Owner may have, correct such deficiencies. In such case an appropriate Change Order shall be issued deducting from payments then or thereafter due the Contractor the reasonable cost of correcting such deficiencies, including Owner's expenses and compensation for the Architect's additional services made necessary by such default, neglect

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or failure. Such action by the Owner and amounts charged to the Contractor are both subject to prior approval of the Architect. If payments then or thereafter due the Contractor are not sufficient to cover such amounts, the Contractor shall pay the difference to the Owner.

## ARTICLE 3 CONTRACTOR

### § 3.1 GENERAL

§ 3.1.1 The Contractor is the person or entity identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The Contractor shall be lawfully licensed, if required in the jurisdiction where the Project is located. The Contractor shall designate in writing a representative who shall have express authority to bind the Contractor with respect to all matters under this Contract. The term “Contractor” means the Contractor or the Contractor’s authorized representative.

§ 3.1.2 The Contractor shall perform the Work in accordance with the Contract Documents.

§ 3.1.3 The Contractor shall not be relieved of obligations to perform the Work in accordance with the Contract Documents either by activities or duties of the Architect in the Architect’s administration of the Contract, or by tests, inspections or approvals required or performed by persons or entities other than the Contractor.

### § 3.2 REVIEW OF CONTRACT DOCUMENTS AND FIELD CONDITIONS BY CONTRACTOR

§ 3.2.1 Execution of the Contract by the Contractor is a representation that the Contractor has visited the site, become generally familiar with local conditions under which the Work is to be performed and correlated personal observations with requirements of the Contract Documents.

§ 3.2.2 Because the Contract Documents are complementary, the Contractor shall, before starting each portion of the Work, carefully study and compare the various Contract Documents relative to that portion of the Work, as well as the information furnished by the Owner pursuant to Section 2.2.3, shall take field measurements of any existing conditions related to that portion of the Work, and shall observe any conditions at the site affecting it. These obligations are for the purpose of facilitating coordination and construction by the Contractor and are not for the purpose of discovering errors, omissions, or inconsistencies in the Contract Documents; however, the Contractor shall promptly report to the Architect any errors, inconsistencies or omissions discovered by or made known to the Contractor as a request for information in such form as the Architect may require. It is recognized that the Contractor’s review is made in the Contractor’s capacity as a contractor and not as a licensed design professional, unless otherwise specifically provided in the Contract Documents.

§ 3.2.3 The Contractor is not required to ascertain that the Contract Documents are in accordance with applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities, but the Contractor shall promptly report to the Architect any nonconformity discovered by or made known to the Contractor as a request for information in such form as the Architect may require.

§ 3.2.4 If the Contractor believes that additional cost or time is involved because of clarifications or instructions the Architect issues in response to the Contractor’s notices or requests for information pursuant to Sections 3.2.2 or 3.2.3, the Contractor shall make Claims as provided in Article 15. If the Contractor fails to perform the obligations of Sections 3.2.2 or 3.2.3, the Contractor shall pay such costs and damages to the Owner as would have been avoided if the Contractor had performed such obligations. If the Contractor performs those obligations, the Contractor shall not be liable to the Owner or Architect for damages resulting from errors, inconsistencies or omissions in the Contract Documents, for differences between field measurements or conditions and the Contract Documents, or for nonconformities of the Contract Documents to applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities.

### § 3.3 SUPERVISION AND CONSTRUCTION PROCEDURES

§ 3.3.1 The Contractor shall supervise and direct the Work, using the Contractor’s best skill and attention. The Contractor shall be solely responsible for, and have control over, construction means, methods, techniques, sequences and procedures and for coordinating all portions of the Work under the Contract, unless the Contract Documents give other specific instructions concerning these matters. If the Contract Documents give specific instructions concerning construction means, methods, techniques, sequences or procedures, the Contractor shall evaluate the jobsite safety thereof and, except as stated below, shall be fully and solely responsible for the jobsite

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safety of such means, methods, techniques, sequences or procedures. If the Contractor determines that such means, methods, techniques, sequences or procedures may not be safe, the Contractor shall give timely written notice to the Owner and Architect and shall not proceed with that portion of the Work without further written instructions from the Architect. If the Contractor is then instructed to proceed with the required means, methods, techniques, sequences or procedures without acceptance of changes proposed by the Contractor, the Owner shall be solely responsible for any loss or damage arising solely from those Owner-required means, methods, techniques, sequences or procedures.

§ 3.3.2 The Contractor shall be responsible to the Owner for acts and omissions of the Contractor's employees, Subcontractors and their agents and employees, and other persons or entities performing portions of the Work for, or on behalf of, the Contractor or any of its Subcontractors.

§ 3.3.3 The Contractor shall be responsible for inspection of portions of Work already performed to determine that such portions are in proper condition to receive subsequent Work.

#### § 3.4 LABOR AND MATERIALS

§ 3.4.1 Unless otherwise provided in the Contract Documents, the Contractor shall provide and pay for labor, materials, equipment, tools, construction equipment and machinery, water, heat, utilities, transportation, and other facilities and services necessary for proper execution and completion of the Work, whether temporary or permanent and whether or not incorporated or to be incorporated in the Work.

§ 3.4.2 Except in the case of minor changes in the Work authorized by the Architect in accordance with Sections 3.12.8 or 7.4, the Contractor may make substitutions only with the consent of the Owner, after evaluation by the Architect and in accordance with a Change Order or Construction Change Directive.

§ 3.4.3 The Contractor shall enforce strict discipline and good order among the Contractor's employees and other persons carrying out the Work. The Contractor shall not permit employment of unfit persons or persons not properly skilled in tasks assigned to them.

#### § 3.5 WARRANTY

The Contractor warrants to the Owner and Architect that materials and equipment furnished under the Contract will be of good quality and new unless the Contract Documents require or permit otherwise. The Contractor further warrants that the Work will conform to the requirements of the Contract Documents and will be free from defects, except for those inherent in the quality of the Work the Contract Documents require or permit. Work, materials, or equipment not conforming to these requirements may be considered defective. The Contractor's warranty excludes remedy for damage or defect caused by abuse, alterations to the Work not executed by the Contractor, improper or insufficient maintenance, improper operation, or normal wear and tear and normal usage. If required by the Architect, the Contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment.

#### § 3.6 TAXES

The Contractor shall pay sales, consumer, use and similar taxes for the Work provided by the Contractor that are legally enacted when bids are received or negotiations concluded, whether or not yet effective or merely scheduled to go into effect.

#### § 3.7 PERMITS, FEES, NOTICES AND COMPLIANCE WITH LAWS

§ 3.7.1 Unless otherwise provided in the Contract Documents, the Contractor shall secure and pay for the building permit as well as for other permits, fees, licenses, and inspections by government agencies necessary for proper execution and completion of the Work that are customarily secured after execution of the Contract and legally required at the time bids are received or negotiations concluded.

§ 3.7.2 The Contractor shall comply with and give notices required by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities applicable to performance of the Work.

§ 3.7.3 If the Contractor performs Work knowing it to be contrary to applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities, the Contractor shall assume appropriate responsibility for such Work and shall bear the costs attributable to correction.

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§ 3.7.4 **Concealed or Unknown Conditions.** If the Contractor encounters conditions at the site that are (1) subsurface or otherwise concealed physical conditions that differ materially from those indicated in the Contract Documents or (2) unknown physical conditions of an unusual nature, that differ materially from those ordinarily found to exist and generally recognized as inherent in construction activities of the character provided for in the Contract Documents, the Contractor shall promptly provide notice to the Owner and the Architect before conditions are disturbed and in no event later than 21 days after first observance of the conditions. The Architect will promptly investigate such conditions and, if the Architect determines that they differ materially and cause an increase or decrease in the Contractor's cost of, or time required for, performance of any part of the Work, will recommend an equitable adjustment in the Contract Sum or Contract Time, or both. If the Architect determines that the conditions at the site are not materially different from those indicated in the Contract Documents and that no change in the terms of the Contract is justified, the Architect shall promptly notify the Owner and Contractor in writing, stating the reasons. If either party disputes the Architect's determination or recommendation, that party may proceed as provided in Article 15.

§ 3.7.5 If, in the course of the Work, the Contractor encounters human remains or recognizes the existence of burial markers, archaeological sites or wetlands not indicated in the Contract Documents, the Contractor shall immediately suspend any operations that would affect them and shall notify the Owner and Architect. Upon receipt of such notice, the Owner shall promptly take any action necessary to obtain governmental authorization required to resume the operations. The Contractor shall continue to suspend such operations until otherwise instructed by the Owner but shall continue with all other operations that do not affect those remains or features. Requests for adjustments in the Contract Sum and Contract Time arising from the existence of such remains or features may be made as provided in Article 15.

#### § 3.8 ALLOWANCES

§ 3.8.1 The Contractor shall include in the Contract Sum all allowances stated in the Contract Documents. Items covered by allowances shall be supplied for such amounts and by such persons or entities as the Owner may direct, but the Contractor shall not be required to employ persons or entities to whom the Contractor has reasonable objection.

§ 3.8.2 Unless otherwise provided in the Contract Documents,

- .1 Allowances shall cover the cost to the Contractor of materials and equipment delivered at the site and all required taxes, less applicable trade discounts;
- .2 Contractor's costs for unloading and handling at the site, labor, installation costs, overhead, profit and other expenses contemplated for stated allowance amounts shall be included in the Contract Sum but not in the allowances; and
- .3 Whenever costs are more than or less than allowances, the Contract Sum shall be adjusted accordingly by Change Order. The amount of the Change Order shall reflect (1) the difference between actual costs and the allowances under Section 3.8.2.1 and (2) changes in Contractor's costs under Section 3.8.2.2.

§ 3.8.3 Materials and equipment under an allowance shall be selected by the Owner with reasonable promptness.

#### § 3.9 SUPERINTENDENT

§ 3.9.1 The Contractor shall employ a competent superintendent and necessary assistants who shall be in attendance at the Project site during performance of the Work. The superintendent shall represent the Contractor, and communications given to the superintendent shall be as binding as if given to the Contractor.

§ 3.9.2 The Contractor, as soon as practicable after award of the Contract, shall furnish in writing to the Owner through the Architect the name and qualifications of a proposed superintendent. The Architect may reply within 14 days to the Contractor in writing stating (1) whether the Owner or the Architect has reasonable objection to the proposed superintendent or (2) that the Architect requires additional time to review. Failure of the Architect to reply within the 14 day period shall constitute notice of no reasonable objection.

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§ 3.9.3 The Contractor shall not employ a proposed superintendent to whom the Owner or Architect has made reasonable and timely objection. The Contractor shall not change the superintendent without the Owner's consent, which shall not unreasonably be withheld or delayed.

#### § 3.10 CONTRACTOR'S CONSTRUCTION SCHEDULES

§ 3.10.1 The Contractor, promptly after being awarded the Contract, shall prepare and submit for the Owner's and Architect's information a Contractor's construction schedule for the Work. The schedule shall not exceed time limits current under the Contract Documents, shall be revised at appropriate intervals as required by the conditions of the Work and Project, shall be related to the entire Project to the extent required by the Contract Documents, and shall provide for expeditious and practicable execution of the Work.

§ 3.10.2 The Contractor shall prepare a submittal schedule, promptly after being awarded the Contract and thereafter as necessary to maintain a current submittal schedule, and shall submit the schedule(s) for the Architect's approval. The Architect's approval shall not unreasonably be delayed or withheld. The submittal schedule shall (1) be coordinated with the Contractor's construction schedule, and (2) allow the Architect reasonable time to review submittals. If the Contractor fails to submit a submittal schedule, the Contractor shall not be entitled to any increase in Contract Sum or extension of Contract Time based on the time required for review of submittals.

§ 3.10.3 The Contractor shall perform the Work in general accordance with the most recent schedules submitted to the Owner and Architect.

#### § 3.11 DOCUMENTS AND SAMPLES AT THE SITE

The Contractor shall maintain at the site for the Owner one copy of the Drawings, Specifications, Addenda, Change Orders and other Modifications, in good order and marked currently to indicate field changes and selections made during construction, and one copy of approved Shop Drawings, Product Data, Samples and similar required submittals. These shall be available to the Architect and shall be delivered to the Architect for submittal to the Owner upon completion of the Work as a record of the Work as constructed.

#### § 3.12 SHOP DRAWINGS, PRODUCT DATA AND SAMPLES

§ 3.12.1 Shop Drawings are drawings, diagrams, schedules and other data specially prepared for the Work by the Contractor or a Subcontractor, Sub-subcontractor, manufacturer, supplier or distributor to illustrate some portion of the Work.

§ 3.12.2 Product Data are illustrations, standard schedules, performance charts, instructions, brochures, diagrams and other information furnished by the Contractor to illustrate materials or equipment for some portion of the Work.

§ 3.12.3 Samples are physical examples that illustrate materials, equipment or workmanship and establish standards by which the Work will be judged.

§ 3.12.4 Shop Drawings, Product Data, Samples and similar submittals are not Contract Documents. Their purpose is to demonstrate the way by which the Contractor proposes to conform to the information given and the design concept expressed in the Contract Documents for those portions of the Work for which the Contract Documents require submittals. Review by the Architect is subject to the limitations of Section 4.2.7. Informational submittals upon which the Architect is not expected to take responsive action may be so identified in the Contract Documents. Submittals that are not required by the Contract Documents may be returned by the Architect without action.

§ 3.12.5 The Contractor shall review for compliance with the Contract Documents, approve and submit to the Architect Shop Drawings, Product Data, Samples and similar submittals required by the Contract Documents in accordance with the submittal schedule approved by the Architect or, in the absence of an approved submittal schedule, with reasonable promptness and in such sequence as to cause no delay in the Work or in the activities of the Owner or of separate contractors.

§ 3.12.6 By submitting Shop Drawings, Product Data, Samples and similar submittals, the Contractor represents to the Owner and Architect that the Contractor has (1) reviewed and approved them, (2) determined and verified materials, field measurements and field construction criteria related thereto, or will do so and (3) checked and

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coordinated the information contained within such submittals with the requirements of the Work and of the Contract Documents.

§ 3.12.7 The Contractor shall perform no portion of the Work for which the Contract Documents require submittal and review of Shop Drawings, Product Data, Samples or similar submittals until the respective submittal has been approved by the Architect.

§ 3.12.8 The Work shall be in accordance with approved submittals except that the Contractor shall not be relieved of responsibility for deviations from requirements of the Contract Documents by the Architect's approval of Shop Drawings, Product Data, Samples or similar submittals unless the Contractor has specifically informed the Architect in writing of such deviation at the time of submittal and (1) the Architect has given written approval to the specific deviation as a minor change in the Work, or (2) a Change Order or Construction Change Directive has been issued authorizing the deviation. The Contractor shall not be relieved of responsibility for errors or omissions in Shop Drawings, Product Data, Samples or similar submittals by the Architect's approval thereof.

§ 3.12.9 The Contractor shall direct specific attention, in writing or on resubmitted Shop Drawings, Product Data, Samples or similar submittals, to revisions other than those requested by the Architect on previous submittals. In the absence of such written notice, the Architect's approval of a resubmission shall not apply to such revisions.

§ 3.12.10 The Contractor shall not be required to provide professional services that constitute the practice of architecture or engineering unless such services are specifically required by the Contract Documents for a portion of the Work or unless the Contractor needs to provide such services in order to carry out the Contractor's responsibilities for construction means, methods, techniques, sequences and procedures. The Contractor shall not be required to provide professional services in violation of applicable law. If professional design services or certifications by a design professional related to systems, materials or equipment are specifically required of the Contractor by the Contract Documents, the Owner and the Architect will specify all performance and design criteria that such services must satisfy. The Contractor shall cause such services or certifications to be provided by a properly licensed design professional, whose signature and seal shall appear on all drawings, calculations, specifications, certifications, Shop Drawings and other submittals prepared by such professional. Shop Drawings and other submittals related to the Work designed or certified by such professional, if prepared by others, shall bear such professional's written approval when submitted to the Architect. The Owner and the Architect shall be entitled to rely upon the adequacy, accuracy and completeness of the services, certifications and approvals performed or provided by such design professionals, provided the Owner and Architect have specified to the Contractor all performance and design criteria that such services must satisfy. Pursuant to this Section 3.12.10, the Architect will review, approve or take other appropriate action on submittals only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. The Contractor shall not be responsible for the adequacy of the performance and design criteria specified in the Contract Documents.

### § 3.13 USE OF SITE

The Contractor shall confine operations at the site to areas permitted by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities and the Contract Documents and shall not unreasonably encumber the site with materials or equipment.

### § 3.14 CUTTING AND PATCHING

§ 3.14.1 The Contractor shall be responsible for cutting, fitting or patching required to complete the Work or to make its parts fit together properly. All areas requiring cutting, fitting and patching shall be restored to the condition existing prior to the cutting, fitting and patching, unless otherwise required by the Contract Documents.

§ 3.14.2 The Contractor shall not damage or endanger a portion of the Work or fully or partially completed construction of the Owner or separate contractors by cutting, patching or otherwise altering such construction, or by excavation. The Contractor shall not cut or otherwise alter such construction by the Owner or a separate contractor except with written consent of the Owner and of such separate contractor; such consent shall not be unreasonably withheld. The Contractor shall not unreasonably withhold from the Owner or a separate contractor the Contractor's consent to cutting or otherwise altering the Work.

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### § 3.15 CLEANING UP

§ 3.15.1 The Contractor shall keep the premises and surrounding area free from accumulation of waste materials or rubbish caused by operations under the Contract. At completion of the Work, the Contractor shall remove waste materials, rubbish, the Contractor's tools, construction equipment, machinery and surplus materials from and about the Project.

§ 3.15.2 If the Contractor fails to clean up as provided in the Contract Documents, the Owner may do so and Owner shall be entitled to reimbursement from the Contractor.

### § 3.16 ACCESS TO WORK

The Contractor shall provide the Owner and Architect access to the Work in preparation and progress wherever located.

### § 3.17 ROYALTIES, PATENTS AND COPYRIGHTS

The Contractor shall pay all royalties and license fees. The Contractor shall defend suits or claims for infringement of copyrights and patent rights and shall hold the Owner and Architect harmless from loss on account thereof, but shall not be responsible for such defense or loss when a particular design, process or product of a particular manufacturer or manufacturers is required by the Contract Documents, or where the copyright violations are contained in Drawings, Specifications or other documents prepared by the Owner or Architect. However, if the Contractor has reason to believe that the required design, process or product is an infringement of a copyright or a patent, the Contractor shall be responsible for such loss unless such information is promptly furnished to the Architect.

### § 3.18 INDEMNIFICATION

§ 3.18.1 To the fullest extent permitted by law the Contractor shall indemnify and hold harmless the Owner, Architect, Architect's consultants, and agents and employees of any of them from and against claims, damages, losses and expenses, including but not limited to attorneys' fees, arising out of or resulting from performance of the Work, provided that such claim, damage, loss or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself), but only to the extent caused by the negligent acts or omissions of the Contractor, a Subcontractor, anyone directly or indirectly employed by them or anyone for whose acts they may be liable, regardless of whether or not such claim, damage, loss or expense is caused in part by a party indemnified hereunder. Such obligation shall not be construed to negate, abridge, or reduce other rights or obligations of indemnity that would otherwise exist as to a party or person described in this Section 3.18.

§ 3.18.2 In claims against any person or entity indemnified under this Section 3.18 by an employee of the Contractor, a Subcontractor, anyone directly or indirectly employed by them or anyone for whose acts they may be liable, the indemnification obligation under Section 3.18.1 shall not be limited by a limitation on amount or type of damages, compensation or benefits payable by or for the Contractor or a Subcontractor under workers' compensation acts, disability benefit acts or other employee benefit acts.

## ARTICLE 4 ARCHITECT

### § 4.1 GENERAL

§ 4.1.1 The Owner shall retain an architect lawfully licensed to practice architecture or an entity lawfully practicing architecture in the jurisdiction where the Project is located. That person or entity is identified as the Architect in the Agreement and is referred to throughout the Contract Documents as if singular in number.

§ 4.1.2 Duties, responsibilities and limitations of authority of the Architect as set forth in the Contract Documents shall not be restricted, modified or extended without written consent of the Owner, Contractor and Architect. Consent shall not be unreasonably withheld.

§ 4.1.3 If the employment of the Architect is terminated, the Owner shall employ a successor architect as to whom the Contractor has no reasonable objection and whose status under the Contract Documents shall be that of the Architect.

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## § 4.2 ADMINISTRATION OF THE CONTRACT

§ 4.2.1 The Architect will provide administration of the Contract as described in the Contract Documents and will be an Owner's representative during construction until the date the Architect issues the final Certificate for Payment. The Architect will have authority to act on behalf of the Owner only to the extent provided in the Contract Documents.

§ 4.2.2 The Architect will visit the site at intervals appropriate to the stage of construction, or as otherwise agreed with the Owner, to become generally familiar with the progress and quality of the portion of the Work completed, and to determine in general if the Work observed is being performed in a manner indicating that the Work, when fully completed, will be in accordance with the Contract Documents. However, the Architect will not be required to make exhaustive or continuous on-site inspections to check the quality or quantity of the Work. The Architect will not have control over, charge of, or responsibility for, the construction means, methods, techniques, sequences or procedures, or for the safety precautions and programs in connection with the Work, since these are solely the Contractor's rights and responsibilities under the Contract Documents, except as provided in Section 3.3.1.

§ 4.2.3 On the basis of the site visits, the Architect will keep the Owner reasonably informed about the progress and quality of the portion of the Work completed, and report to the Owner (1) known deviations from the Contract Documents and from the most recent construction schedule submitted by the Contractor, and (2) defects and deficiencies observed in the Work. The Architect will not be responsible for the Contractor's failure to perform the Work in accordance with the requirements of the Contract Documents. The Architect will not have control over or charge of and will not be responsible for acts or omissions of the Contractor, Subcontractors, or their agents or employees, or any other persons or entities performing portions of the Work.

## § 4.2.4 COMMUNICATIONS FACILITATING CONTRACT ADMINISTRATION

Except as otherwise provided in the Contract Documents or when direct communications have been specially authorized, the Owner and Contractor shall endeavor to communicate with each other through the Architect about matters arising out of or relating to the Contract. Communications by and with the Architect's consultants shall be through the Architect. Communications by and with Subcontractors and material suppliers shall be through the Contractor. Communications by and with separate contractors shall be through the Owner.

§ 4.2.5 Based on the Architect's evaluations of the Contractor's Applications for Payment, the Architect will review and certify the amounts due the Contractor and will issue Certificates for Payment in such amounts.

§ 4.2.6 The Architect has authority to reject Work that does not conform to the Contract Documents. Whenever the Architect considers it necessary or advisable, the Architect will have authority to require inspection or testing of the Work in accordance with Sections 13.5.2 and 13.5.3, whether or not such Work is fabricated, installed or completed. However, neither this authority of the Architect nor a decision made in good faith either to exercise or not to exercise such authority shall give rise to a duty or responsibility of the Architect to the Contractor, Subcontractors, material and equipment suppliers, their agents or employees, or other persons or entities performing portions of the Work.

§ 4.2.7 The Architect will review and approve, or take other appropriate action upon, the Contractor's submittals such as Shop Drawings, Product Data and Samples, but only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. The Architect's action will be taken in accordance with the submittal schedule approved by the Architect or, in the absence of an approved submittal schedule, with reasonable promptness while allowing sufficient time in the Architect's professional judgment to permit adequate review. Review of such submittals is not conducted for the purpose of determining the accuracy and completeness of other details such as dimensions and quantities, or for substantiating instructions for installation or performance of equipment or systems, all of which remain the responsibility of the Contractor as required by the Contract Documents. The Architect's review of the Contractor's submittals shall not relieve the Contractor of the obligations under Sections 3.3, 3.5 and 3.12. The Architect's review shall not constitute approval of safety precautions or, unless otherwise specifically stated by the Architect, of any construction means, methods, techniques, sequences or procedures. The Architect's approval of a specific item shall not indicate approval of an assembly of which the item is a component.

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§ 4.2.8 The Architect will prepare Change Orders and Construction Change Directives, and may authorize minor changes in the Work as provided in Section 7.4. The Architect will investigate and make determinations and recommendations regarding concealed and unknown conditions as provided in Section 3.7.4.

§ 4.2.9 The Architect will conduct inspections to determine the date or dates of Substantial Completion and the date of final completion; issue Certificates of Substantial Completion pursuant to Section 9.8; receive and forward to the Owner, for the Owner's review and records, written warranties and related documents required by the Contract and assembled by the Contractor pursuant to Section 9.10; and issue a final Certificate for Payment pursuant to Section 9.10.

§ 4.2.10 If the Owner and Architect agree, the Architect will provide one or more project representatives to assist in carrying out the Architect's responsibilities at the site. The duties, responsibilities and limitations of authority of such project representatives shall be as set forth in an exhibit to be incorporated in the Contract Documents.

§ 4.2.11 The Architect will interpret and decide matters concerning performance under, and requirements of, the Contract Documents on written request of either the Owner or Contractor. The Architect's response to such requests will be made in writing within any time limits agreed upon or otherwise with reasonable promptness.

§ 4.2.12 Interpretations and decisions of the Architect will be consistent with the intent of, and reasonably inferable from, the Contract Documents and will be in writing or in the form of drawings. When making such interpretations and decisions, the Architect will endeavor to secure faithful performance by both Owner and Contractor, will not show partiality to either and will not be liable for results of interpretations or decisions rendered in good faith.

§ 4.2.13 The Architect's decisions on matters relating to aesthetic effect will be final if consistent with the intent expressed in the Contract Documents.

§ 4.2.14 The Architect will review and respond to requests for information about the Contract Documents. The Architect's response to such requests will be made in writing within any time limits agreed upon or otherwise with reasonable promptness. If appropriate, the Architect will prepare and issue supplemental Drawings and Specifications in response to the requests for information.

## ARTICLE 5 SUBCONTRACTORS

### § 5.1 DEFINITIONS

§ 5.1.1 A Subcontractor is a person or entity who has a direct contract with the Contractor to perform a portion of the Work at the site. The term "Subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Subcontractor or an authorized representative of the Subcontractor. The term "Subcontractor" does not include a separate contractor or subcontractors of a separate contractor.

§ 5.1.2 A Sub-subcontractor is a person or entity who has a direct or indirect contract with a Subcontractor to perform a portion of the Work at the site. The term "Sub-subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Sub-subcontractor or an authorized representative of the Sub-subcontractor.

### § 5.2 AWARD OF SUBCONTRACTS AND OTHER CONTRACTS FOR PORTIONS OF THE WORK

§ 5.2.1 Unless otherwise stated in the Contract Documents or the bidding requirements, the Contractor, as soon as practicable after award of the Contract, shall furnish in writing to the Owner through the Architect the names of persons or entities (including those who are to furnish materials or equipment fabricated to a special design) proposed for each principal portion of the Work. The Architect may reply within 14 days to the Contractor in writing stating (1) whether the Owner or the Architect has reasonable objection to any such proposed person or entity or (2) that the Architect requires additional time for review. Failure of the Owner or Architect to reply within the 14-day period shall constitute notice of no reasonable objection.

§ 5.2.2 The Contractor shall not contract with a proposed person or entity to whom the Owner or Architect has made reasonable and timely objection. The Contractor shall not be required to contract with anyone to whom the Contractor has made reasonable objection.

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§ 5.2.3 If the Owner or Architect has reasonable objection to a person or entity proposed by the Contractor, the Contractor shall propose another to whom the Owner or Architect has no reasonable objection. If the proposed but rejected Subcontractor was reasonably capable of performing the Work, the Contract Sum and Contract Time shall be increased or decreased by the difference, if any, occasioned by such change, and an appropriate Change Order shall be issued before commencement of the substitute Subcontractor's Work. However, no increase in the Contract Sum or Contract Time shall be allowed for such change unless the Contractor has acted promptly and responsively in submitting names as required.

§ 5.2.4 The Contractor shall not substitute a Subcontractor, person or entity previously selected if the Owner or Architect makes reasonable objection to such substitution.

### § 5.3 SUBCONTRACTUAL RELATIONS

By appropriate agreement, written where legally required for validity, the Contractor shall require each Subcontractor, to the extent of the Work to be performed by the Subcontractor, to be bound to the Contractor by terms of the Contract Documents, and to assume toward the Contractor all the obligations and responsibilities, including the responsibility for safety of the Subcontractor's Work, which the Contractor, by these Documents, assumes toward the Owner and Architect. Each subcontract agreement shall preserve and protect the rights of the Owner and Architect under the Contract Documents with respect to the Work to be performed by the Subcontractor so that subcontracting thereof will not prejudice such rights, and shall allow to the Subcontractor, unless specifically provided otherwise in the subcontract agreement, the benefit of all rights, remedies and redress against the Contractor that the Contractor, by the Contract Documents, has against the Owner. Where appropriate, the Contractor shall require each Subcontractor to enter into similar agreements with Sub-subcontractors. The Contractor shall make available to each proposed Subcontractor, prior to the execution of the subcontract agreement, copies of the Contract Documents to which the Subcontractor will be bound, and, upon written request of the Subcontractor, identify to the Subcontractor terms and conditions of the proposed subcontract agreement that may be at variance with the Contract Documents. Subcontractors will similarly make copies of applicable portions of such documents available to their respective proposed Sub-subcontractors.

### § 5.4 CONTINGENT ASSIGNMENT OF SUBCONTRACTS

§ 5.4.1 Each subcontract agreement for a portion of the Work is assigned by the Contractor to the Owner, provided that

- .1 assignment is effective only after termination of the Contract by the Owner for cause pursuant to Section 14.2 and only for those subcontract agreements that the Owner accepts by notifying the Subcontractor and Contractor in writing; and
- .2 assignment is subject to the prior rights of the surety, if any, obligated under bond relating to the Contract.

When the Owner accepts the assignment of a subcontract agreement, the Owner assumes the Contractor's rights and obligations under the subcontract.

§ 5.4.2 Upon such assignment, if the Work has been suspended for more than 30 days, the Subcontractor's compensation shall be equitably adjusted for increases in cost resulting from the suspension.

§ 5.4.3 Upon such assignment to the Owner under this Section 5.4, the Owner may further assign the subcontract to a successor contractor or other entity. If the Owner assigns the subcontract to a successor contractor or other entity, the Owner shall nevertheless remain legally responsible for all of the successor contractor's obligations under the subcontract.

## ARTICLE 6 CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS

### § 6.1 OWNER'S RIGHT TO PERFORM CONSTRUCTION AND TO AWARD SEPARATE CONTRACTS

§ 6.1.1 The Owner reserves the right to perform construction or operations related to the Project with the Owner's own forces, and to award separate contracts in connection with other portions of the Project or other construction or operations on the site under Conditions of the Contract identical or substantially similar to these including those portions related to insurance and waiver of subrogation. If the Contractor claims that delay or additional cost is involved because of such action by the Owner, the Contractor shall make such Claim as provided in Article 15.

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§ 6.1.2 When separate contracts are awarded for different portions of the Project or other construction or operations on the site, the term “Contractor” in the Contract Documents in each case shall mean the Contractor who executes each separate Owner-Contractor Agreement.

§ 6.1.3 The Owner shall provide for coordination of the activities of the Owner’s own forces and of each separate contractor with the Work of the Contractor, who shall cooperate with them. The Contractor shall participate with other separate contractors and the Owner in reviewing their construction schedules. The Contractor shall make any revisions to the construction schedule deemed necessary after a joint review and mutual agreement. The construction schedules shall then constitute the schedules to be used by the Contractor, separate contractors and the Owner until subsequently revised.

§ 6.1.4 Unless otherwise provided in the Contract Documents, when the Owner performs construction or operations related to the Project with the Owner’s own forces, the Owner shall be deemed to be subject to the same obligations and to have the same rights that apply to the Contractor under the Conditions of the Contract, including, without excluding others, those stated in Article 3, this Article 6 and Articles 10, 11 and 12.

## § 6.2 MUTUAL RESPONSIBILITY

§ 6.2.1 The Contractor shall afford the Owner and separate contractors reasonable opportunity for introduction and storage of their materials and equipment and performance of their activities, and shall connect and coordinate the Contractor’s construction and operations with theirs as required by the Contract Documents.

§ 6.2.2 If part of the Contractor’s Work depends for proper execution or results upon construction or operations by the Owner or a separate contractor, the Contractor shall, prior to proceeding with that portion of the Work, promptly report to the Architect apparent discrepancies or defects in such other construction that would render it unsuitable for such proper execution and results. Failure of the Contractor so to report shall constitute an acknowledgment that the Owner’s or separate contractor’s completed or partially completed construction is fit and proper to receive the Contractor’s Work, except as to defects not then reasonably discoverable.

§ 6.2.3 The Contractor shall reimburse the Owner for costs the Owner incurs that are payable to a separate contractor because of the Contractor’s delays, improperly timed activities or defective construction. The Owner shall be responsible to the Contractor for costs the Contractor incurs because of a separate contractor’s delays, improperly timed activities, damage to the Work or defective construction.

§ 6.2.4 The Contractor shall promptly remedy damage the Contractor wrongfully causes to completed or partially completed construction or to property of the Owner or separate contractors as provided in Section 10.2.5.

§ 6.2.5 The Owner and each separate contractor shall have the same responsibilities for cutting and patching as are described for the Contractor in Section 3.14.

## § 6.3 OWNER’S RIGHT TO CLEAN UP

If a dispute arises among the Contractor, separate contractors and the Owner as to the responsibility under their respective contracts for maintaining the premises and surrounding area free from waste materials and rubbish, the Owner may clean up and the Architect will allocate the cost among those responsible.

# ARTICLE 7 CHANGES IN THE WORK

## § 7.1 GENERAL

§ 7.1.1 Changes in the Work may be accomplished after execution of the Contract, and without invalidating the Contract, by Change Order, Construction Change Directive or order for a minor change in the Work, subject to the limitations stated in this Article 7 and elsewhere in the Contract Documents.

§ 7.1.2 A Change Order shall be based upon agreement among the Owner, Contractor and Architect; a Construction Change Directive requires agreement by the Owner and Architect and may or may not be agreed to by the Contractor; an order for a minor change in the Work may be issued by the Architect alone.

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§ 7.1.3 Changes in the Work shall be performed under applicable provisions of the Contract Documents, and the Contractor shall proceed promptly, unless otherwise provided in the Change Order, Construction Change Directive or order for a minor change in the Work.

## § 7.2 CHANGE ORDERS

§ 7.2.1 A Change Order is a written instrument prepared by the Architect and signed by the Owner, Contractor and Architect stating their agreement upon all of the following:

- .1 The change in the Work;
- .2 The amount of the adjustment, if any, in the Contract Sum; and
- .3 The extent of the adjustment, if any, in the Contract Time.

## § 7.3 CONSTRUCTION CHANGE DIRECTIVES

§ 7.3.1 A Construction Change Directive is a written order prepared by the Architect and signed by the Owner and Architect, directing a change in the Work prior to agreement on adjustment, if any, in the Contract Sum or Contract Time, or both. The Owner may by Construction Change Directive, without invalidating the Contract, order changes in the Work within the general scope of the Contract consisting of additions, deletions or other revisions, the Contract Sum and Contract Time being adjusted accordingly.

§ 7.3.2 A Construction Change Directive shall be used in the absence of total agreement on the terms of a Change Order.

§ 7.3.3 If the Construction Change Directive provides for an adjustment to the Contract Sum, the adjustment shall be based on one of the following methods:

- .1 Mutual acceptance of a lump sum properly itemized and supported by sufficient substantiating data to permit evaluation;
- .2 Unit prices stated in the Contract Documents or subsequently agreed upon;
- .3 Cost to be determined in a manner agreed upon by the parties and a mutually acceptable fixed or percentage fee; or
- .4 As provided in Section 7.3.7.

§ 7.3.4 If unit prices are stated in the Contract Documents or subsequently agreed upon, and if quantities originally contemplated are materially changed in a proposed Change Order or Construction Change Directive so that application of such unit prices to quantities of Work proposed will cause substantial inequity to the Owner or Contractor, the applicable unit prices shall be equitably adjusted.

§ 7.3.5 Upon receipt of a Construction Change Directive, the Contractor shall promptly proceed with the change in the Work involved and advise the Architect of the Contractor's agreement or disagreement with the method, if any, provided in the Construction Change Directive for determining the proposed adjustment in the Contract Sum or Contract Time.

§ 7.3.6 A Construction Change Directive signed by the Contractor indicates the Contractor's agreement therewith, including adjustment in Contract Sum and Contract Time or the method for determining them. Such agreement shall be effective immediately and shall be recorded as a Change Order.

§ 7.3.7 If the Contractor does not respond promptly or disagrees with the method for adjustment in the Contract Sum, the Architect shall determine the method and the adjustment on the basis of reasonable expenditures and savings of those performing the Work attributable to the change, including, in case of an increase in the Contract Sum, an amount for overhead and profit as set forth in the Agreement, or if no such amount is set forth in the Agreement, a reasonable amount. In such case, and also under Section 7.3.3.3, the Contractor shall keep and present, in such form as the Architect may prescribe, an itemized accounting together with appropriate supporting data. Unless otherwise provided in the Contract Documents, costs for the purposes of this Section 7.3.7 shall be limited to the following:

- .1 Costs of labor, including social security, old age and unemployment insurance, fringe benefits required by agreement or custom, and workers' compensation insurance;
- .2 Costs of materials, supplies and equipment, including cost of transportation, whether incorporated or consumed;

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- .3 Rental costs of machinery and equipment, exclusive of hand tools, whether rented from the Contractor or others;
- .4 Costs of premiums for all bonds and insurance, permit fees, and sales, use or similar taxes related to the Work; and
- .5 Additional costs of supervision and field office personnel directly attributable to the change.

§ 7.3.8 The amount of credit to be allowed by the Contractor to the Owner for a deletion or change that results in a net decrease in the Contract Sum shall be actual net cost as confirmed by the Architect. When both additions and credits covering related Work or substitutions are involved in a change, the allowance for overhead and profit shall be figured on the basis of net increase, if any, with respect to that change.

§ 7.3.9 Pending final determination of the total cost of a Construction Change Directive to the Owner, the Contractor may request payment for Work completed under the Construction Change Directive in Applications for Payment. The Architect will make an interim determination for purposes of monthly certification for payment for those costs and certify for payment the amount that the Architect determines, in the Architect's professional judgment, to be reasonably justified. The Architect's interim determination of cost shall adjust the Contract Sum on the same basis as a Change Order, subject to the right of either party to disagree and assert a Claim in accordance with Article 15.

§ 7.3.10 When the Owner and Contractor agree with a determination made by the Architect concerning the adjustments in the Contract Sum and Contract Time, or otherwise reach agreement upon the adjustments, such agreement shall be effective immediately and the Architect will prepare a Change Order. Change Orders may be issued for all or any part of a Construction Change Directive.

#### § 7.4 MINOR CHANGES IN THE WORK

The Architect has authority to order minor changes in the Work not involving adjustment in the Contract Sum or extension of the Contract Time and not inconsistent with the intent of the Contract Documents. Such changes will be effected by written order signed by the Architect and shall be binding on the Owner and Contractor.

### ARTICLE 8 TIME

#### § 8.1 DEFINITIONS

§ 8.1.1 Unless otherwise provided, Contract Time is the period of time, including authorized adjustments, allotted in the Contract Documents for Substantial Completion of the Work.

§ 8.1.2 The date of commencement of the Work is the date established in the Agreement.

§ 8.1.3 The date of Substantial Completion is the date certified by the Architect in accordance with Section 9.8.

§ 8.1.4 The term "day" as used in the Contract Documents shall mean calendar day unless otherwise specifically defined.

#### § 8.2 PROGRESS AND COMPLETION

§ 8.2.1 Time limits stated in the Contract Documents are of the essence of the Contract. By executing the Agreement the Contractor confirms that the Contract Time is a reasonable period for performing the Work.

§ 8.2.2 The Contractor shall not knowingly, except by agreement or instruction of the Owner in writing, prematurely commence operations on the site or elsewhere prior to the effective date of insurance required by Article 11 to be furnished by the Contractor and Owner. The date of commencement of the Work shall not be changed by the effective date of such insurance.

§ 8.2.3 The Contractor shall proceed expeditiously with adequate forces and shall achieve Substantial Completion within the Contract Time.

#### § 8.3 DELAYS AND EXTENSIONS OF TIME

§ 8.3.1 If the Contractor is delayed at any time in the commencement or progress of the Work by an act or neglect of the Owner or Architect, or of an employee of either, or of a separate contractor employed by the Owner; or by changes ordered in the Work; or by labor disputes, fire, unusual delay in deliveries, unavoidable casualties or other

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causes beyond the Contractor's control; or by delay authorized by the Owner pending mediation and arbitration; or by other causes that the Architect determines may justify delay, then the Contract Time shall be extended by Change Order for such reasonable time as the Architect may determine.

§ 8.3.2 Claims relating to time shall be made in accordance with applicable provisions of Article 15.

§ 8.3.3 This Section 8.3 does not preclude recovery of damages for delay by either party under other provisions of the Contract Documents.

## ARTICLE 9 PAYMENTS AND COMPLETION

### § 9.1 CONTRACT SUM

The Contract Sum is stated in the Agreement and, including authorized adjustments, is the total amount payable by the Owner to the Contractor for performance of the Work under the Contract Documents.

### § 9.2 SCHEDULE OF VALUES

Where the Contract is based on a stipulated sum or Guaranteed Maximum Price, the Contractor shall submit to the Architect, before the first Application for Payment, a schedule of values allocating the entire Contract Sum to the various portions of the Work and prepared in such form and supported by such data to substantiate its accuracy as the Architect may require. This schedule, unless objected to by the Architect, shall be used as a basis for reviewing the Contractor's Applications for Payment.

### § 9.3 APPLICATIONS FOR PAYMENT

§ 9.3.1 At least ten days before the date established for each progress payment, the Contractor shall submit to the Architect an itemized Application for Payment prepared in accordance with the schedule of values, if required under Section 9.2, for completed portions of the Work. Such application shall be notarized, if required, and supported by such data substantiating the Contractor's right to payment as the Owner or Architect may require, such as copies of requisitions from Subcontractors and material suppliers, and shall reflect retainage if provided for in the Contract Documents.

§ 9.3.1.1 As provided in Section 7.3.9, such applications may include requests for payment on account of changes in the Work that have been properly authorized by Construction Change Directives, or by interim determinations of the Architect, but not yet included in Change Orders.

§ 9.3.1.2 Applications for Payment shall not include requests for payment for portions of the Work for which the Contractor does not intend to pay a Subcontractor or material supplier, unless such Work has been performed by others whom the Contractor intends to pay.

§ 9.3.2 Unless otherwise provided in the Contract Documents, payments shall be made on account of materials and equipment delivered and suitably stored at the site for subsequent incorporation in the Work. If approved in advance by the Owner, payment may similarly be made for materials and equipment suitably stored off the site at a location agreed upon in writing. Payment for materials and equipment stored on or off the site shall be conditioned upon compliance by the Contractor with procedures satisfactory to the Owner to establish the Owner's title to such materials and equipment or otherwise protect the Owner's interest, and shall include the costs of applicable insurance, storage and transportation to the site for such materials and equipment stored off the site.

§ 9.3.3 The Contractor warrants that title to all Work covered by an Application for Payment will pass to the Owner no later than the time of payment. The Contractor further warrants that upon submittal of an Application for Payment all Work for which Certificates for Payment have been previously issued and payments received from the Owner shall, to the best of the Contractor's knowledge, information and belief, be free and clear of liens, claims, security interests or encumbrances in favor of the Contractor, Subcontractors, material suppliers, or other persons or entities making a claim by reason of having provided labor, materials and equipment relating to the Work.

### § 9.4 CERTIFICATES FOR PAYMENT

§ 9.4.1 The Architect will, within seven days after receipt of the Contractor's Application for Payment, either issue to the Owner a Certificate for Payment, with a copy to the Contractor, for such amount as the Architect determines

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is properly due, or notify the Contractor and Owner in writing of the Architect's reasons for withholding certification in whole or in part as provided in Section 9.5.1.

§ 9.4.2 The issuance of a Certificate for Payment will constitute a representation by the Architect to the Owner, based on the Architect's evaluation of the Work and the data comprising the Application for Payment, that, to the best of the Architect's knowledge, information and belief, the Work has progressed to the point indicated and that the quality of the Work is in accordance with the Contract Documents. The foregoing representations are subject to an evaluation of the Work for conformance with the Contract Documents upon Substantial Completion, to results of subsequent tests and inspections, to correction of minor deviations from the Contract Documents prior to completion and to specific qualifications expressed by the Architect. The issuance of a Certificate for Payment will further constitute a representation that the Contractor is entitled to payment in the amount certified. However, the issuance of a Certificate for Payment will not be a representation that the Architect has (1) made exhaustive or continuous on-site inspections to check the quality or quantity of the Work, (2) reviewed construction means, methods, techniques, sequences or procedures, (3) reviewed copies of requisitions received from Subcontractors and material suppliers and other data requested by the Owner to substantiate the Contractor's right to payment, or (4) made examination to ascertain how or for what purpose the Contractor has used money previously paid on account of the Contract Sum.

## § 9.5 DECISIONS TO WITHHOLD CERTIFICATION

§ 9.5.1 The Architect may withhold a Certificate for Payment in whole or in part, to the extent reasonably necessary to protect the Owner, if in the Architect's opinion the representations to the Owner required by Section 9.4.2 cannot be made. If the Architect is unable to certify payment in the amount of the Application, the Architect will notify the Contractor and Owner as provided in Section 9.4.1. If the Contractor and Architect cannot agree on a revised amount, the Architect will promptly issue a Certificate for Payment for the amount for which the Architect is able to make such representations to the Owner. The Architect may also withhold a Certificate for Payment or, because of subsequently discovered evidence, may nullify the whole or a part of a Certificate for Payment previously issued, to such extent as may be necessary in the Architect's opinion to protect the Owner from loss for which the Contractor is responsible, including loss resulting from acts and omissions described in Section 3.3.2, because of

- .1 defective Work not remedied;
- .2 third party claims filed or reasonable evidence indicating probable filing of such claims unless security acceptable to the Owner is provided by the Contractor;
- .3 failure of the Contractor to make payments properly to Subcontractors or for labor, materials or equipment;
- .4 reasonable evidence that the Work cannot be completed for the unpaid balance of the Contract Sum;
- .5 damage to the Owner or a separate contractor;
- .6 reasonable evidence that the Work will not be completed within the Contract Time, and that the unpaid balance would not be adequate to cover actual or liquidated damages for the anticipated delay;  
or
- .7 repeated failure to carry out the Work in accordance with the Contract Documents.

§ 9.5.2 When the above reasons for withholding certification are removed, certification will be made for amounts previously withheld.

§ 9.5.3 If the Architect withholds certification for payment under Section 9.5.1.3, the Owner may, at its sole option, issue joint checks to the Contractor and to any Subcontractor or material or equipment suppliers to whom the Contractor failed to make payment for Work properly performed or material or equipment suitably delivered. If the Owner makes payments by joint check, the Owner shall notify the Architect and the Architect will reflect such payment on the next Certificate for Payment.

## § 9.6 PROGRESS PAYMENTS

§ 9.6.1 After the Architect has issued a Certificate for Payment, the Owner shall make payment in the manner and within the time provided in the Contract Documents, and shall so notify the Architect.

§ 9.6.2 The Contractor shall pay each Subcontractor no later than seven days after receipt of payment from the Owner the amount to which the Subcontractor is entitled, reflecting percentages actually retained from payments to the Contractor on account of the Subcontractor's portion of the Work. The Contractor shall, by appropriate

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agreement with each Subcontractor, require each Subcontractor to make payments to Sub-subcontractors in a similar manner.

§ 9.6.3 The Architect will, on request, furnish to a Subcontractor, if practicable, information regarding percentages of completion or amounts applied for by the Contractor and action taken thereon by the Architect and Owner on account of portions of the Work done by such Subcontractor.

§ 9.6.4 The Owner has the right to request written evidence from the Contractor that the Contractor has properly paid Subcontractors and material and equipment suppliers amounts paid by the Owner to the Contractor for subcontracted Work. If the Contractor fails to furnish such evidence within seven days, the Owner shall have the right to contact Subcontractors to ascertain whether they have been properly paid. Neither the Owner nor Architect shall have an obligation to pay or to see to the payment of money to a Subcontractor, except as may otherwise be required by law.

§ 9.6.5 Contractor payments to material and equipment suppliers shall be treated in a manner similar to that provided in Sections 9.6.2, 9.6.3 and 9.6.4.

§ 9.6.6 A Certificate for Payment, a progress payment, or partial or entire use or occupancy of the Project by the Owner shall not constitute acceptance of Work not in accordance with the Contract Documents.

§ 9.6.7 Unless the Contractor provides the Owner with a payment bond in the full penal sum of the Contract Sum, payments received by the Contractor for Work properly performed by Subcontractors and suppliers shall be held by the Contractor for those Subcontractors or suppliers who performed Work or furnished materials, or both, under contract with the Contractor for which payment was made by the Owner. Nothing contained herein shall require money to be placed in a separate account and not commingled with money of the Contractor, shall create any fiduciary liability or tort liability on the part of the Contractor for breach of trust or shall entitle any person or entity to an award of punitive damages against the Contractor for breach of the requirements of this provision.

#### § 9.7 FAILURE OF PAYMENT

If the Architect does not issue a Certificate for Payment, through no fault of the Contractor, within seven days after receipt of the Contractor's Application for Payment, or if the Owner does not pay the Contractor within seven days after the date established in the Contract Documents the amount certified by the Architect or awarded by binding dispute resolution, then the Contractor may, upon seven additional days' written notice to the Owner and Architect, stop the Work until payment of the amount owing has been received. The Contract Time shall be extended appropriately and the Contract Sum shall be increased by the amount of the Contractor's reasonable costs of shut-down, delay and start-up, plus interest as provided for in the Contract Documents.

#### § 9.8 SUBSTANTIAL COMPLETION

§ 9.8.1 Substantial Completion is the stage in the progress of the Work when the Work or designated portion thereof is sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work for its intended use.

§ 9.8.2 When the Contractor considers that the Work, or a portion thereof which the Owner agrees to accept separately, is substantially complete, the Contractor shall prepare and submit to the Architect a comprehensive list of items to be completed or corrected prior to final payment. Failure to include an item on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents.

§ 9.8.3 Upon receipt of the Contractor's list, the Architect will make an inspection to determine whether the Work or designated portion thereof is substantially complete. If the Architect's inspection discloses any item, whether or not included on the Contractor's list, which is not sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work or designated portion thereof for its intended use, the Contractor shall, before issuance of the Certificate of Substantial Completion, complete or correct such item upon notification by the Architect. In such case, the Contractor shall then submit a request for another inspection by the Architect to determine Substantial Completion.

§ 9.8.4 When the Work or designated portion thereof is substantially complete, the Architect will prepare a Certificate of Substantial Completion that shall establish the date of Substantial Completion, shall establish

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responsibilities of the Owner and Contractor for security, maintenance, heat, utilities, damage to the Work and insurance, and shall fix the time within which the Contractor shall finish all items on the list accompanying the Certificate. Warranties required by the Contract Documents shall commence on the date of Substantial Completion of the Work or designated portion thereof unless otherwise provided in the Certificate of Substantial Completion.

§ 9.8.5 The Certificate of Substantial Completion shall be submitted to the Owner and Contractor for their written acceptance of responsibilities assigned to them in such Certificate. Upon such acceptance and consent of surety, if any, the Owner shall make payment of retainage applying to such Work or designated portion thereof. Such payment shall be adjusted for Work that is incomplete or not in accordance with the requirements of the Contract Documents.

#### § 9.9 PARTIAL OCCUPANCY OR USE

§ 9.9.1 The Owner may occupy or use any completed or partially completed portion of the Work at any stage when such portion is designated by separate agreement with the Contractor, provided such occupancy or use is consented to by the insurer as required under Section 11.3.1.5 and authorized by public authorities having jurisdiction over the Project. Such partial occupancy or use may commence whether or not the portion is substantially complete, provided the Owner and Contractor have accepted in writing the responsibilities assigned to each of them for payments, retainage, if any, security, maintenance, heat, utilities, damage to the Work and insurance, and have agreed in writing concerning the period for correction of the Work and commencement of warranties required by the Contract Documents. When the Contractor considers a portion substantially complete, the Contractor shall prepare and submit a list to the Architect as provided under Section 9.8.2. Consent of the Contractor to partial occupancy or use shall not be unreasonably withheld. The stage of the progress of the Work shall be determined by written agreement between the Owner and Contractor or, if no agreement is reached, by decision of the Architect.

§ 9.9.2 Immediately prior to such partial occupancy or use, the Owner, Contractor and Architect shall jointly inspect the area to be occupied or portion of the Work to be used in order to determine and record the condition of the Work.

§ 9.9.3 Unless otherwise agreed upon, partial occupancy or use of a portion or portions of the Work shall not constitute acceptance of Work not complying with the requirements of the Contract Documents.

#### § 9.10 FINAL COMPLETION AND FINAL PAYMENT

§ 9.10.1 Upon receipt of the Contractor's written notice that the Work is ready for final inspection and acceptance and upon receipt of a final Application for Payment, the Architect will promptly make such inspection and, when the Architect finds the Work acceptable under the Contract Documents and the Contract fully performed, the Architect will promptly issue a final Certificate for Payment stating that to the best of the Architect's knowledge, information and belief, and on the basis of the Architect's on-site visits and inspections, the Work has been completed in accordance with terms and conditions of the Contract Documents and that the entire balance found to be due the Contractor and noted in the final Certificate is due and payable. The Architect's final Certificate for Payment will constitute a further representation that conditions listed in Section 9.10.2 as precedent to the Contractor's being entitled to final payment have been fulfilled.

§ 9.10.2 Neither final payment nor any remaining retained percentage shall become due until the Contractor submits to the Architect (1) an affidavit that payrolls, bills for materials and equipment, and other indebtedness connected with the Work for which the Owner or the Owner's property might be responsible or encumbered (less amounts withheld by Owner) have been paid or otherwise satisfied, (2) a certificate evidencing that insurance required by the Contract Documents to remain in force after final payment is currently in effect and will not be canceled or allowed to expire until at least 30 days' prior written notice has been given to the Owner, (3) a written statement that the Contractor knows of no substantial reason that the insurance will not be renewable to cover the period required by the Contract Documents, (4) consent of surety, if any, to final payment and (5), if required by the Owner, other data establishing payment or satisfaction of obligations, such as receipts, releases and waivers of liens, claims, security interests or encumbrances arising out of the Contract, to the extent and in such form as may be designated by the Owner. If a Subcontractor refuses to furnish a release or waiver required by the Owner, the Contractor may furnish a bond satisfactory to the Owner to indemnify the Owner against such lien. If such lien remains unsatisfied after payments are made, the Contractor shall refund to the Owner all money that the Owner may be compelled to pay in discharging such lien, including all costs and reasonable attorneys' fees.

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§ 9.10.3 If, after Substantial Completion of the Work, final completion thereof is materially delayed through no fault of the Contractor or by issuance of Change Orders affecting final completion, and the Architect so confirms, the Owner shall, upon application by the Contractor and certification by the Architect, and without terminating the Contract, make payment of the balance due for that portion of the Work fully completed and accepted. If the remaining balance for Work not fully completed or corrected is less than retainage stipulated in the Contract Documents, and if bonds have been furnished, the written consent of surety to payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by the Contractor to the Architect prior to certification of such payment. Such payment shall be made under terms and conditions governing final payment, except that it shall not constitute a waiver of claims.

§ 9.10.4 The making of final payment shall constitute a waiver of Claims by the Owner except those arising from

- .1 liens, Claims, security interests or encumbrances arising out of the Contract and unsettled;
- .2 failure of the Work to comply with the requirements of the Contract Documents; or
- .3 terms of special warranties required by the Contract Documents.

§ 9.10.5 Acceptance of final payment by the Contractor, a Subcontractor or material supplier shall constitute a waiver of claims by that payee except those previously made in writing and identified by that payee as unsettled at the time of final Application for Payment.

## ARTICLE 10 PROTECTION OF PERSONS AND PROPERTY

### § 10.1 SAFETY PRECAUTIONS AND PROGRAMS

The Contractor shall be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the performance of the Contract.

### § 10.2 SAFETY OF PERSONS AND PROPERTY

§ 10.2.1 The Contractor shall take reasonable precautions for safety of, and shall provide reasonable protection to prevent damage, injury or loss to

- .1 employees on the Work and other persons who may be affected thereby;
- .2 the Work and materials and equipment to be incorporated therein, whether in storage on or off the site, under care, custody or control of the Contractor or the Contractor's Subcontractors or Sub-subcontractors; and
- .3 other property at the site or adjacent thereto, such as trees, shrubs, lawns, walks, pavements, roadways, structures and utilities not designated for removal, relocation or replacement in the course of construction.

§ 10.2.2 The Contractor shall comply with and give notices required by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities bearing on safety of persons or property or their protection from damage, injury or loss.

§ 10.2.3 The Contractor shall erect and maintain, as required by existing conditions and performance of the Contract, reasonable safeguards for safety and protection, including posting danger signs and other warnings against hazards, promulgating safety regulations and notifying owners and users of adjacent sites and utilities.

§ 10.2.4 When use or storage of explosives or other hazardous materials or equipment or unusual methods are necessary for execution of the Work, the Contractor shall exercise utmost care and carry on such activities under supervision of properly qualified personnel.

§ 10.2.5 The Contractor shall promptly remedy damage and loss (other than damage or loss insured under property insurance required by the Contract Documents) to property referred to in Sections 10.2.1.2 and 10.2.1.3 caused in whole or in part by the Contractor, a Subcontractor, a Sub-subcontractor, or anyone directly or indirectly employed by any of them, or by anyone for whose acts they may be liable and for which the Contractor is responsible under Sections 10.2.1.2 and 10.2.1.3, except damage or loss attributable to acts or omissions of the Owner or Architect or anyone directly or indirectly employed by either of them, or by anyone for whose acts either of them may be liable, and not attributable to the fault or negligence of the Contractor. The foregoing obligations of the Contractor are in addition to the Contractor's obligations under Section 3.18.

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§ 10.2.6 The Contractor shall designate a responsible member of the Contractor's organization at the site whose duty shall be the prevention of accidents. This person shall be the Contractor's superintendent unless otherwise designated by the Contractor in writing to the Owner and Architect.

§ 10.2.7 The Contractor shall not permit any part of the construction or site to be loaded so as to cause damage or create an unsafe condition.

#### § 10.2.8 INJURY OR DAMAGE TO PERSON OR PROPERTY

If either party suffers injury or damage to person or property because of an act or omission of the other party, or of others for whose acts such party is legally responsible, written notice of such injury or damage, whether or not insured, shall be given to the other party within a reasonable time not exceeding 21 days after discovery. The notice shall provide sufficient detail to enable the other party to investigate the matter.

#### § 10.3 HAZARDOUS MATERIALS

§ 10.3.1 The Contractor is responsible for compliance with any requirements included in the Contract Documents regarding hazardous materials. If the Contractor encounters a hazardous material or substance not addressed in the Contract Documents and if reasonable precautions will be inadequate to prevent foreseeable bodily injury or death to persons resulting from a material or substance, including but not limited to asbestos or polychlorinated biphenyl (PCB), encountered on the site by the Contractor, the Contractor shall, upon recognizing the condition, immediately stop Work in the affected area and report the condition to the Owner and Architect in writing.

§ 10.3.2 Upon receipt of the Contractor's written notice, the Owner shall obtain the services of a licensed laboratory to verify the presence or absence of the material or substance reported by the Contractor and, in the event such material or substance is found to be present, to cause it to be rendered harmless. Unless otherwise required by the Contract Documents, the Owner shall furnish in writing to the Contractor and Architect the names and qualifications of persons or entities who are to perform tests verifying the presence or absence of such material or substance or who are to perform the task of removal or safe containment of such material or substance. The Contractor and the Architect will promptly reply to the Owner in writing stating whether or not either has reasonable objection to the persons or entities proposed by the Owner. If either the Contractor or Architect has an objection to a person or entity proposed by the Owner, the Owner shall propose another to whom the Contractor and the Architect have no reasonable objection. When the material or substance has been rendered harmless, Work in the affected area shall resume upon written agreement of the Owner and Contractor. By Change Order, the Contract Time shall be extended appropriately and the Contract Sum shall be increased in the amount of the Contractor's reasonable additional costs of shut-down, delay and start-up.

§ 10.3.3 To the fullest extent permitted by law, the Owner shall indemnify and hold harmless the Contractor, Subcontractors, Architect, Architect's consultants and agents and employees of any of them from and against claims, damages, losses and expenses, including but not limited to attorneys' fees, arising out of or resulting from performance of the Work in the affected area if in fact the material or substance presents the risk of bodily injury or death as described in Section 10.3.1 and has not been rendered harmless, provided that such claim, damage, loss or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself), except to the extent that such damage, loss or expense is due to the fault or negligence of the party seeking indemnity.

§ 10.3.4 The Owner shall not be responsible under this Section 10.3 for materials or substances the Contractor brings to the site unless such materials or substances are required by the Contract Documents. The Owner shall be responsible for materials or substances required by the Contract Documents, except to the extent of the Contractor's fault or negligence in the use and handling of such materials or substances.

§ 10.3.5 The Contractor shall indemnify the Owner for the cost and expense the Owner incurs (1) for remediation of a material or substance the Contractor brings to the site and negligently handles, or (2) where the Contractor fails to perform its obligations under Section 10.3.1, except to the extent that the cost and expense are due to the Owner's fault or negligence.

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§ 10.3.6 If, without negligence on the part of the Contractor, the Contractor is held liable by a government agency for the cost of remediation of a hazardous material or substance solely by reason of performing Work as required by the Contract Documents, the Owner shall indemnify the Contractor for all cost and expense thereby incurred.

#### § 10.4 EMERGENCIES

In an emergency affecting safety of persons or property, the Contractor shall act, at the Contractor's discretion, to prevent threatened damage, injury or loss. Additional compensation or extension of time claimed by the Contractor on account of an emergency shall be determined as provided in Article 15 and Article 7.

### ARTICLE 11 INSURANCE AND BONDS

#### § 11.1 CONTRACTOR'S LIABILITY INSURANCE

§ 11.1.1 The Contractor shall purchase from and maintain in a company or companies lawfully authorized to do business in the jurisdiction in which the Project is located such insurance as will protect the Contractor from claims set forth below which may arise out of or result from the Contractor's operations and completed operations under the Contract and for which the Contractor may be legally liable, whether such operations be by the Contractor or by a Subcontractor or by anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable:

- .1 Claims under workers' compensation, disability benefit and other similar employee benefit acts that are applicable to the Work to be performed;
- .2 Claims for damages because of bodily injury, occupational sickness or disease, or death of the Contractor's employees;
- .3 Claims for damages because of bodily injury, sickness or disease, or death of any person other than the Contractor's employees;
- .4 Claims for damages insured by usual personal injury liability coverage;
- .5 Claims for damages, other than to the Work itself, because of injury to or destruction of tangible property, including loss of use resulting therefrom;
- .6 Claims for damages because of bodily injury, death of a person or property damage arising out of ownership, maintenance or use of a motor vehicle;
- .7 Claims for bodily injury or property damage arising out of completed operations; and
- .8 Claims involving contractual liability insurance applicable to the Contractor's obligations under Section 3.18.

§ 11.1.2 The insurance required by Section 11.1.1 shall be written for not less than limits of liability specified in the Contract Documents or required by law, whichever coverage is greater. Coverages, whether written on an occurrence or claims-made basis, shall be maintained without interruption from the date of commencement of the Work until the date of final payment and termination of any coverage required to be maintained after final payment, and, with respect to the Contractor's completed operations coverage, until the expiration of the period for correction of Work or for such other period for maintenance of completed operations coverage as specified in the Contract Documents.

§ 11.1.3 Certificates of insurance acceptable to the Owner shall be filed with the Owner prior to commencement of the Work and thereafter upon renewal or replacement of each required policy of insurance. These certificates and the insurance policies required by this Section 11.1 shall contain a provision that coverages afforded under the policies will not be canceled or allowed to expire until at least 30 days' prior written notice has been given to the Owner. An additional certificate evidencing continuation of liability coverage, including coverage for completed operations, shall be submitted with the final Application for Payment as required by Section 9.10.2 and thereafter upon renewal or replacement of such coverage until the expiration of the time required by Section 11.1.2. Information concerning reduction of coverage on account of revised limits or claims paid under the General Aggregate, or both, shall be furnished by the Contractor with reasonable promptness.

§ 11.1.4 The Contractor shall cause the commercial liability coverage required by the Contract Documents to include (1) the Owner, the Architect and the Architect's consultants as additional insureds for claims caused in whole or in part by the Contractor's negligent acts or omissions during the Contractor's operations; and (2) the Owner as an additional insured for claims caused in whole or in part by the Contractor's negligent acts or omissions during the Contractor's completed operations.

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## § 11.2 OWNER'S LIABILITY INSURANCE

The Owner shall be responsible for purchasing and maintaining the Owner's usual liability insurance.

## § 11.3 PROPERTY INSURANCE

§ 11.3.1 Unless otherwise provided, the Owner shall purchase and maintain, in a company or companies lawfully authorized to do business in the jurisdiction in which the Project is located, property insurance written on a builder's risk "all-risk" or equivalent policy form in the amount of the initial Contract Sum, plus value of subsequent Contract Modifications and cost of materials supplied or installed by others, comprising total value for the entire Project at the site on a replacement cost basis without optional deductibles. Such property insurance shall be maintained, unless otherwise provided in the Contract Documents or otherwise agreed in writing by all persons and entities who are beneficiaries of such insurance, until final payment has been made as provided in Section 9.10 or until no person or entity other than the Owner has an insurable interest in the property required by this Section 11.3 to be covered, whichever is later. This insurance shall include interests of the Owner, the Contractor, Subcontractors and Sub-subcontractors in the Project.

§ 11.3.1.1 Property insurance shall be on an "all-risk" or equivalent policy form and shall include, without limitation, insurance against the perils of fire (with extended coverage) and physical loss or damage including, without duplication of coverage, theft, vandalism, malicious mischief, collapse, earthquake, flood, windstorm, falsework, testing and startup, temporary buildings and debris removal including demolition occasioned by enforcement of any applicable legal requirements, and shall cover reasonable compensation for Architect's and Contractor's services and expenses required as a result of such insured loss.

§ 11.3.1.2 If the Owner does not intend to purchase such property insurance required by the Contract and with all of the coverages in the amount described above, the Owner shall so inform the Contractor in writing prior to commencement of the Work. The Contractor may then effect insurance that will protect the interests of the Contractor, Subcontractors and Sub-subcontractors in the Work, and by appropriate Change Order the cost thereof shall be charged to the Owner. If the Contractor is damaged by the failure or neglect of the Owner to purchase or maintain insurance as described above, without so notifying the Contractor in writing, then the Owner shall bear all reasonable costs properly attributable thereto.

§ 11.3.1.3 If the property insurance requires deductibles, the Owner shall pay costs not covered because of such deductibles.

§ 11.3.1.4 This property insurance shall cover portions of the Work stored off the site, and also portions of the Work in transit.

§ 11.3.1.5 Partial occupancy or use in accordance with Section 9.9 shall not commence until the insurance company or companies providing property insurance have consented to such partial occupancy or use by endorsement or otherwise. The Owner and the Contractor shall take reasonable steps to obtain consent of the insurance company or companies and shall, without mutual written consent, take no action with respect to partial occupancy or use that would cause cancellation, lapse or reduction of insurance.

## § 11.3.2 BOILER AND MACHINERY INSURANCE

The Owner shall purchase and maintain boiler and machinery insurance required by the Contract Documents or by law, which shall specifically cover such insured objects during installation and until final acceptance by the Owner; this insurance shall include interests of the Owner, Contractor, Subcontractors and Sub-subcontractors in the Work, and the Owner and Contractor shall be named insureds.

## § 11.3.3 LOSS OF USE INSURANCE

The Owner, at the Owner's option, may purchase and maintain such insurance as will insure the Owner against loss of use of the Owner's property due to fire or other hazards, however caused. The Owner waives all rights of action against the Contractor for loss of use of the Owner's property, including consequential losses due to fire or other hazards however caused.

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§ 11.3.4 If the Contractor requests in writing that insurance for risks other than those described herein or other special causes of loss be included in the property insurance policy, the Owner shall, if possible, include such insurance, and the cost thereof shall be charged to the Contractor by appropriate Change Order.

§ 11.3.5 If during the Project construction period the Owner insures properties, real or personal or both, at or adjacent to the site by property insurance under policies separate from those insuring the Project, or if after final payment property insurance is to be provided on the completed Project through a policy or policies other than those insuring the Project during the construction period, the Owner shall waive all rights in accordance with the terms of Section 11.3.7 for damages caused by fire or other causes of loss covered by this separate property insurance. All separate policies shall provide this waiver of subrogation by endorsement or otherwise.

§ 11.3.6 Before an exposure to loss may occur, the Owner shall file with the Contractor a copy of each policy that includes insurance coverages required by this Section 11.3. Each policy shall contain all generally applicable conditions, definitions, exclusions and endorsements related to this Project. Each policy shall contain a provision that the policy will not be canceled or allowed to expire, and that its limits will not be reduced, until at least 30 days' prior written notice has been given to the Contractor.

#### § 11.3.7 WAIVERS OF SUBROGATION

The Owner and Contractor waive all rights against (1) each other and any of their subcontractors, sub-subcontractors, agents and employees, each of the other, and (2) the Architect, Architect's consultants, separate contractors described in Article 6, if any, and any of their subcontractors, sub-subcontractors, agents and employees, for damages caused by fire or other causes of loss to the extent covered by property insurance obtained pursuant to this Section 11.3 or other property insurance applicable to the Work, except such rights as they have to proceeds of such insurance held by the Owner as fiduciary. The Owner or Contractor, as appropriate, shall require of the Architect, Architect's consultants, separate contractors described in Article 6, if any, and the subcontractors, sub-subcontractors, agents and employees of any of them, by appropriate agreements, written where legally required for validity, similar waivers each in favor of other parties enumerated herein. The policies shall provide such waivers of subrogation by endorsement or otherwise. A waiver of subrogation shall be effective as to a person or entity even though that person or entity would otherwise have a duty of indemnification, contractual or otherwise, did not pay the insurance premium directly or indirectly, and whether or not the person or entity had an insurable interest in the property damaged.

§ 11.3.8 A loss insured under the Owner's property insurance shall be adjusted by the Owner as fiduciary and made payable to the Owner as fiduciary for the insureds, as their interests may appear, subject to requirements of any applicable mortgagee clause and of Section 11.3.10. The Contractor shall pay Subcontractors their just shares of insurance proceeds received by the Contractor, and by appropriate agreements, written where legally required for validity, shall require Subcontractors to make payments to their Sub-subcontractors in similar manner.

§ 11.3.9 If required in writing by a party in interest, the Owner as fiduciary shall, upon occurrence of an insured loss, give bond for proper performance of the Owner's duties. The cost of required bonds shall be charged against proceeds received as fiduciary. The Owner shall deposit in a separate account proceeds so received, which the Owner shall distribute in accordance with such agreement as the parties in interest may reach, or as determined in accordance with the method of binding dispute resolution selected in the Agreement between the Owner and Contractor. If after such loss no other special agreement is made and unless the Owner terminates the Contract for convenience, replacement of damaged property shall be performed by the Contractor after notification of a Change in the Work in accordance with Article 7.

§ 11.3.10 The Owner as fiduciary shall have power to adjust and settle a loss with insurers unless one of the parties in interest shall object in writing within five days after occurrence of loss to the Owner's exercise of this power; if such objection is made, the dispute shall be resolved in the manner selected by the Owner and Contractor as the method of binding dispute resolution in the Agreement. If the Owner and Contractor have selected arbitration as the method of binding dispute resolution, the Owner as fiduciary shall make settlement with insurers or, in the case of a dispute over distribution of insurance proceeds, in accordance with the directions of the arbitrators.

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#### § 11.4 PERFORMANCE BOND AND PAYMENT BOND

§ 11.4.1 The Owner shall have the right to require the Contractor to furnish bonds covering faithful performance of the Contract and payment of obligations arising thereunder as stipulated in bidding requirements or specifically required in the Contract Documents on the date of execution of the Contract.

§ 11.4.2 Upon the request of any person or entity appearing to be a potential beneficiary of bonds covering payment of obligations arising under the Contract, the Contractor shall promptly furnish a copy of the bonds or shall authorize a copy to be furnished.

### ARTICLE 12 UNCOVERING AND CORRECTION OF WORK

#### § 12.1 UNCOVERING OF WORK

§ 12.1.1 If a portion of the Work is covered contrary to the Architect's request or to requirements specifically expressed in the Contract Documents, it must, if requested in writing by the Architect, be uncovered for the Architect's examination and be replaced at the Contractor's expense without change in the Contract Time.

§ 12.1.2 If a portion of the Work has been covered that the Architect has not specifically requested to examine prior to its being covered, the Architect may request to see such Work and it shall be uncovered by the Contractor. If such Work is in accordance with the Contract Documents, costs of uncovering and replacement shall, by appropriate Change Order, be at the Owner's expense. If such Work is not in accordance with the Contract Documents, such costs and the cost of correction shall be at the Contractor's expense unless the condition was caused by the Owner or a separate contractor in which event the Owner shall be responsible for payment of such costs.

#### § 12.2 CORRECTION OF WORK

##### § 12.2.1 BEFORE OR AFTER SUBSTANTIAL COMPLETION

The Contractor shall promptly correct Work rejected by the Architect or failing to conform to the requirements of the Contract Documents, whether discovered before or after Substantial Completion and whether or not fabricated, installed or completed. Costs of correcting such rejected Work, including additional testing and inspections, the cost of uncovering and replacement, and compensation for the Architect's services and expenses made necessary thereby, shall be at the Contractor's expense.

##### § 12.2.2 AFTER SUBSTANTIAL COMPLETION

§ 12.2.2.1 In addition to the Contractor's obligations under Section 3.5, if, within one year after the date of Substantial Completion of the Work or designated portion thereof or after the date for commencement of warranties established under Section 9.9.1, or by terms of an applicable special warranty required by the Contract Documents, any of the Work is found to be not in accordance with the requirements of the Contract Documents, the Contractor shall correct it promptly after receipt of written notice from the Owner to do so unless the Owner has previously given the Contractor a written acceptance of such condition. The Owner shall give such notice promptly after discovery of the condition. During the one-year period for correction of Work, if the Owner fails to notify the Contractor and give the Contractor an opportunity to make the correction, the Owner waives the rights to require correction by the Contractor and to make a claim for breach of warranty. If the Contractor fails to correct nonconforming Work within a reasonable time during that period after receipt of notice from the Owner or Architect, the Owner may correct it in accordance with Section 2.4.

§ 12.2.2.2 The one-year period for correction of Work shall be extended with respect to portions of Work first performed after Substantial Completion by the period of time between Substantial Completion and the actual completion of that portion of the Work.

§ 12.2.2.3 The one-year period for correction of Work shall not be extended by corrective Work performed by the Contractor pursuant to this Section 12.2.

§ 12.2.3 The Contractor shall remove from the site portions of the Work that are not in accordance with the requirements of the Contract Documents and are neither corrected by the Contractor nor accepted by the Owner.

§ 12.2.4 The Contractor shall bear the cost of correcting destroyed or damaged construction, whether completed or partially completed, of the Owner or separate contractors caused by the Contractor's correction or removal of Work that is not in accordance with the requirements of the Contract Documents.

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§ 12.2.5 Nothing contained in this Section 12.2 shall be construed to establish a period of limitation with respect to other obligations the Contractor has under the Contract Documents. Establishment of the one-year period for correction of Work as described in Section 12.2.2 relates only to the specific obligation of the Contractor to correct the Work, and has no relationship to the time within which the obligation to comply with the Contract Documents may be sought to be enforced, nor to the time within which proceedings may be commenced to establish the Contractor's liability with respect to the Contractor's obligations other than specifically to correct the Work.

#### § 12.3 ACCEPTANCE OF NONCONFORMING WORK

If the Owner prefers to accept Work that is not in accordance with the requirements of the Contract Documents, the Owner may do so instead of requiring its removal and correction, in which case the Contract Sum will be reduced as appropriate and equitable. Such adjustment shall be effected whether or not final payment has been made.

### ARTICLE 13 MISCELLANEOUS PROVISIONS

#### § 13.1 GOVERNING LAW

The Contract shall be governed by the law of the place where the Project is located except that, if the parties have selected arbitration as the method of binding dispute resolution, the Federal Arbitration Act shall govern Section 15.4.

#### § 13.2 SUCCESSORS AND ASSIGNS

§ 13.2.1 The Owner and Contractor respectively bind themselves, their partners, successors, assigns and legal representatives to covenants, agreements and obligations contained in the Contract Documents. Except as provided in Section 13.2.2, neither party to the Contract shall assign the Contract as a whole without written consent of the other. If either party attempts to make such an assignment without such consent, that party shall nevertheless remain legally responsible for all obligations under the Contract.

§ 13.2.2 The Owner may, without consent of the Contractor, assign the Contract to a lender providing construction financing for the Project, if the lender assumes the Owner's rights and obligations under the Contract Documents. The Contractor shall execute all consents reasonably required to facilitate such assignment.

#### § 13.3 WRITTEN NOTICE

Written notice shall be deemed to have been duly served if delivered in person to the individual, to a member of the firm or entity, or to an officer of the corporation for which it was intended; or if delivered at, or sent by registered or certified mail or by courier service providing proof of delivery to, the last business address known to the party giving notice.

#### § 13.4 RIGHTS AND REMEDIES

§ 13.4.1 Duties and obligations imposed by the Contract Documents and rights and remedies available thereunder shall be in addition to and not a limitation of duties, obligations, rights and remedies otherwise imposed or available by law.

§ 13.4.2 No action or failure to act by the Owner, Architect or Contractor shall constitute a waiver of a right or duty afforded them under the Contract, nor shall such action or failure to act constitute approval of or acquiescence in a breach there under, except as may be specifically agreed in writing.

#### § 13.5 TESTS AND INSPECTIONS

§ 13.5.1 Tests, inspections and approvals of portions of the Work shall be made as required by the Contract Documents and by applicable laws, statutes, ordinances, codes, rules and regulations or lawful orders of public authorities. Unless otherwise provided, the Contractor shall make arrangements for such tests, inspections and approvals with an independent testing laboratory or entity acceptable to the Owner, or with the appropriate public authority, and shall bear all related costs of tests, inspections and approvals. The Contractor shall give the Architect timely notice of when and where tests and inspections are to be made so that the Architect may be present for such procedures. The Owner shall bear costs of (1) tests, inspections or approvals that do not become requirements until after bids are received or negotiations concluded, and (2) tests, inspections or approvals where building codes or applicable laws or regulations prohibit the Owner from delegating their cost to the Contractor.

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§ 13.5.2 If the Architect, Owner or public authorities having jurisdiction determine that portions of the Work require additional testing, inspection or approval not included under Section 13.5.1, the Architect will, upon written authorization from the Owner, instruct the Contractor to make arrangements for such additional testing, inspection or approval by an entity acceptable to the Owner, and the Contractor shall give timely notice to the Architect of when and where tests and inspections are to be made so that the Architect may be present for such procedures. Such costs, except as provided in Section 13.5.3, shall be at the Owner's expense.

§ 13.5.3 If such procedures for testing, inspection or approval under Sections 13.5.1 and 13.5.2 reveal failure of the portions of the Work to comply with requirements established by the Contract Documents, all costs made necessary by such failure including those of repeated procedures and compensation for the Architect's services and expenses shall be at the Contractor's expense.

§ 13.5.4 Required certificates of testing, inspection or approval shall, unless otherwise required by the Contract Documents, be secured by the Contractor and promptly delivered to the Architect.

§ 13.5.5 If the Architect is to observe tests, inspections or approvals required by the Contract Documents, the Architect will do so promptly and, where practicable, at the normal place of testing.

§ 13.5.6 Tests or inspections conducted pursuant to the Contract Documents shall be made promptly to avoid unreasonable delay in the Work.

#### § 13.6 INTEREST

Payments due and unpaid under the Contract Documents shall bear interest from the date payment is due at such rate as the parties may agree upon in writing or, in the absence thereof, at the legal rate prevailing from time to time at the place where the Project is located.

#### § 13.7 TIME LIMITS ON CLAIMS

The Owner and Contractor shall commence all claims and causes of action, whether in contract, tort, breach of warranty or otherwise, against the other arising out of or related to the Contract in accordance with the requirements of the final dispute resolution method selected in the Agreement within the time period specified by applicable law, but in any case not more than 10 years after the date of Substantial Completion of the Work. The Owner and Contractor waive all claims and causes of action not commenced in accordance with this Section 13.7.

### ARTICLE 14 TERMINATION OR SUSPENSION OF THE CONTRACT

#### § 14.1 TERMINATION BY THE CONTRACTOR

§ 14.1.1 The Contractor may terminate the Contract if the Work is stopped for a period of 30 consecutive days through no act or fault of the Contractor or a Subcontractor, Sub-subcontractor or their agents or employees or any other persons or entities performing portions of the Work under direct or indirect contract with the Contractor, for any of the following reasons:

- .1 Issuance of an order of a court or other public authority having jurisdiction that requires all Work to be stopped;
- .2 An act of government, such as a declaration of national emergency that requires all Work to be stopped;
- .3 Because the Architect has not issued a Certificate for Payment and has not notified the Contractor of the reason for withholding certification as provided in Section 9.4.1, or because the Owner has not made payment on a Certificate for Payment within the time stated in the Contract Documents; or
- .4 The Owner has failed to furnish to the Contractor promptly, upon the Contractor's request, reasonable evidence as required by Section 2.2.1.

§ 14.1.2 The Contractor may terminate the Contract if, through no act or fault of the Contractor or a Subcontractor, Sub-subcontractor or their agents or employees or any other persons or entities performing portions of the Work under direct or indirect contract with the Contractor, repeated suspensions, delays or interruptions of the entire Work by the Owner as described in Section 14.3 constitute in the aggregate more than 100 percent of the total number of days scheduled for completion, or 120 days in any 365-day period, whichever is less.

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§ 14.1.3 If one of the reasons described in Section 14.1.1 or 14.1.2 exists, the Contractor may, upon seven days' written notice to the Owner and Architect, terminate the Contract and recover from the Owner payment for Work executed, including reasonable overhead and profit, costs incurred by reason of such termination, and damages.

§ 14.1.4 If the Work is stopped for a period of 60 consecutive days through no act or fault of the Contractor or a Subcontractor or their agents or employees or any other persons performing portions of the Work under contract with the Contractor because the Owner has repeatedly failed to fulfill the Owner's obligations under the Contract Documents with respect to matters important to the progress of the Work, the Contractor may, upon seven additional days' written notice to the Owner and the Architect, terminate the Contract and recover from the Owner as provided in Section 14.1.3.

#### § 14.2 TERMINATION BY THE OWNER FOR CAUSE

§ 14.2.1 The Owner may terminate the Contract if the Contractor

- .1 repeatedly refuses or fails to supply enough properly skilled workers or proper materials;
- .2 fails to make payment to Subcontractors for materials or labor in accordance with the respective agreements between the Contractor and the Subcontractors;
- .3 repeatedly disregards applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of a public authority; or
- .4 otherwise is guilty of substantial breach of a provision of the Contract Documents.

§ 14.2.2 When any of the above reasons exist, the Owner, upon certification by the Initial Decision Maker that sufficient cause exists to justify such action, may without prejudice to any other rights or remedies of the Owner and after giving the Contractor and the Contractor's surety, if any, seven days' written notice, terminate employment of the Contractor and may, subject to any prior rights of the surety:

- .1 Exclude the Contractor from the site and take possession of all materials, equipment, tools, and construction equipment and machinery thereon owned by the Contractor;
- .2 Accept assignment of subcontracts pursuant to Section 5.4; and
- .3 Finish the Work by whatever reasonable method the Owner may deem expedient. Upon written request of the Contractor, the Owner shall furnish to the Contractor a detailed accounting of the costs incurred by the Owner in finishing the Work.

§ 14.2.3 When the Owner terminates the Contract for one of the reasons stated in Section 14.2.1, the Contractor shall not be entitled to receive further payment until the Work is finished.

§ 14.2.4 If the unpaid balance of the Contract Sum exceeds costs of finishing the Work, including compensation for the Architect's services and expenses made necessary thereby, and other damages incurred by the Owner and not expressly waived, such excess shall be paid to the Contractor. If such costs and damages exceed the unpaid balance, the Contractor shall pay the difference to the Owner. The amount to be paid to the Contractor or Owner, as the case may be, shall be certified by the Initial Decision Maker, upon application, and this obligation for payment shall survive termination of the Contract.

#### § 14.3 SUSPENSION BY THE OWNER FOR CONVENIENCE

§ 14.3.1 The Owner may, without cause, order the Contractor in writing to suspend, delay or interrupt the Work in whole or in part for such period of time as the Owner may determine.

§ 14.3.2 The Contract Sum and Contract Time shall be adjusted for increases in the cost and time caused by suspension, delay or interruption as described in Section 14.3.1. Adjustment of the Contract Sum shall include profit. No adjustment shall be made to the extent

- .1 that performance is, was or would have been so suspended, delayed or interrupted by another cause for which the Contractor is responsible; or
- .2 that an equitable adjustment is made or denied under another provision of the Contract.

#### § 14.4 TERMINATION BY THE OWNER FOR CONVENIENCE

§ 14.4.1 The Owner may, at any time, terminate the Contract for the Owner's convenience and without cause.

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§ 14.4.2 Upon receipt of written notice from the Owner of such termination for the Owner's convenience, the Contractor shall

- .1 cease operations as directed by the Owner in the notice;
- .2 take actions necessary, or that the Owner may direct, for the protection and preservation of the Work; and
- .3 except for Work directed to be performed prior to the effective date of termination stated in the notice, terminate all existing subcontracts and purchase orders and enter into no further subcontracts and purchase orders.

§ 14.4.3 In case of such termination for the Owner's convenience, the Contractor shall be entitled to receive payment for Work executed, and costs incurred by reason of such termination, along with reasonable overhead and profit on the Work not executed.

## ARTICLE 15 CLAIMS AND DISPUTES

### § 15.1 CLAIMS

#### § 15.1.1 DEFINITION

A Claim is a demand or assertion by one of the parties seeking, as a matter of right, payment of money, or other relief with respect to the terms of the Contract. The term "Claim" also includes other disputes and matters in question between the Owner and Contractor arising out of or relating to the Contract. The responsibility to substantiate Claims shall rest with the party making the Claim.

#### § 15.1.2 NOTICE OF CLAIMS

Claims by either the Owner or Contractor must be initiated by written notice to the other party and to the Initial Decision Maker with a copy sent to the Architect, if the Architect is not serving as the Initial Decision Maker.

Claims by either party must be initiated within 21 days after occurrence of the event giving rise to such Claim or within 21 days after the claimant first recognizes the condition giving rise to the Claim, whichever is later.

#### § 15.1.3 CONTINUING CONTRACT PERFORMANCE

Pending final resolution of a Claim, except as otherwise agreed in writing or as provided in Section 9.7 and Article 14, the Contractor shall proceed diligently with performance of the Contract and the Owner shall continue to make payments in accordance with the Contract Documents. The Architect will prepare Change Orders and issue Certificates for Payment in accordance with the decisions of the Initial Decision Maker.

#### § 15.1.4 CLAIMS FOR ADDITIONAL COST

If the Contractor wishes to make a Claim for an increase in the Contract Sum, written notice as provided herein shall be given before proceeding to execute the Work. Prior notice is not required for Claims relating to an emergency endangering life or property arising under Section 10.4.

#### § 15.1.5 CLAIMS FOR ADDITIONAL TIME

§ 15.1.5.1 If the Contractor wishes to make a Claim for an increase in the Contract Time, written notice as provided herein shall be given. The Contractor's Claim shall include an estimate of cost and of probable effect of delay on progress of the Work. In the case of a continuing delay, only one Claim is necessary.

§ 15.1.5.2 If adverse weather conditions are the basis for a Claim for additional time, such Claim shall be documented by data substantiating that weather conditions were abnormal for the period of time, could not have been reasonably anticipated and had an adverse effect on the scheduled construction.

#### § 15.1.6 CLAIMS FOR CONSEQUENTIAL DAMAGES

The Contractor and Owner waive Claims against each other for consequential damages arising out of or relating to this Contract. This mutual waiver includes

- .1 damages incurred by the Owner for rental expenses, for losses of use, income, profit, financing, business and reputation, and for loss of management or employee productivity or of the services of such persons; and
- .2 damages incurred by the Contractor for principal office expenses including the compensation of personnel stationed there, for losses of financing, business and reputation, and for loss of profit except anticipated profit arising directly from the Work.

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This mutual waiver is applicable, without limitation, to all consequential damages due to either party's termination in accordance with Article 14. Nothing contained in this Section 15.1.6 shall be deemed to preclude an award of liquidated damages, when applicable, in accordance with the requirements of the Contract Documents.

#### § 15.2 INITIAL DECISION

§ 15.2.1 Claims, excluding those arising under Sections 10.3, 10.4, 11.3.9, and 11.3.10, shall be referred to the Initial Decision Maker for initial decision. The Architect will serve as the Initial Decision Maker, unless otherwise indicated in the Agreement. Except for those Claims excluded by this Section 15.2.1, an initial decision shall be required as a condition precedent to mediation of any Claim arising prior to the date final payment is due, unless 30 days have passed after the Claim has been referred to the Initial Decision Maker with no decision having been rendered. Unless the Initial Decision Maker and all affected parties agree, the Initial Decision Maker will not decide disputes between the Contractor and persons or entities other than the Owner.

§ 15.2.2 The Initial Decision Maker will review Claims and within ten days of the receipt of a Claim take one or more of the following actions: (1) request additional supporting data from the claimant or a response with supporting data from the other party, (2) reject the Claim in whole or in part, (3) approve the Claim, (4) suggest a compromise, or (5) advise the parties that the Initial Decision Maker is unable to resolve the Claim if the Initial Decision Maker lacks sufficient information to evaluate the merits of the Claim or if the Initial Decision Maker concludes that, in the Initial Decision Maker's sole discretion, it would be inappropriate for the Initial Decision Maker to resolve the Claim.

§ 15.2.3 In evaluating Claims, the Initial Decision Maker may, but shall not be obligated to, consult with or seek information from either party or from persons with special knowledge or expertise who may assist the Initial Decision Maker in rendering a decision. The Initial Decision Maker may request the Owner to authorize retention of such persons at the Owner's expense.

§ 15.2.4 If the Initial Decision Maker requests a party to provide a response to a Claim or to furnish additional supporting data, such party shall respond, within ten days after receipt of such request, and shall either (1) provide a response on the requested supporting data, (2) advise the Initial Decision Maker when the response or supporting data will be furnished or (3) advise the Initial Decision Maker that no supporting data will be furnished. Upon receipt of the response or supporting data, if any, the Initial Decision Maker will either reject or approve the Claim in whole or in part.

§ 15.2.5 The Initial Decision Maker will render an initial decision approving or rejecting the Claim, or indicating that the Initial Decision Maker is unable to resolve the Claim. This initial decision shall (1) be in writing; (2) state the reasons therefor; and (3) notify the parties and the Architect, if the Architect is not serving as the Initial Decision Maker, of any change in the Contract Sum or Contract Time or both. The initial decision shall be final and binding on the parties but subject to mediation and, if the parties fail to resolve their dispute through mediation, to binding dispute resolution.

§ 15.2.6 Either party may file for mediation of an initial decision at any time, subject to the terms of Section 15.2.6.1.

§ 15.2.6.1 Either party may, within 30 days from the date of an initial decision, demand in writing that the other party file for mediation within 60 days of the initial decision. If such a demand is made and the party receiving the demand fails to file for mediation within the time required, then both parties waive their rights to mediate or pursue binding dispute resolution proceedings with respect to the initial decision.

§ 15.2.7 In the event of a Claim against the Contractor, the Owner may, but is not obligated to, notify the surety, if any, of the nature and amount of the Claim. If the Claim relates to a possibility of a Contractor's default, the Owner may, but is not obligated to, notify the surety and request the surety's assistance in resolving the controversy.

§ 15.2.8 If a Claim relates to or is the subject of a mechanic's lien, the party asserting such Claim may proceed in accordance with applicable law to comply with the lien notice or filing deadlines.

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### § 15.3 MEDIATION

§ 15.3.1 Claims, disputes, or other matters in controversy arising out of or related to the Contract except those waived as provided for in Sections 9.10.4, 9.10.5, and 15.1.6 shall be subject to mediation as a condition precedent to binding dispute resolution.

§ 15.3.2 The parties shall endeavor to resolve their Claims by mediation which, unless the parties mutually agree otherwise, shall be administered by the American Arbitration Association in accordance with its Construction Industry Mediation Procedures in effect on the date of the Agreement. A request for mediation shall be made in writing, delivered to the other party to the Contract, and filed with the person or entity administering the mediation. The request may be made concurrently with the filing of binding dispute resolution proceedings but, in such event, mediation shall proceed in advance of binding dispute resolution proceedings, which shall be stayed pending mediation for a period of 60 days from the date of filing, unless stayed for a longer period by agreement of the parties or court order. If an arbitration is stayed pursuant to this Section 15.3.2, the parties may nonetheless proceed to the selection of the arbitrator(s) and agree upon a schedule for later proceedings.

§ 15.3.3 The parties shall share the mediator's fee and any filing fees equally. The mediation shall be held in the place where the Project is located, unless another location is mutually agreed upon. Agreements reached in mediation shall be enforceable as settlement agreements in any court having jurisdiction thereof.

### § 15.4 ARBITRATION

§ 15.4.1 If the parties have selected arbitration as the method for binding dispute resolution in the Agreement, any Claim subject to, but not resolved by, mediation shall be subject to arbitration which, unless the parties mutually agree otherwise, shall be administered by the American Arbitration Association in accordance with its Construction Industry Arbitration Rules in effect on the date of the Agreement. A demand for arbitration shall be made in writing, delivered to the other party to the Contract, and filed with the person or entity administering the arbitration. The party filing a notice of demand for arbitration must assert in the demand all Claims then known to that party on which arbitration is permitted to be demanded.

§ 15.4.1.1 A demand for arbitration shall be made no earlier than concurrently with the filing of a request for mediation, but in no event shall it be made after the date when the institution of legal or equitable proceedings based on the Claim would be barred by the applicable statute of limitations. For statute of limitations purposes, receipt of a written demand for arbitration by the person or entity administering the arbitration shall constitute the institution of legal or equitable proceedings based on the Claim.

§ 15.4.2 The award rendered by the arbitrator or arbitrators shall be final, and judgment may be entered upon it in accordance with applicable law in any court having jurisdiction thereof.

§ 15.4.3 The foregoing agreement to arbitrate and other agreements to arbitrate with an additional person or entity duly consented to by parties to the Agreement shall be specifically enforceable under applicable law in any court having jurisdiction thereof.

### § 15.4.4 CONSOLIDATION OR JOINDER

§ 15.4.4.1 Either party, at its sole discretion, may consolidate an arbitration conducted under this Agreement with any other arbitration to which it is a party provided that (1) the arbitration agreement governing the other arbitration permits consolidation, (2) the arbitrations to be consolidated substantially involve common questions of law or fact, and (3) the arbitrations employ materially similar procedural rules and methods for selecting arbitrator(s).

§ 15.4.4.2 Either party, at its sole discretion, may include by joinder persons or entities substantially involved in a common question of law or fact whose presence is required if complete relief is to be accorded in arbitration, provided that the party sought to be joined consents in writing to such joinder. Consent to arbitration involving an additional person or entity shall not constitute consent to arbitration of any claim, dispute or other matter in question not described in the written consent.

§ 15.4.4.3 The Owner and Contractor grant to any person or entity made a party to an arbitration conducted under this Section 15.4, whether by joinder or consolidation, the same rights of joinder and consolidation as the Owner and Contractor under this Agreement.

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**END SECTION AIA A201**

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## 12.1 – Addendum To General Conditions – AIA Document A201

### GENERAL CONDITIONS

- A. Standard Form: The General Conditions of the Contract forming a part of the Contract Documents and of these Specifications, consists of AIA Document A201, 2007 Edition.
- B. Modifications and Additions: Where Contract Documents refer to General Conditions, such reference shall be interpreted to include Addendum to General Conditions.
- C. Where contract documents refer to “architect”, such reference shall be interpreted to be “engineer”.

### CORRELATION AND INTENT OF THE CONTRACT DOCUMENTS

- A. If conflicts or discrepancies occur in the Contract Documents, interpretations will be based on the following priorities:
  - 1. Awarding Authority-Contractor Agreement.
  - 2. Addenda, with those of later date having precedence over those of earlier date.
  - 3. The Supplementary Conditions.
  - 4. The General Conditions of the Contract for Construction.
  - 5. Drawings and Specifications.
- B. For an inconsistency between Drawings and Specifications or within either Document not clarified by Addendum, the better quality or greater quantity of work shall be provided according to the Architect's interpretation.

### ARTICLE 2 - OWNER

Sub-paragraph 2.1.2- delete in its entirety

### ARTICLE 7 – CHANGES IN THE WORK

Sub-paragraph 7.3.4- delete in its entirety

### ARTICLE 11 – INSURANCE AND BONDS

Sub-paragraph 11.3- delete in its entirety.

End of section

## Section 12.1 – Page 1 of 2

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## Section 12.1 – Page 2 of 2

## **13 – Supplementary Conditions**

### **100.0 CLAIMS FOR EXTRA COST**

100.1 If the Contractor claims that any instructions by Drawings or otherwise involve extra cost or extension of time, they shall, within ten (10) days after the receipt of such instructions, and in any event before proceeding to execute the work, submit their protest thereto in writing to the Owner stating clearly and in detail the basis of his objections. No such claim will be considered unless so made.

100.2 Claims for additional compensation for extra work, due to alleged errors in ground elevations, contour lines, site location, or bench marks, will not be recognized unless accompanied by certified survey data, made prior to the time the original ground was disturbed, clearly showing that errors exist which resulted, or would result, in handling more material or performing more work than would be reasonably estimated from the Drawings and map issued.

100.3 Any discrepancies which may be discovered between actual conditions and those represented by the Drawings and maps shall at once be reported to the Owner and work shall not proceed except at the Contractor's risk, until written instructions have been received by them from the Owner.

100.4 If, on the basis of the available evidence, the Owner determines that an adjustment of the Contract Price and/or Time is justifiable, the procedure shall be as provided in Section 110 hereof.

### **101.0 TERMINATION, DELAYS, AND LIQUIDATED DAMAGES**

101.1 Termination of Contract. If the Contractor 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 in these Contract Documents, the Owner by written notice to the Contractor, may terminate the Contractor's right to proceed with the work. Upon such termination, the Owner may take over the work and prosecute the same to completion of the work and the Contractor shall also be liable to the Owner in its completion of the work and the Contractor shall also be liable to the Owner for liquidated damages for any delay in the completion of the work as provided below. If the Contractor's right to proceed is so terminated, the Owner may take possession of and utilize in completing the work, such materials, tools, equipment, and plant as may be on the site of the work and necessary therefore.

101.2 Liquidated Damages for Delays. If the work be not completed within the time stipulated in Section 402 hereof, including any extensions of time for excusable delays as herein provided, the Contractor shall pay to the Owner as fixed, agreed, and liquidated damages (it being impossible to determine the actual damages occasioned by the delay) for each calendar day of delay, until the work is completed, the amount as set forth in Section 403 hereof and the Contractor and his sureties shall be liable to the Owner for the amount thereof.

101.3 Excusable Delays. The right of the Contractor to proceed shall not be terminated nor shall the Contractor be charged with liquidated damages for any delays in the completion of the work due.

101.3.1 To any acts of the Government, including controls or restrictions upon or requisitioning of materials, equipment, tools, or labor by reason of war, National Defense, or any other national emergency.

101.3.2.1 To any acts of the Owner.

101.3.3 To causes not reasonably foreseeable by the parties to this Contract at the time of the execution of the Contract which are beyond the control and without the fault or



negligence of the Contractor, including, but not restricted to, acts of God or of the Public enemy, acts of another Contractor in the performance of some other contract with the Owner, fires, floods, epidemics, quarantine, restrictions, strikes, freight embargoes, and weather of unusual severity such as hurricane, tornadoes, cyclones and other extreme weather conditions; and

101.3.4 To any delay of any subcontractor occasioned by any of the causes specified in subparagraphs 1, 2 and 3 of this paragraph 101.3.

Provided, however, that the Contractor promptly notify the Owner within ten (10) days in writing of the cause of the delay. Upon receipt of such notification, the Owner shall ascertain the facts and the cause and extent of delay. If, upon the basis of the facts and the terms of this contract, the delay is properly excusable, the Owner shall extend the time for completing the work for a period of time commensurate with the period of excusable delay.

## 102.0 SAMPLES, CERTIFICATES AND TESTS

102.1 The Contractor shall submit all material or equipment samples, certificates, affidavits, etc. as called for in the contract documents or required by the Owner promptly after award of the Contract and acceptance of the Contractor's bond. No such material or equipment shall be manufactured or delivered to the site, except at the Contractor's own risk, until the required samples or certificates have been approved in writing by the Owner. Any delay in the work caused by late or improper submission of samples or certificates for approval shall not be considered just cause for an extension of the contract time.

Each sample submitted by the Contractor shall carry a label giving the name of the Contractor, the property for which it is intended, and the name of the producer. The accompanying certificate or letter from the Contractor shall state that the sample complies with contract requirements, shall give the name and brand of the products, its place or origin, the name and address of the producer and all specifications or other detailed information which will assist the Owner in passing upon the acceptability of the sample promptly. It shall also include the statement that all materials or equipment furnished for use in the project will comply with the samples and/or certified statements.

102.2 Approval of any materials shall be general only and shall not constitute a waiver of the Owner's right to demand full compliance with Contract requirements. After actual deliveries, the Owner will have such check tests made as they deem necessary in each instance and may reject materials and equipment and accessories for cause, even though such materials and articles have been given general approval. If materials, equipment or accessories, which fail to meet check tests have been incorporated in the work, the Owner will have the right to cause their removal and replacement by proper materials or to demand and secure such reparation by the Contractor as is equitable.

102.3 Except as otherwise specifically stated in the Contract, the costs of sampling and testing will be divided as follows:

102.3.1 The Contractor shall furnish without extra cost, including packing and delivery charges, all samples required for testing purposes except those samples taken on the project by the Owner;

102.3.2. The Contractor shall assume all costs of re-testing materials which fail to meet contract requirements;

102.3.3 The Contractor shall assure all cost of testing materials offered in substitution of those found deficient; and

102.3.4 The Owner will pay all other expenses.

### 103.0 PERMITS AND CODES

103.1 The Contractor shall give all notices required by and comply with all applicable laws, ordinances, and codes of the Local Government. All construction work and/or utility installations shall comply with all applicable ordinances, and codes including all written waivers. Before installing any work, the Contractor shall examine the Drawings and Technical Specifications for compliance with applicable ordinances and codes and shall immediately report any discrepancy to the Owner. Where the requirements of the Drawings and Technical Specifications fail to comply with such applicable ordinances or codes, the

Owner will adjust the Contract by Change Order to conform to such ordinances or codes (unless waivers in writing covering the difference have been granted by the governing body or department) and make appropriate adjustment in the Contract Price or stipulated unit prices.

Should the Contractor fail to observe the foregoing provisions and proceed with the construction and/or install any utility at the variance with any applicable ordinance or code, including any written waivers (notwithstanding the fact that such installation is in compliance with the Drawings and Technical Specifications), the Contractor shall remove such work without cost to the Owner, but a Change Order will be issued to cover only the excess cost the Contractor would have been entitled to receive if the Change had been made before the Contractor commenced work on the items involved.

103.2 The Contractor shall at their own expense, secure and pay to the appropriate department of the Local Government the fees or charges for all permits for street pavement, sidewalks, sheds, removal of abandoned water taps, sealing of house connection drains, pavement cuts, buildings, electrical, plumbing, water, gas and sewer permits required by the local regulatory body or any of its agencies.

103.3 The Contractor shall comply with applicable local laws and ordinances governing excavations and the disposal of surplus excavation, materials, debris and rubbish on or off the Project Area and commit no trespass on any public or private property in any operation due to or connected with the Improvements embraced in this Contract.

### 104.0 CARE OF WORK

104.1 The Contractor shall be responsible for all damages to person or property that occur as a result of their fault or negligence in connection with the prosecution of the work and shall be responsible for the proper care and protection of all materials delivered and work performed until completion and final acceptance, whether or not the same has been covered in whole or in part by payments made by the Owner.

104.2 The Contractor shall provide, where necessary and as requested by the Owner, sufficient competent watchmen, both day and night, including Saturdays, Sundays, and holidays, from the time the work is commenced until final completion and acceptance.

104.3 In an emergency affecting and safety of life, limb or property, including adjoining property, the Contractor without special instructions or authorization from the Owner is authorized to act at their discretion to prevent such threatened loss or injury, and they shall so act. They shall likewise act if instructed to do so by the Owner. Any compensation claimed by the Contractor on account of such emergency work will be determined by the Owner as provided in Section 110 hereof.

104.4 The Contractor shall avoid damage as a result of their operations to existing sidewalks, streets, curbs, pavements, utilities, (except those which are to be replaced or removed), adjoining

property, etc., and they shall at their own expense completely repair any damage thereto caused by their operations.

104.5 The Contractor shall shore up, brace, underpin, secure, and protect as may be necessary, all foundations and other parts of existing structures adjacent to, adjoining, and in the vicinity of the site, which may be in any way affected by the excavations or other operations connected with the construction of the Improvements embraced in this Contract. The Contractor shall be responsible for the giving of any and all required notices to any adjoining or adjacent property Owner or other party before the commencement of any work. The Contractor shall indemnify and save harmless the Owner from any damages on account of settlements or the loss of lateral support of adjoining property and from all loss or expense and all damages for which the Owner may become liable in consequence of such injury of damage to adjoining and adjacent structures and their premises.

#### 105.0 ACCIDENT PREVENTION

105.1 The Contractor shall exercise proper precaution at all times for the protection of persons and property and shall be responsible for all damages to persons or property, either on or off the site, which occur as a result of his prosecution of the work. The safety provisions of applicable laws and building and construction codes shall be observed and the Contractor shall take or cause to be taken such additional safety and health measures as the Owner may determine to be reasonably necessary. Machinery, equipment and all hazards shall be guarded in accordance with the safety provisions of the "Manual of Accident prevention in Construction" published by the Associates General Contractors of America, Inc., to the extent that such provisions are not in conflict with applicable local laws.

105.2 The Contractor shall maintain an accurate record of all cases of death, occupational disease, or injury requiring medical attention or causing loss of time from work, arising out of and in the course of employment on work under the Contract. The Contractor shall promptly furnish the Owner with reports concerning these matters.

105.3 The Contractor shall indemnify and save harmless the Owner from any claims for damages resulting from property damage, personal injury and/or death suffered or alleged to have been suffered by any person as a result of any work conducted under this Contract.

#### 106.0 USE OF PREMISES

106.1 The Contractor shall confine their equipment, storage of materials and construction operations to the Contract limits as shown on the Drawings and as prescribed by ordinances or permits, or as may be desired by the Owner and shall not unreasonably encumber the site or public rights of way with his materials and construction equipment.

106.2 The Contractor shall comply with all reasonable instructions of the Owner and the ordinances and codes of the Local Government, regarding signs, advertising, traffic, fires, explosives, danger signals, barricades and fire prevention.

#### 107.0 REMOVAL OF DEBRIS, CLEANING, ETC.

The Contractor shall, periodically or as directed during the progress of the work, remove and legally dispose of all surplus excavated material and debris, and keep the Project Area and public rights of way reasonably clear. Upon completion of the work, the Contractor shall remove all temporary construction facilities, debris and unused materials provided for the work, and put the work site of the work and public rights of way in a neat and clean condition. Trash burning on the site of the work will be subject to prior approval of the Owner and existing State and Local regulations.

## 108.0 INSPECTION

108.1 All materials and workmanship shall be subject to inspection, examination, or test by the Owner and the Engineer at any and all times during manufacture of construction and at any and all places where such manufacture or construction is carried on. The Owner shall have the right to reject defective material and workmanship or require its correction. Unacceptable workmanship shall be satisfactorily corrected. Rejected material shall be promptly segregated and removed from the Project Area and replaced with material of specified quality without charge therefore. If the Contractor fails to proceed at once with correction of rejected workmanship or defective material, the Owner may by Contract or otherwise have the defects remedied or rejected materials removed from the Project Area and charge the cost of the same against any monies which may be due the Contractor, without prejudice to any other rights or remedies of the Owner.

108.2 The Contractor shall furnish promptly all materials reasonably necessary for any tests, which may be required. (See Section 102 hereof). All tests by the Owner will be performed in such manner as not to delay the work unnecessarily and will be made in accordance with the provisions of the Technical Specifications.

108.3 The Contractor shall notify the Owner sufficiently in advance of backfilling or concealing any facilities to permit proper inspection. If any facilities are concealed without approval or consent of the Owner, the Contractor shall uncover for inspection and recover such facilities all at their own expense, when so requested by the Owner.

Should it be considered necessary or advisable by the Owner at any time before final acceptance of the entire work to make an examination of work already completed by uncovering the same, the Contractor shall on request promptly furnish all necessary facilities, labor, and material. If such work is found to be defective in any important or essential respect, due to fault of the Contractor or their subcontractors, the Contractor shall defray all the expenses of such examination and of satisfactory reconstruction. If, however, such work is found to meet the requirements of the Contract, the actual cost of labor and material necessarily involved in the examination and replacement, plus 15 percent of such costs to cover superintendence, general expenses and profit, shall be allowed by the Contractor and they shall, in addition, if completion of the work of the entire Contract has been delayed thereby, be granted a suitable extension of time on account of the additional work involved.

108.4 Inspection of materials and appurtenances to be incorporated in the Improvements embraced in this Contract may be made at the place of production, manufacture or shipment, whatever the quantity justifies it, and such inspection and acceptance, unless otherwise stated in the Technical Specifications, shall be final, except as regards (1) latent defects, (2) departures from specific requirements of the Contract, (3) damage or loss in transit, or (4) fraud or such gross mistakes as amount to fraud. Subject to the requirements contained in the preceding sentence, the inspection of materials as a whole or in part will be made at the Project Site.

108.5 Neither inspection, testing, approval nor acceptance of the work in whole or in part, by the Owner or its agents shall relieve the Contractor of their sureties of full responsibility for materials furnished or work performed not in strict accordance with the Contract.

## 109.0 REVIEW BY THE OWNER

The Owner, its authorized Engineer and agents and the Representative for the Secretary (as defined under GENERAL CONDITIONS, PART II) shall, at all times, have access to, and be permitted to observe and review all work, materials, equipment, payrolls, personnel records, employment conditions, material invoices, and other relevant data and records pertaining to this Contract, provided, however, that all instructions and approval with respect to the work will be given to the Contractor only by the Owner through its authorized Engineers or agents.

## 110.0 FINAL INSPECTION

110.1 When the Improvements embraced in this Contract are substantially completed, the Contractor shall notify the Owner in writing that the work will be ready for final inspection on a definite date, which shall be stated in the notice. The notice will be given at least ten (10) days prior to the date stated for final inspection, and bear the signed concurrence of the Engineer of the Owner having charge of inspection. If the Owner determines that the status of the Improvements is as represented, it will make the arrangements necessary to have final inspection commenced on the date stated in the notice, or as soon thereafter as is practicable. The inspection party will include representatives of each department of the Local Government having in charge Improvements of like character when such Improvements are later to be accepted by the Local Government.

## 111.0 DEDUCTION FOR UNCORRECTED WORK

If the Owner deems it not expedient to require the Contractor to correct work not done in accordance with the Contract Documents, an equitable deduction from the Contract Price will be made by agreement between the Contractor and the Owner and subject to settlement, in case of dispute, as herein provided.

## 112.0 INSURANCE

See Section 5.0 Insurance for information.

## 113.0 PATENTS

The Contractor shall hold and save the Owner its officers, and employees, harmless from liability of any nature of kind, including costs and expenses, for, or on account of, any patented or unpatented invention, process, article, or appliance manufactured or used in the performance of the Contract, including its use by the Owner unless otherwise specifically stipulated in the Technical Specifications.

## 114.0 WARRANTY OF TITLE

No material, supplies, or equipment to be installed or furnished under this Contract shall be purchased subject to any chattel mortgage or under a conditioned sale, lease-purchase or other agreement by which an interest therein or in any part thereof is retained by the seller or supplier. The Contractor shall warrant good title to all materials, supplies, and equipment installed or incorporated in the work and upon completion of all work, shall deliver the same together with all improvements and appurtenances constructed or placed thereon by them to the Owner free from any claims, liens, or charges. Neither the Contractor nor any person, firm or corporation furnishing any material or labor for any work covered by this Contract shall have any right to a lien upon any improvement or appurtenance thereon. Nothing contained in this paragraph, however, shall defeat or impair the right of persons furnishing materials or labor to recover under any bond given by the Contractor for their protection or any rights under any law permitting such persons to look to funds due the Contractor in the hands of the Owner. The provisions of this paragraph shall be inserted in all subcontracts and materials contracts and notice of its provisions shall be given to all persons furnishing materials for the work when no formal Contract is entered into for such materials.

## 115.0 GENERAL GUARANTY

Neither the final certificate of payment nor any provision in the Contract nor partial or entire use of the Improvements embraced in this Contract by the Owner or the public shall constitute an acceptance of work not done in accordance with the Contract or relieve the Contractor of liability in respect to any express warranties or responsibility for faulty materials or workmanship. The

Contractor shall promptly remedy any defects in the work and pay for any damage to other work resulting therefrom, which shall appear within a period of twelve (12) months from the date of final acceptance of the work. The Owner will give notice of defective materials and work with reasonable promptness.

#### 116.0 CONTRACTOR TO MAKE OWN EXAMINATION

Plans, calculations, estimates of quantities, and any statements made in the Instructions to Bidders or otherwise as to the conditions under which the work is to be performed are not guaranteed by the Owner to be correct or to be a complete representation of all existing data on conditions affecting work, and the Contractor agrees that they have made their examination and will make no claim for damages on account of any errors, inaccuracies or omissions that may be found.

The Contractor shall not take any advantage or have any claim for damages on account of any discrepancy, error or omission in any plans, calculations, estimates of quantities, or any statement made in the Instructions to Bidders or otherwise as to the conditions under which the work is to be performed, and they shall report such discrepancy, error or omission to the Owner in writing as soon as it comes to their knowledge, and before proceeding with work related to such discrepancy, error or omission. Any correction or modification of the plans or specifications may be made by the Owner when necessary, in their opinion, for the proper fulfillment of their purpose or for their proper interpretation.

200.0 OMITTED

300.0 OMITTED

#### 402.0 TIME FOR COMPLETION

The work which the Contractor is required to perform under this Contract shall be commenced at the time stipulated by the Owner in the Notice to Proceed to the Contractor.

The rate of progress shall be such that the whole work shall be performed in accordance with the terms of this contract within the number of calendar days after the date of execution of the contract as herein stipulated, unless the expected as any part may be delayed under the provisions of this contract. The work shall be pursued in a continuous, diligent, and uniform manner throughout the project until completion.

It is agreed that the rates of progress herein required has been purposely made low enough to allow for the ordinary delays incident to construction work of this character. No extension of time will be made for ordinary delays, inclement weather and accidents, and the occurrence of such will not relieve the Contractor from the necessity of maintaining this rate of progress.

If delays are caused by acts of God, acts of Government or State, strikes extra work, floods or other contingencies clearly beyond the control or responsibility of the Contractor, the Contractor shall be entitled to so much additional time wherein to perform and complete this contract on his part as the Engineer shall certify in writing to be just.

#### 403.0 LIQUIDATED DAMAGES

In case the Contractor fails satisfactorily to complete the entire work contemplated and provided for under this contract on or before the date of completion determined as described above, the Owner shall deduct from the payments due to the Contractor each month the sum of \$250.00 for each calendar day (Sundays and legal holidays excluded) of delay, which sum is agreed upon not as a penalty, but as fixed and liquidated damages, said damages shall be deducted from any other moneys due or to become due the Contractor, and in case such damages exceed the

amount of all moneys due or to become due, the Contractor then the Contractor or his Surety shall pay the balance to the Owner.

#### 404.0 RESPONSIBILITIES OF CONTRACTOR

404.1 Except as otherwise specifically stated in the Contract Documents, and Technical Specifications, the Contract shall provide and pay for all materials, tools, labor, equipment, water, light, heat, power, transportation, superintendence, temporary construction of every nature, charges, levies, fee or other expenses, and all other services and facilities of every nature whatsoever necessary for the performance of the Contract and to deliver all improvements embraced in this Contract complete in every respect within the specified time.

404.2 All materials, workmanship, methods and practices shall conform to the current Standards of the American Water Works Association, the Rhode Island Standard Specifications for Road and Bridge Construction, 2010 edition, including all corrections, all issued compilation of approved specifications, and addendum to date and all general requirements and special requirements contained in this project specifications. All work zone traffic control shall be in accordance with the manual on uniform traffic control devices, 2009 edition.

404.3 The Contractor shall be responsible for detailed layout, all stakeout and grade control, and shall employ a registered engineer or a registered land surveyor for this purpose as may be necessary. The Owner will provide engineering and inspection.

404.4 The Contractor shall verify dimensions shown on the plans and if any inconsistencies or discrepancies should be noted on the Drawings and the Specifications, he/she shall immediately notify the Owner. The Contractor will be held responsible for any errors resulting from his/her failure to exercise the aforementioned precaution.

404.5 As soon as the Contract is executed, the Contractor shall order any materials necessary and not supplied by the Owner, submit construction schedules as hereinafter specified, and otherwise anticipate the Notice to Proceed. When the Owner gives the Notice to Proceed, the work of construction shall begin at the time stipulated therein and shall be completed within the Time for Completion specified.

404.6 It is the Contractor's responsibility to make his/her own investigation and related assumptions and to *satisfy himself as to subsurface conditions and to insure that these are reflected in the prices bid*. No change or extra to the price will be accepted due to subsurface conditions or utility locations.

The determination of location and subsequent maintenance and protection of existing subsurface and above ground utilities are the sole responsibility of the Contractor; claims resulting from damage to such by the Contractor will be settled by the Contractor at his/her expense in accordance with the Contract.

404.7 The Contractor shall, at his/her own expense, take out all necessary permits from the county, municipal, or other public authorities; shall give all notices required by law or ordinances; and shall post all bonds and pay all fees and charges incident to the due and lawful prosecution of the work covered by this Contract.

404.8 RESPONSIBILITY FOR MATERIAL FURNISHED BY OWNER: The Contractor's responsibility for material furnished by the Owner shall begin upon Contractor's acceptance at the point of delivery to him. All such material shall be examined, and material defective in manufacture and/or otherwise damaged shall be rejected by the Contractor at the time and place of delivery to him and replaced by the Owner. Material furnished by the Owner which is accepted by the Contractor, but is discovered prior to final acceptance of the work, (1) to be defective in manufacture, shall be replaced by the Owner; (2) to have been damaged before or after

acceptance by the Contractor, shall be replaced by the Contractor. Once accepted by the Contractor at the point of delivery to him, all defective and/or damaged material discovered prior to final acceptance of the work shall be removed by the Contractor and he shall install, at his own expense, the material replaced, in its stead, by the Owner or Contractor. In such case, the Contractor shall furnish all labor, equipment, and material incidental to replacement and necessary for the completion of the work to the satisfaction of the Engineer.

404.9 RESPONSIBILITY FOR SAFE STORAGE: The Contractor shall be responsible for the safe storage of all material furnished to or by him and accepted by him until it has been incorporated in the completed project.

#### 405.0 COMMUNICATIONS

405.1 All notices, demands, requests, instructions, approvals, proposals and claims must be in writing.

405.2 Any notice to or demand upon the Contractor shall be sufficiently given if delivered at the office of the Contractor stated on the signature page of the Agreement (or at such other offices as the Contractor may from time to time designate in writing to the Owner), or if deposited in the United States mail in a sealed, postage-prepaid envelope, or delivered with charges prepaid to any telegraph company for translation, in each case addressed to such office.

405.3 All papers; required to be delivered to the Owner shall, unless otherwise specified in writing to the Contractor, be delivered to the CITY OF PAWTUCKET, DEPARTMENT OF PUBLIC WORKS, 250 Armistice Boulevard, Pawtucket, Rhode Island, 02860; any notice to or demands upon the Owner shall be sufficiently given if so delivered, or if deposited in the United States mail in a sealed, postage-prepaid envelope, or delivered with charges prepaid to any telegraph company for transmission to said Owner at such address, or to such Engineer of the Owner or to such other address, as the Owner may subsequently specify in writing to the Contractor for such purpose.

405.4 Any such notice shall be deemed to have been given as of the time of actual delivery or (in the case of mailing when the same should have been received in due course of post, or in the case of telegram) at the time of actual receipt, as the case may be.

#### 406.0 PARTIAL USE OF SITE IMPROVEMENTS

The Owner, at its elections may give notice to the Contractor and place in use those sections of the improvements which have been completed, inspected, and can be accepted as complying with the Technical Specifications and if in its opinion, each such section is reasonably safe, fit and convenient, for the use and accommodation for which it was intended, provided;

406.1 The use of such sections of the Improvements shall in no way impede the completion of the remainder of the work by the Contractor.

406.2 The Contractor shall not be responsible for any damages or maintenance costs due directly to the use of such sections.

406.3 The use of such sections shall in no way relieve the Contractor or his liability due to having used defective materials or to poor workmanship.

406.4 The period of guarantee shall not begin to run until the date of the final acceptance of all work which the Contractor is required to construct under this Contract.

#### 407.0 OMITTED



#### 408.0 OMITTED

#### 409.0 EMPLOY SUFFICIENT LABOR AND EQUIPMENT

If, in the opinion of the Engineer, the Contractor is not employing sufficient labor or equipment to complete this contract within the time specified the Owner may, after giving written notice, require said Contractor to employ such additional labor and equipment as may be necessary to enable said work to progress properly.

#### 410.0 INTOXICATING LIQUORS

The Contractor shall not sell and shall neither permit or suffer the introduction or use of intoxicating liquors upon or about the work embraced in this contract.

#### 411.0 ACCESS TO WORK

The Owner and the Engineer, and their agents and employees may, for purposes already specified and for any other purpose, enter upon the work and the premises used by the Contractor, and the Contractor shall provide safe and proper facilities therefor.

#### 412.0 TIME OF BEGINNING WORK

412.1 Except as herein provided, the Contractor shall commence work at such points as the Engineer may approve, within ten (10) days after the execution of this contract by the Owner.

412.2 Such time of starting may be postponed by written agreement between the Owner and the Contractor because of expected delays in receipt of materials and equipment, or if the season be unsuitable for commencement of the work, or because of other contingency clearly beyond the control or responsibility of the Contractor. Unless stipulated otherwise in said agreement, the Contractor shall commence work at such points as the Engineer may direct or approve, within 10 days after the receipt of a written order from the Owner to start work.

#### 413.0 PROVISIONS FOR TRAFFIC

413.1 The Contractor shall not close or obstruct any portion of a street without obtaining permits for from the proper municipal authorities. If any street or private way shall be rendered unsafe by the Contractor's operations, he shall make such repairs or provide such temporary ways or guards as shall be acceptable to the Owner.

413.2 Streets, roads, private ways, and walks shall be maintained passable by the Contractor at his expense, and the Contractor shall assume full responsibility for the adequacy and safety of provisions made. He shall conduct his construction operations such that interference with the flow of traffic will be held to a minimum.

413.3 The Contractor shall cooperate in every way possible with the municipal authorities maintaining a flow of traffic through the site. The Contractor shall notify the Pawtucket Fire Department when any street is to be closed regardless of the length of time or time of day.

413.4 All detours shall be signed and lighted as directed by the City of Pawtucket.

#### 414.0 COORDINATION WITH OUTSIDE PARTIES

414.1 The Contractor shall conduct his work so as to interfere as little as possible with private business and public travel. He shall at his own expense, wherever necessary or required, maintain fences, furnish watchmen, maintain lights and take such other precautions as may be necessary to protect life and property.

414.2 The Contractor shall take all responsibility for the protection of the work and for preventing injuries to persons and damage to property and utilities on or about the work. He shall not be relieved of his responsibility by any right of the City to give permission or issue orders relating to any part of the work, or by any such permission given or orders issued, or by failure of the Engineer to give such permission or issue such orders. The Contractor shall bear all losses resulting to him or to the Owner on account of the amount of character of the work, or because nature of the land in or on which the work is done is different from what was estimated or expected, or on account of the weather, elements or other causes. The Contractor shall assume the defense of all claims or whatsoever character against the Contractor of the Owner, and indemnify, save harmless and insure the Owner, its officers or agents, against all claims arising out of injury or damage to persons, corporation, or property, whether said claims are for unavoidable damage or not, and from all claims relating to labor and materials furnished for the work. The Contractor shall not be required to indemnify the Owner against damage or claims occasioned by acts of the Owner, except otherwise provided in the articles relative to patents and responsibilities.

#### 415.0 DELAY BY OWNER

The Owner may delay the beginning of the work or any part thereof, if the necessary lands or rights-of-way, or materials for such work shall not have been obtained. The Contractor shall have no claim for damages on account of such delay, but shall be entitled to so much additional time wherein to perform and complete this contract on his part as the City shall certify in writing to be just.

#### 416.0 OMITTED

#### 417.0 PROVISIONS REQUIRED BY LAW DEEMED INSERTED

Each and every provision of law and clause required by law to be inserted in this contract shall be deemed to be inserted herein and the contract shall be read and enforced as though it were included herein, and if through mistake or otherwise any such provision is not inserted, or is not correctly inserted, then upon the application of either party, the contract shall forthwith be physically amended to make such insertion.

#### 418.0 SAFETY AND HEALTH REGULATIONS

These construction documents, and the joint and several phases of construction hereby contemplated are to be governed, at all times by applicable provisions of the Federal law(s), including but not limited to, the latest amendments of the following:

- (1) Williams-Steiger Occupational Safety and Health Act of 1970, Public Law 91-596;
- (2) Part 1910 - Occupation Safety and Health Standards, Chapter XVII of Title 29, Code of Federal Regulations;
- (3) Part 1518 - Safety and Health Regulations for Construction, Chapter XIII of Title 29, Code of Federal Regulations.

In the event of any inconsistencies between the above laws and regulations and the provisions of these documents, the laws and regulations shall prevail.

#### 419.0 NOTIFICATION OF EXCAVATION TO UTILITIES

The Contractor shall provide a minimum of two working days notice to "Dig Safe" (1-800-225-4977) and any other appropriate utility before the Contractor begins excavation.

## **14.0 – Special Conditions for EDA Contracts**

**INTRODUCTION:** These EDA Contracting Provisions for Construction Projects (EDA Contracting Provisions) are intended for use by recipients receiving federal assistance from the U. S. Department of Commerce - Economic Development Administration (EDA). They contain provisions specific to EDA and other federal provisions not normally found in non-federal contract documents. The requirements contained herein must be incorporated into all construction contracts and subcontracts funded wholly or in part with federal assistance from EDA.

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## 1. DEFINITIONS

*Agreement* – The written instrument that is evidence of the agreement between the Owner and the Contractor overseeing the Work.

*Architect/Engineer* - The person or other entity engaged by the Recipient to perform architectural, engineering, design, and other services related to the work as provided for in the contract.

*Contract* – The entire and integrated written agreement between the Owner and the Contractor concerning the Work. The Contract supersedes prior negotiations, representations, or agreements, whether written or oral.

*Contract Documents* – Those items so designated in the Agreement. Only printed or hard copies of the items listed in the Agreement are Contract Documents.

*Contractor* – The individual or entity with whom the Owner has entered into the Agreement.

*Drawings or Plans* – That part of the Contract Documents prepared or approved by the Architect/Engineer that graphically shows the scope, extent, and character of the Work to be performed by the Contractor.

*EDA* - The United States of America acting through the Economic Development Administration of the U.S. Department of Commerce or any other person designated to act on its behalf. EDA has agreed to provide financial assistance to the Owner, which includes assistance in financing the Work to be performed under this Contract. Notwithstanding EDA's role, nothing in this Contract shall be construed to create any contractual relationship between the Contractor and EDA.

*Owner* – The individual or entity with whom the Contractor has entered into the Agreement and for whom the Work is to be performed.

*Project* – The total construction of which the Work to be performed under the Contract Documents may be the whole, or a part.

*Recipient* – A non-Federal entity receiving a Federal financial assistance award directly from EDA to carry out an activity under an EDA program, including any EDA-approved successor to the entity.

*Specifications* – That part of the Contract Documents consisting of written requirements for materials, equipment, systems, standards, and workmanship as applied to the Work, and certain administrative requirements and procedural matters applicable thereto.

*Subcontractor* – An individual or entity having direct contract with the Contractor or with any other Subcontractor for the performance of a part of the Work at the Site.

*Work* – The entire construction or the various separately identifiable parts thereof required to be provided under the Contract Documents. Work includes and is the result of performing or providing all labor, services, and documentation necessary to produce such construction and furnishing, installing, and incorporating all materials and equipment into such construction, all as required by the Contract Documents.

## 2. APPLICABILITY

The Project to which the construction work covered by this Contract pertains is being assisted by the United States of America through federal assistance provided by the U.S. Department of Commerce - Economic Development Administration (EDA). Neither EDA, nor any of its departments, entities, or employees is a party to this Contract. The following EDA Contracting Provisions are included in this Contract and all subcontracts or related instruments pursuant to the provisions applicable to such federal assistance from EDA.

## 3. FEDERALLY REQUIRED CONTRACT PROVISIONS

(a) All contracts in excess of the simplified acquisition threshold - currently fixed at \$150,000 (see 41 U.S.C. §§ 134 and 1908) must address administrative, contractual, or legal remedies in instances where contractors violate or breach contract terms, and provide for such sanctions and penalties as may be appropriate.

(b) All contracts in excess of \$10,000 must address termination for cause and for convenience by the Recipient including the manner by which it will be effected and the basis for settlement.

(c) All construction contracts awarded in excess of \$10,000 by recipients of federal assistance and their contractors or subcontractors shall contain a provision requiring compliance with Executive Order 11246 of September 24, 1965, *Equal Employment Opportunity*, as amended by Executive Order 11375 of October 13, 1967, and Department of Labor implementing regulations at 41 C.F.R. part 60.

(d) All prime construction contracts in excess of \$2,000 awarded by Recipients must include a provision for compliance with the Davis-Bacon Act (40 U.S.C. §§ 3141-3148) as supplemented by Department of Labor regulations at 29 C.F.R. part 5. The contracts must also include a provision for compliance with the Copeland "Anti-Kickback" Act (18 U.S.C. § 874 and 40 U.S.C. § 3145) as supplemented by Department of Labor regulations at 29 C.F.R. part 3.

(e) All contracts awarded by the Recipient in excess of \$100,000 that involve the employment of mechanics or laborers must include a provision for compliance with 40 U.S.C. §§ 3702 and 3704 (the Contract Work Hours and Safety Standards Act) as supplemented by Department of Labor regulations at 29 C.F.R. part 5.

(f) All contracts must include EDA requirements and regulations that involve a requirement on the contractor or sub-contractor to report information to EDA, the Recipient or any other federal agency.

(g) All contracts must include EDA requirements and regulations pertaining to patent rights with respect to any discovery or invention which arises or is developed in the course of or under such contract.

(h) All contracts must include EDA requirements and regulations pertaining to copyrights and rights in data.

(i) All contracts and subgrants in excess of \$150,000 must contain a provision that requires compliance with all applicable standards, orders, or requirements issued under the Clean Air Act (42 U.S.C. § 7401 *et seq.*) and the Federal Water Pollution Control Act (Clean Water Act) (33 U.S.C. § 1251 *et seq.*), and Executive Order 11738, *Providing for Administration of the Clean Air Act and the Federal Water Pollution Control Act With Respect to Federal Contracts, Grants, or Loans*.

(j) Contracts must contain mandatory standards and policies relating to energy efficiency which are contained in the state energy conservation plan issued in compliance with the Energy Policy and Conservation Act (42 U.S.C. § 6201).

(k) Contracts must contain a provision ensuring that contracts are not to be made to parties on the government wide Excluded Parties List System in the System for Award Management (SAM), in accordance with the OMB guidelines at 2 C.F.R. part 180.

(l) Contracts must contain a provision ensure compliance with the Byrd Anti-Lobbying Amendment (31 U.S.C. § 1352) under which contractors that apply or bid for an award of \$100,000 or more must file the required certification. Each tier certifies to the tier above that it will not and has not used Federal appropriated funds to pay any person or organization for influencing or attempting to influence an officer or employee of any agency, a member of Congress, officer or employee of Congress, or an employee of a member of Congress in connection with obtaining any Federal contract, grant or any other award covered by 31 U.S.C. § 1352. Each tier must also disclose any lobbying with non-Federal funds that takes place in connection with obtaining any Federal award. Such disclosures are forwarded from tier to tier up to the non-Federal award.

(m) If the Recipient is a state agency or agency of a political subdivision of a state, any contract awarded must contain a provision ensuring compliance with section 6002 of the Solid Waste Disposal Act (42 U.S.C. § 6962), as amended by the Resource Conservation and Recovery Act related to the procurement of recovered materials.

#### 4. REQUIRED PROVISIONS DEEMED INSERTED

Each and every provision of law and clause required by law to be inserted in this contract shall be deemed to be inserted herein and the contract shall be read and enforced as though it were included herein, and if through mistake or otherwise any such provision is not inserted, or is not correctly inserted, then upon the application of either party the contract shall forthwith be physically amended to make such insertion of correction.

#### 5. INSPECTION BY EDA REPRESENTATIVES

The authorized representatives and agents of EDA shall be permitted to inspect all work, materials, payrolls, personnel records, invoices of materials, and other relevant data and records.

## 6. EXAMINATION AND RETENTION OF CONTRACTOR'S RECORDS

(a) The Owner, EDA, or the Comptroller General of the United States, or any of their duly authorized representatives shall, generally until three years after final payment under this contract, have access to and the right to examine any of the Contractor's directly pertinent books, documents, papers, or other records involving transactions related to this contract for the purpose of making audit, examination, excerpts, and transcriptions.

(b) The Contractor agrees to include in first-tier subcontracts under this contract a clause substantially the same as paragraph (a) above. "Subcontract," as used in this clause, excludes purchase orders that do not exceed \$10,000.

(c) The periods of access and examination in paragraphs (a) and (b) above for records relating to (1) appeals under the disputes clause of this contract, (2) litigation or settlement of claims arising from the performance of this contract, or (3) costs and expenses of this contract to which the Owner, EDA, or Comptroller General or any of their duly authorized representatives has taken exception shall continue until disposition of such appeals, litigation, claims, or exceptions.

## 7. CONSTRUCTION SCHEDULE AND PERIODIC ESTIMATES

Immediately after execution and delivery of the contract, and before the first partial payment is made, the Contractor shall deliver to the Owner an estimated construction progress schedule in a form satisfactory to the Owner, showing the proposed dates of commencement and completion of each of the various subdivisions of work required under the Contract Documents and the anticipated amount of each monthly payment that will become due to the Contractor in accordance with the progress schedule. The Contractor also shall furnish the Owner (a) a detailed estimate giving a complete breakdown of the contract price and (b) periodic itemized estimates of work done for the purpose of making partial payments thereon. The costs employed in making up any of these schedules will be used only to determine the basis of partial payments and will not be considered as fixing a basis for additions to or deductions from the contract price.

## 8. CONTRACTOR'S TITLE TO MATERIAL

No materials, supplies, or equipment for the work shall be purchased by the Contractor or by any subcontractor that is subject to any chattel mortgage or under a conditional sale contract or other agreement by which an interest is retained by the seller. The Contractor warrants and guarantees that he/she has good title to all work, materials, and equipment used by him/her in the work, free and clear of all liens, claims, or encumbrances.

## 9. INSPECTION AND TESTING OF MATERIALS

All materials and equipment used in the completion of the Work shall be subject to adequate inspection and testing in accordance with accepted standards. The laboratory or inspection agency shall be selected by the Owner. Materials of construction, particularly those upon which the strength and durability of any structure may depend, shall be subject to inspection and testing to establish conformance with specifications and suitability for intended uses.

## 10. "OR EQUAL" CLAUSE

Whenever a material, article, or piece of equipment is identified in the Contract Documents by reference to manufacturers' or vendors' names, trade names, catalogue numbers, etc., it is intended merely to establish a standard. Any material, article, or equipment of other manufacturers and vendors that will perform adequately the duties imposed by the general design will be considered equally acceptable

provided the material, article, or equipment so proposed is, in the opinion of the Architect/Engineer, of equal substance and function. However, such substitution material, article, or equipment shall not be purchased or installed by the Contractor without the Architect/Engineer's written approval.

#### 11. PATENT FEES AND ROYALTIES

(a) Contractor shall pay all license fees and royalties and assume all costs incident to the use in the performance of the Work or the incorporation in the Work of any invention, design, process, product, or device that is the subject of patent rights or copyrights held by others. If a particular invention, design, process, product, or device is specified in the Contract Documents for use in the performance of the Work and if, to the actual knowledge of Owner or Architect/Engineer, its use is subject to patent rights or copyrights calling for the payment of any license fee or royalty to others, the existence of such rights shall be disclosed by the Owner in the Contract Documents.

(b) To the fullest extent permitted by Laws and Regulations, the Contractor shall indemnify and hold harmless the Owner and the Architect/Engineer, and the officers, directors, partners, employees, agents, consultants, and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product, or device not specified in the Contract Documents.

#### 12. CLAIMS FOR EXTRA COSTS

No claims for extra work or cost shall be allowed unless the same was done in pursuance of a written order from the Architect/Engineer approved by the Owner.

#### 13. CONTRACTORS AND SUBCONTRACTORS INSURANCE

(a) The Contractor shall not commence work under this Contract until the Contractor has obtained all insurance reasonably required by the Owner, nor shall the Contractor allow any subcontractor to commence work on his/her subcontract until the insurance required of the subcontractor has been so obtained and approved.

(b) Types of insurance normally required are:

- (1) Workers' Compensation
- (2) Contractor's Public Liability and Property Damage
- (3) Contractor's Vehicle Liability
- (4) Subcontractors' Public Liability, Property Damage and Vehicle Liability
- (5) Builder's Risk (Fire and Extended Coverage)

(c) **Scope of Insurance and Special Hazards:** The insurance obtained, which is described above, shall provide adequate protection for the Contractor and his/her subcontractors, respectively, against damage claims that may arise from operations under this contract, whether such operations be by the insured or by anyone directly or indirectly employed by him/her and also against any of the special hazards that may be encountered in the performance of this Contract.

(d) **Proof of Carriage of Insurance:** The Contractor shall furnish the Owner with certificates showing the type, amount, class of operations covered, effective dates, and dates of expiration of applicable insurance policies.



14. CONTRACT SECURITY BONDS

(a) If the amount of this Contract exceeds \$150,000, the Contractor shall furnish a performance bond in an amount at least equal to one hundred percent (100%) of the Contract price as security for the faithful performance of this Contract and also a payment bond in an amount equal to one hundred percent (100%) of the Contract price or in a penal sum not less than that prescribed by State, Territorial, or local law, as security for the payment of all persons performing labor on the Work under this Contract and furnishing materials in connection with this Contract. The performance bond and the payment bond may be in one or in separate instruments in accordance with local law. Before final acceptance, each bond must be approved by EDA. If the amount of this Contract does not exceed \$150,000, the Owner shall specify the amount of the payment and performance bonds.

(b) All bonds shall be in the form prescribed by the Contract Documents except as otherwise provided in applicable laws or regulations, and shall be executed by such sureties as are named in the current list of *Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies* as published in Treasury Circular 570 (amended) by the Financial Management Service, Surety Bond Branch, U.S. Department of the Treasury. All bonds signed by an agent must be accompanied by a certified copy of the agent's authority to act. Surety companies executing the bonds must also be authorized to transact business in the state where the Work is located.

15. LABOR STANDARDS - DAVIS-BACON AND RELATED ACTS  
(as required by section 602 of PWEDA)

(a) Minimum Wages

(1) All laborers and mechanics employed or working upon the site of the Work in the construction or development of the Project will be paid unconditionally and not less often than once a week, and without subsequent deduction or rebate on any account (except such payroll deductions as are permitted by regulations issued by the Secretary of Labor under the Copeland Act at 29 C.F.R. part 3, the full amount of wages and bona fide fringe benefits (or cash equivalents thereof) due at the time of payment computed at rates not less than those contained in the wage determination of the Secretary of Labor, which is attached hereto and made a part hereof, regardless of any contractual relationship that may be alleged to exist between the Contractor and such laborers and mechanics. Contributions made or costs reasonably anticipated for bona fide fringe benefits under Section 1(b)(2) of the Davis-Bacon Act on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of 29 C.F.R.

§ 5.5(a)(1)(iv); also, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs, which cover the particular weekly period, are deemed to be constructively made or incurred during such weekly period. Such laborers and mechanics shall be paid the appropriate wage rate and fringe benefits on the wage determination for the classification of work actually performed, without regard to skill, except as provided in 29 C.F.R. § 5.5(a)(4). Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein, provided that the employer's payroll records accurately set forth the time spent in each classification in which work is performed. The wage determination (including any additional classification and wage rates determined under 29 C.F.R. § 5.5(a)(1)(ii) and the Davis-Bacon poster (WH-1321) shall be posted at all times by the contractor and its subcontractors at the site of the work in a prominent and accessible place where it can be easily seen by the workers.

(2) (i) Any class of laborers or mechanics to be employed under the Contract, but not listed in the wage determination, shall be classified in conformance with the wage determination.

EDA shall approve an additional classification and wage rate and fringe benefits therefore only when the following criteria have been met:

- (A) The work to be performed by the classification requested is not performed by a classification in the wage determination;
- (B) The classification is utilized in the area by the construction industry; and
- (C) The proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination.

(ii) If the Contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and EDA or its designee agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), a report of the action taken shall be sent by EDA or its designee to the Administrator of the Wage and Hour Division, Employment Standards Administration, U.S. Department of Labor, Washington, D.C. 20210.

(iii) In the event the Contractor, the laborers or mechanics to be employed in the classification or their representatives, and EDA or its designee do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), EDA or its designee shall refer the questions, including the views of all interested parties and the recommendation of EDA or its designee, to the Administrator for determination.

(iv) The wage rate (including fringe benefits where appropriate) determined pursuant to paragraphs (a)(2)(ii) or (iii) of this section, shall be paid to all workers performing work in the classification under this contract from the first day on which work is performed in the classification.

(3) Whenever the minimum wage rate prescribed in the contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, the Contractor shall either pay the benefit as stated in the wage determination or shall pay another bona fide fringe benefit or an hourly cash equivalent thereof.

(4) If the Contractor does not make payments to a trustee or other third person, the Contractor may consider as part of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or program, provided, that the Secretary of Labor has found, upon the written request of the Contractor, that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the Contractor to set aside in a separate account assets for the meeting of obligations under the plan or program.

(b) Withholding

EDA or its designee shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld from the Contractor under this Contract or any other federal contract with the same prime Contractor, or any other federally-assisted contract subject to Davis-Bacon prevailing wage requirements, which is held by the same prime contractor so much of the accrued payments or advances as may be considered necessary to pay laborers and mechanics, including apprentices, trainees and helpers, employed by the Contractor or any subcontractor the full amount of wages required by the Contract. In the event of failure to pay any laborer or mechanic, including any apprentice, trainee or helper employed or working on the site of the Work in the construction or development of the Project, all or part of the wages required by the Contract,

EDA or its designee may, after written notice to the Contractor, sponsor, applicant, or owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations have ceased. EDA or its designee may, after written notice to the Contractor, disburse such amounts withheld for and on account of the Contractor or subcontractor to the respective employees to whom they are due. The Comptroller General shall make such disbursements in the case of direct Davis-Bacon Act contracts.

(c) Payrolls and basic records

(1) Payrolls and basic records relating thereto shall be maintained by the Contractor during the course of the Work and preserved for a period of three years thereafter for all laborers and mechanics working at the site of the Work in the construction or development of the Project. Such records shall contain the name, address, and social security number of each such worker, his or her correct classification, hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalents thereof of the types described in section 1(b)(2)(B) of the Davis-Bacon Act), daily and weekly number of hours worked, deductions made and actual wages paid. Whenever the Secretary of Labor has found under 29 C.F.R.

§ 5.5(a)(1)(iv) that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in section 1(b)(2)(B) of the Davis-Bacon Act, the Contractor shall maintain records which show that the commitment to provide such benefits is enforceable, the plan or program is financially responsible, and the plan or program has been communicated in writing to the laborers or mechanics affected, and provide records that show the costs anticipated or the actual cost incurred in providing such benefits. Contractors employing apprentices or trainees under approved programs shall maintain written evidence of the registration of apprenticeship programs and certification of trainee programs, the registration of the apprentices and trainees, and the ratios and wage rates prescribed in the applicable programs.

(2) (i) For each week in which Contract work is performed, the Contractor shall submit a copy of all payrolls to the Owner for transmission to EDA or its designee. The payrolls submitted shall set out accurately and completely all of the information required to be maintained under 29 C.F.R. part 5.5(a)(3)(i). This information may be submitted in any form desired. Optional Form WH-347 is available for this purpose. It may be purchased from the Superintendent of Documents (Federal Stock Number 029-005-00014-1), U.S. Government Printing Office, Washington, D.C. 20402; or downloaded from the U.S. Department of Labor's website at <https://www.dol.gov/whd/forms/wh347.pdf>. The prime Contractor is responsible for the submission of copies of payrolls by all subcontractors

(ii) Each payroll submitted shall be accompanied by a "Statement of Compliance," signed by the Contractor or subcontractor or his or her agent who pays or supervises the payment of the persons employed under the Contract and shall certify the following:

(A) That the payroll for the payroll period contains the information required to be maintained under 29 C.F.R. § 5.5(a)(3)(i) and that such information is correct and complete;

(B) That each laborer or mechanic (including each helper, apprentice, and trainee) employed on the Contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in 29 C.F.R. part 3; and

(C) That each laborer or mechanic has been paid not less than the applicable wage

rates and fringe benefits or cash equivalents for the classification of work performed, as specified in the applicable wage determination incorporated into the Contract.

(iii) The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH-347 shall satisfy the requirement for submission of the "Statement of Compliance" required by paragraph 15(c)(2)(ii) of this section.

(iv) The falsification of any of the above certifications may subject the Contractor or subcontractor to civil or criminal prosecution under section 1001 of Title 18 and section 3729 of Title 31 of the U.S. Code.

(3) The Contractor or subcontractor shall make the records required under paragraph 15(c)(1) of this section available for inspection, copying, or transcription by authorized representatives of EDA or its designee or the Department of Labor, and shall permit such representatives to interview employees during working hours on the job. If the Contractor or subcontractor fails to submit the required records or to make them available, EDA or its designee may, after written notice to the Contractor or Owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available may be grounds for debarment action pursuant to 29 C.F.R. § 5.12.

(d) Apprentices and Trainees.

(1) **Apprentices.** Apprentices will be permitted to work at less than the predetermined rate for the work they performed when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the U.S. Department of Labor, Employment and Training Administration, Bureau of Apprenticeship and Training (Bureau), or with a State Apprenticeship Agency recognized by the Bureau, or if a person is employed in his or her first 90 days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program, but who has been certified by the Bureau of Apprenticeship and Training or a State Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice. The allowable ratio of apprentices to journeymen on the job site in any craft classification shall not be greater than the ratio permitted to the Contractor as to the entire work force under the registered program. Any worker listed on a payroll at an apprentice wage rate who is not registered or otherwise employed as stated above, shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any apprentice performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. Where a Contractor is performing construction on a Project in a locality other than that in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyman's hourly rate) specified in the Contractor's or subcontractor's registered program shall be observed. Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as a percentage of the journeymen hourly rate specified in the applicable wage determination. Apprentices shall be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the Administrator determines that a different practice prevails for the applicable apprentice classification, fringes shall be paid in accordance with that determination. In the event the Bureau of Apprenticeship and Training, or a State Apprenticeship Agency recognized by the Bureau, withdraws approval of an apprenticeship program, the Contractor will no longer be permitted to utilize apprentices at less

than the applicable predetermined rate for the work performed until an acceptable program is approved.

(2) **Trainees.** Except as provided in 29 C.F.R. § 5.16, trainees will not be permitted to work at less than the predetermined rate for the work performed unless they are employed pursuant to and individually registered in a program that has received prior approval, evidenced by formal certification by the U.S. Department of Labor, Employment and Training Administration. The ratio of trainees to journeymen on the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration. Every trainee must be paid at not less than the rate specified in the approved program for the trainee's level of progress, expressed as a percentage of the journeyman's hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed on the wage determination unless the Administrator of the Wage and Hour Division determines that there is an apprenticeship program associated with the corresponding journeyman wage rate on the wage determination which provides for less than full fringe benefits for apprentices. Any employee listed on the payroll at a trainee rate who is not registered and participating in a training plan approved by the Employment and Training Administration shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any trainee performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. In the event the Employment and Training Administration withdraws approval of a training program, the Contractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(3) **Equal employment opportunity.** The utilization of apprentices, trainees and journeymen under this part shall be in conformity with the equal employment opportunity requirements of Executive Order 11246, *Equal Employment Opportunity*, as amended, and 29 C.F.R. part 30.

(e) **Compliance with Copeland Anti-Kickback Act Requirements.** The Contractor shall comply with the Copeland Anti-Kickback Act (18 U.S.C. § 874 and 40 U.S.C. § 3145) as supplemented by Department of Labor regulations (29 C.F.R. part 3, "Contractors and Subcontractors on Public Buildings or Public Works Financed in Whole or in Part by Loans or Grants of the United States"). The Act provides that the Contractor and any subcontractors shall be prohibited from inducing, by any means, any person employed in the construction, completion, or repair of public work, to give up any part of the compensation to which they are otherwise entitled. The Owner shall report all suspected or reported violations to EDA.

(f) **Subcontracts.** The Contractor and any subcontractors will insert in any subcontracts the clauses contained in 29 C.F.R. §§ 5.5(a)(1) through (10) and such other clauses as EDA or its designee may require, and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime Contractor shall be responsible for the compliance by any subcontractor or lower tier subcontractor with all the contract clauses in 29 C.F.R. § 5.5.

(g) **Contract termination; debarment.** The breach of the contract clauses in 29 C.F.R. § 5.5 may be grounds for termination of the contract, and for debarment as a Contractor and a subcontractor as provided in 29 C.F.R. § 5.12.

(h) **Compliance with Davis-Bacon and Related Act Requirements.** All rulings and interpretations of the Davis-Bacon and Related Acts contained in 29 C.F.R. parts 1, 3, and 5 are herein incorporated by reference in this contract.

(i) **Disputes concerning labor standards.** Disputes arising out of the labor standards provisions

of this Contract shall not be subject to the general disputes clause of this Contract. Such disputes shall be resolved in accordance with the procedures of the Department of Labor set forth in 29 C.F.R. parts 5, 6, and 7. Disputes within the meaning of this clause include disputes between the contractor (or any of its subcontractors) and EDA or its designee, the U.S. Department of Labor, or the employees or their representatives.

(j) Certification of Eligibility.

(1) By entering into this Contract, the Contractor certifies that neither it nor any person or firm that has an interest in the Contractor's firm is a person or firm ineligible to be awarded Government contracts by virtue of section 3(a) of the Davis-Bacon Act or 29 C.F.R. § 5.12(a)(1).

(2) No part of this Contract shall be subcontracted to any person or firm ineligible for award of a Government contract by virtue of section 3(a) of the Davis-Bacon Act or 29 C.F.R. § 5.12(a)(1).

(3) The penalty for making false statements is prescribed in the U.S. Criminal Code, 18 U.S.C. § 1001.

16. LABOR STANDARDS - CONTRACT WORK HOURS AND SAFETY STANDARDS ACT

As used in this paragraph, the terms "laborers" and "mechanics" include watchmen and guards.

(a) **Overtime requirements.** No Contractor or subcontractor contracting for any part of the Contract work, which may require or involve the employment of laborers or mechanics, shall require or permit any such laborer or mechanic in any workweek in which that person is employed on such work to work in excess of forty hours in such workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of forty hours in such workweek.

(b) **Violation; liability for unpaid wages, liquidated damages.** In the event of any violation of the clause set forth in paragraph (a) of this section, the Contractor and any subcontractor responsible therefore shall be liable for the unpaid wages. In addition, such Contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory), for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic, including watchmen and guards, employed in violation of the clause set forth in paragraph (a) of this section, in the sum of \$10 for each calendar day on which such individual was required or

permitted to work in excess of the standard workweek of forty hours without payment of the overtime wages required by the clause set forth in paragraph (a) of this section.

(c) **Withholding for unpaid wages and liquidated damages.** EDA or its designee shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld, from any monies payable on account of work performed by the Contractor or subcontractor under any such Contract or any other federal contract with the same prime Contractor, or any other federally-assisted contract subject to the Contract Work Hours and Safety Standards Act, which is held by the same prime Contractor such sums as may be determined to be necessary to satisfy any liabilities of such Contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in paragraph (b) of this section.

(d) **Subcontracts.** The Contractor or subcontractor shall insert in any subcontracts the clauses set forth in paragraphs (a) through (c) of this section and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime Contractor shall be responsible for compliance

by any subcontractor or lower tier subcontractor with the clauses set forth in paragraphs (a) through (c) of this section.

17. EQUAL EMPLOYMENT OPPORTUNITY

(a) The Recipient hereby agrees that it will incorporate or cause to be incorporated into any contract for construction work, or modification thereof, as defined in the regulations of the Secretary of Labor at 41 C.F.R. chapter 60, which is paid for in whole or in part with funds obtained from EDA, the following equal opportunity clause. During the performance of this contract, the Contractor agrees as follows:

(1) The Contractor will not discriminate against any employee or applicant for employment because of race, color, religion, sex, sexual orientation, gender identity, or national origin. The Contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment without regard to their race, color, religion, sex, sexual orientation, gender identity, or national origin. Such action shall include, but not be limited to the following: Employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training including apprenticeship. The Contractor agrees to post in conspicuous places available to employees and applicants for employment notices to be provided setting forth the provisions of this nondiscrimination clause.

(2) The Contractor will, in all solicitations or advertisements for employees placed by or on behalf of the Contractor state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, sexual orientation, gender identity, or national origin.

(3) The contractor will not discharge or in any other manner discriminate against any employee or applicant for employment because such employee or applicant has inquired about, discussed, or disclosed the compensation of the employee or applicant or another employee or applicant. This provision shall not apply to instances in which an employee who has access to the compensation information of other employees or applicants as a part of such employee's essential job functions discloses the compensation of such other employees or applicants to individuals who do not otherwise have access to such information, unless such disclosure is in response to a formal complaint or charge, in furtherance of an investigation, proceeding, hearing, or action, including an investigation conducted by the employer, or is consistent with the contractor's legal duty to furnish information.

(4) The Contractor will send to each labor union or representative of workers with which it has a collective bargaining agreement or other contract or understanding, a notice to be provided advising the said labor union or workers representatives of the Contractor's commitments hereunder, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

(5) The Contractor will comply with all provisions of Executive Order 11246 of September 24, 1965 and of the rules, regulations, and relevant orders of the Secretary of Labor.

(6) The Contractor will furnish all information and reports required by Executive Order 11246 of September 24, 1965, and by rules, regulations, and orders of the Secretary of Labor, or pursuant thereto, and will permit access to its books, records, and accounts by EDA and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders.

(7) In the event of the Contractor's noncompliance with the nondiscrimination clauses of this Contract or with any of the said rules, regulations, or orders, this Contract may be canceled, terminated, or suspended in whole or in part and the Contractor may be declared ineligible for further Government contracts or federally-assisted construction contracts in accordance with procedures authorized in Executive Order 11246 of September 24, 1965, and such other sanctions may be imposed and remedies invoked as provided in Executive Order 11246 of September 24, 1965, or by rule, regulation or order of the Secretary of Labor, or as otherwise provided by law.

(8) The Contractor will include the portion of the sentence immediately preceding paragraph 17(a)(1) and the provisions of paragraphs 17(a)(1) through (8) in every subcontract or purchase order unless exempted by rules, regulations, or orders of the Secretary of Labor issued pursuant to section 204 of Executive Order 11246 of September 24, 1965, so that such provisions will be binding upon each subcontractor or vendor. The Contractor will take such action with respect to any subcontract or purchase order as EDA or the Secretary of Labor may direct as a means of enforcing such provisions, including sanctions for noncompliance. Provided, however, that in the event the Contractor becomes involved in or is threatened with litigation with a subcontractor or vendor as a result of such direction by EDA or the Secretary of Labor, the Contractor may request the United States to enter into such litigation to protect the interests of the United States.

(9) The Recipient further agrees that it will be bound by the above equal opportunity clause with respect to its own employment practices when it participates in federally- assisted construction work. Provided, however, that if the Recipient so participating is a State or local government, the above equal opportunity clause is not applicable to any agency, instrumentality, or subdivision of such government that does not participate in work on or under the Contract.

(10) The Recipient agrees that it will assist and cooperate actively with EDA and the Secretary of Labor in obtaining the compliance of contractors and subcontractors with the equal opportunity clause and the rules, regulations, and relevant orders of the Secretary of Labor, that it will furnish EDA and the Secretary of Labor such information as they may require for the supervision of such compliance, and that it will otherwise assist EDA in the discharge of the EDA's primary responsibility for securing compliance.

(11) The Recipient further agrees that it will refrain from entering into any contract or contract modification subject to Executive Order 11246 of September 24, 1965, with a Contractor debarred from, or who has not demonstrated eligibility for, Government contracts and federally assisted construction contracts pursuant to the Executive Order and will carry out such sanctions and penalties for violation of the equal opportunity clause as may be imposed upon contractors and subcontractors by EDA or the Secretary of Labor pursuant to Part II, Subpart D of the Executive Order. In addition, the Recipient agrees that if it fails or refuses to comply with these undertakings, EDA may take any or all of the following actions: Cancel, terminate, or suspend in whole or in part this EDA financial assistance; refrain from extending any further assistance to the applicant under the program with respect to which the failure or refund occurred until satisfactory assurance of future compliance has been received from such applicant; and refer the case to the Department of Justice for appropriate legal proceedings.

(b) Exemptions to Above Equal Opportunity Clause (41 C.F.R. chapter 60):

(1) Contracts and subcontracts not exceeding \$10,000 (other than Government bills of lading, and other than contracts and subcontracts with depositories of Federal funds in any



amount and with financial institutions which are issuing and paying agents for U.S. savings bonds and savings notes) are exempt. The amount of the Contract, rather than the amount of the federal financial assistance, shall govern in determining the applicability of this exemption.

(2) Except in the case of subcontractors for the performance of construction work at the site of construction, the clause shall not be required to be inserted in subcontracts below the second tier.

(3) Contracts and subcontracts not exceeding \$10,000 for standard commercial supplies or raw materials are exempt.

## 18. CONTRACTING WITH SMALL, MINORITY AND WOMEN'S BUSINESSES

(a) If the Contractor intends to let any subcontracts for a portion of the work, the Contractor shall take affirmative steps to assure that small, minority and women's businesses are used when possible as sources of supplies, equipment, construction, and services.

(b) Affirmative steps shall consist of:

(1) Placing qualified small and minority businesses and women's business enterprises on solicitation lists;

(2) Ensuring that small and minority businesses and women's business enterprises are solicited whenever they are potential sources;

(3) Dividing total requirements, when economically feasible, into smaller tasks or quantities to permit maximum participation by small and minority businesses and women's business enterprises;

(4) Establishing delivery schedules, where the requirements of the contract permit, which encourage participation by small and minority businesses and women's business enterprises;

(5) Using the services and assistance of the U.S. Small Business Administration, the Minority Business Development Agency of the U.S. Department of Commerce, and State and local governmental small business agencies;

(6) Requiring each party to a subcontract to take the affirmative steps of this section; and

(7) The Contractor is encouraged to procure goods and services from labor surplus area firms.

## 19. HEALTH, SAFETY, AND ACCIDENT PREVENTION

(a) In performing this contract, the Contractor shall:

(1) Ensure that no laborer or mechanic shall be required to work in surroundings or under working conditions which are unsanitary, hazardous, or dangerous to their health and/or safety as determined under construction safety and health standards promulgated by the Secretary of Labor by regulation;

(2) Protect the lives, health, and safety of other persons;

(3) Prevent damage to property, materials, supplies, and equipment; and

(4) Avoid work interruptions.

(b) For these purposes, the Contractor shall:

(1) Comply with regulations and standards issued by the Secretary of Labor at 29 C.F.R. part 1926. Failure to comply may result in imposition of sanctions pursuant to the Contract Work Hours and Safety Standards Act (40 U.S.C. §§ 3701 – 3708); and

(2) Include the terms of this clause in every subcontract so that such terms will be binding on each subcontractor.

(c) The Contractor shall maintain an accurate record of exposure data on all accidents incident to work performed under this Contract resulting in death, traumatic injury, occupational disease, or damage to property, materials, supplies, or equipment, and shall report this data in the manner prescribed by 29 C.F.R. part 1904.

(d) The Owner shall notify the Contractor of any noncompliance with these requirements and of the corrective action required. This notice, when delivered to the Contractor or the Contractor's representative at the site of the Work, shall be deemed sufficient notice of the noncompliance and corrective action required. After receiving the notice, the Contractor shall immediately take corrective action. If the Contractor fails or refuses to take corrective action promptly, the Owner may issue an order stopping all or part of the Work until satisfactory corrective action has been taken. The Contractor shall not base any claim or request for equitable adjustment for additional time or money on any stop order issued under these circumstances.

(e) The Contractor shall be responsible for its subcontractors' compliance with the provisions of this clause. The Contractor shall take such action with respect to any subcontract as EDA, or the Secretary of Labor shall direct as a means of enforcing such provisions.

## 20. CONFLICT OF INTEREST AND OTHER PROHIBITED INTERESTS

(a) No official of the Owner who is authorized in such capacity and on behalf of the Owner to negotiate, make, accept, or approve, or to take part in negotiating, making, accepting, or approving any architectural, engineering, inspection, construction or material supply contract or any subcontract in connection with the construction of the Project, shall become directly or indirectly interested personally in this Contract or in any part hereof.

(b) No officer, employee, architect, attorney, engineer, or inspector of or for the Owner who is authorized in such capacity and on behalf of the Owner to exercise any legislative, executive, supervisory or other similar functions in connection with the construction of the Project, shall become directly or indirectly interested personally in this Contract or in any part thereof, any material supply contract, subcontract, insurance contract, or any other contract pertaining to the Project.

(c) The Contractor may not knowingly contract with a supplier or manufacturer if the individual or entity who prepared the Contract Documents has a corporate or financial affiliation with the supplier or manufacturer.

(d) The Owner's officers, employees, or agents shall not engage in the award or administration of this Contract if a conflict of interest, real or apparent, may be involved. Such a conflict may arise when: (i) the employee, officer or agent; (ii) any member of their immediate family; (iii) their partner or (iv) an organization that employs, or is about to employ, any of the above, has a financial interest in the Contractor. The Owner's officers, employees, or agents shall neither solicit nor accept gratuities, favors, or anything of monetary value from the Contractor or subcontractors.

(e) If the Owner finds after a notice and hearing that the Contractor, or any of the Contractor's agents or representatives, offered or gave gratuities (in the form of entertainment, gifts, or otherwise) to any official, employee, or agent of the Owner or EDA in an attempt to secure this Contract or favorable treatment in awarding, amending, or making any determinations related to the performance of this Contract, the Owner may, by written notice to the Contractor, terminate this Contract.

The Owner may also pursue other rights and remedies that the law or this Contract provides. However, the existence of the facts on which the Owner bases such findings shall be an issue and may be reviewed in proceedings under the dispute resolution provisions of this Contract.

(f) In the event this Contract is terminated as provided in paragraph (e) of this section, the Owner may pursue the same remedies against the Contractor as it could pursue in the event of a breach of this Contract by the Contractor. As a penalty, in addition to any other damages to which it may be entitled by law, the Owner may pursue exemplary damages in an amount (as determined by the Owner) which shall not be less than three nor more than ten times the costs the Contractor incurs in providing any such gratuities to any such officer or employee.

## 21. RESTRICTIONS ON LOBBYING

(a) This Contract, or subcontract is subject to 31 U.S.C. § 1352, regarding lobbying restrictions. The section is explained in the common rule, 15 C.F.R. part 28 (55 FR 6736-6748, February 26, 1990). Each bidder under this Contract or subcontract is generally prohibited from using federal funds for lobbying the Executive or Legislative Branches of the Federal Government in connection with this EDA Award.

(b) **Contract Clause Threshold:** This Contract Clause regarding lobbying must be included in each bid for a contract or subcontract exceeding \$100,000 of federal funds at any tier under the EDA Award.

(c) **Certification and Disclosure:** Each bidder of a contract or subcontract exceeding \$100,000 of federal funds at any tier under the federal Award must file Form CD-512, *Certification Regarding Lobbying – Lower Tier Covered Transactions*, and, if applicable, Standard Form- LLL, *Disclosure of Lobbying Activities*, regarding the use of any nonfederal funds for lobbying. Certifications shall be retained by the Contractor or subcontractor at the next higher tier. All disclosure forms, however, shall be forwarded from tier to tier until received by the Recipient of the EDA Award, who shall forward all disclosure forms to EDA.

(d) **Continuing Disclosure Requirement:** Each Contractor or subcontractor that is subject to the Certification and Disclosure provision of this Contract Clause is required to file a disclosure form at the end of each calendar quarter in which there occurs any event that requires disclosure or that materially affects the accuracy of the information contained in any disclosure form previously filed by such person. Disclosure forms shall be forwarded from tier to tier until received by the Recipient of the EDA Award, who shall forward all disclosure forms to EDA.

(e) **Indian Tribes, Tribal Organizations, or Other Indian Organizations:** Indian tribes, tribal organizations, or any other Indian organizations, including Alaskan Native organizations, are excluded from the above lobbying restrictions and reporting requirements, but only with respect to expenditures that are by such tribes or organizations for lobbying activities permitted by other federal law. An Indian tribe or organization that is seeking an exclusion from Certification and Disclosure requirements must provide EDA with the citation of the provision or provisions of federal law upon which it relies to conduct lobbying activities that would otherwise be subject to the prohibitions in and to the Certification and

Disclosure requirements of 31 U.S.C. § 1352, preferably through an attorney's opinion. Note, also, that a non-Indian subrecipient, contractor, or subcontractor under an award to an Indian tribe, for example, is subject to the restrictions and reporting requirements.

## 22. HISTORICAL AND ARCHAEOLOGICAL DATA PRESERVATION

The Contractor agrees to facilitate the preservation and enhancement of structures and objects of historical, architectural or archaeological significance and when such items are found and/or unearthed during the course of project construction. Any excavation by the Contractor that uncovers an historical or archaeological artifact shall be immediately reported to the Owner and a representative of EDA. Construction shall be temporarily halted pending the notification process and further directions issued by EDA after consultation with the State Historic Preservation Officer (SHPO) for recovery of the items. See the National Historic Preservation Act of 1966 (54 U.S.C. § 300101 *et seq.*, formerly at 16 U.S.C. § 470 *et seq.*) and Executive Order No. 11593 of May 31, 1971.

## 23. CLEAN AIR AND WATER

Applicable to Contracts in Excess of \$150,000

(a) **Definition.** "Facility" means any building, plant, installation, structure, mine, vessel, or other floating craft, location, or site of operations, owned, leased, or supervised by the Contractor or any subcontractor, used in the performance of the Contract or any subcontract. When a location or site of operations includes more than one building, plant, installation, or structure, the entire location or site shall be deemed a facility except when the Administrator, or a designee, of the United States Environmental Protection Agency (EPA) determines that independent facilities are collocated in one geographical area.

(b) In compliance with regulations issued by the EPA, 2 C.F.R. part 1532, pursuant to the Clean Air Act, as amended (42 U.S.C. § 7401 *et seq.*); the Federal Water Pollution Control Act, as amended (33 U.S.C. § 1251 *et seq.*); and Executive Order 11738, the Contractor agrees to:

- (1) Not utilize any facility in the performance of this contract or any subcontract which is listed on the Excluded Parties List System, part of the System for Award Management (SAM), pursuant to 2 C.F.R. part 1532 for the duration of time that the facility remains on the list;
- (2) Promptly notify the Owner if a facility the Contractor intends to use in the performance of this contract is on the Excluded Parties List System or the Contractor knows that it has been recommended to be placed on the List;
- (3) Comply with all requirements of the Clean Air Act and the Federal Water Pollution Control Act, including the requirements of section 114 of the Clean Air Act and section 308 of the Federal Water Pollution Control Act, and all applicable clean air and clean water standards; and
- (4) Include or cause to be included the provisions of this clause in every subcontract and take such action as EDA may direct as a means of enforcing such provisions.

## 24. USE OF LEAD-BASED PAINTS ON RESIDENTIAL STRUCTURES

(a) If the work under this Contract involves construction or rehabilitation of residential structures over \$5,000, the Contractor shall comply with the Lead-based Paint Poisoning Prevention Act (42 U.S.C. § 4831). The Contractor shall assure that paint or other surface coatings used in a residential property does not contain lead equal to or in excess of 1.0 milligram per square centimeter or 0.5

percent by weight or 5,000 parts per million (ppm) by weight.

(b) For purposes of this section, “residential property” means a dwelling unit, common areas, building exterior surfaces, and any surrounding land, including outbuildings, fences and play equipment affixed to the land, belonging to an owner and available for use by residents, but not including land used for agricultural, commercial, industrial or other non-residential purposes, and not including paint on the pavement of parking lots, garages, or roadways.

(c) As a condition to receiving assistance under PWEDA, recipients shall assure that the restriction against the use of lead-based paint is included in all contracts and subcontracts involving the use of federal funds.

## 25. ENERGY EFFICIENCY

The Contractor shall comply with all standards and policies relating to energy efficiency which are contained in the energy conservation plan issued in compliance with the Energy Policy and Conservation Act (42 U.S.C. § 6201) for the State in which the Work under the Contract is performed.

## 26. ENVIRONMENTAL REQUIREMENTS

When constructing a Project involving trenching and/or other related earth excavations, the Contractor shall comply with the following environmental constraints:

(1) **Wetlands.** When disposing of excess, spoil, or other construction materials on public or private property, the Contractor shall not fill in or otherwise convert wetlands.

(2) **Floodplains.** When disposing of excess, spoil, or other construction materials on public or private property, the Contractor shall not fill in or otherwise convert 100 year floodplain areas delineated on the latest Federal Emergency Management Agency (FEMA) Floodplain Maps, or other appropriate maps, i.e., alluvial soils on Natural Resource Conservation Service (NRCS) Soil Survey Maps.

(3) **Endangered Species.** The Contractor shall comply with the Endangered Species Act, which provides for the protection of endangered and/or threatened species and critical habitat. Should any evidence of the presence of endangered and/or threatened species or their critical habitat be brought to the attention of the Contractor, the Contractor will immediately report this evidence to the Owner and a representative of EDA. Construction shall be temporarily halted pending the notification process and further directions issued by EDA after consultation with the U.S. Fish and Wildlife Service.

## 27. DEBARMENT, SUSPENSION, INELIGIBILITY, AND VOLUNTARY EXCLUSIONS

As required by Executive Orders 12549 and 12689, *Debarment and Suspension*, 2 C.F.R. Part 180 and implemented by the Department of Commerce at 2 C.F.R. part 1326, for prospective participants in lower tier covered transactions (except subcontracts for goods or services under the \$25,000 small purchase threshold unless the subrecipient will have a critical influence on or substantive control over the award), the Contractor agrees that:

(1) By entering into this Contract, the Contractor and subcontractors certify, that neither it nor its principals is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in this Contract by any federal department or agency.

(2) Where the Contractor or subcontractors are unable to certify to any of the statements in this certification, the Contractor or subcontractors shall attach an explanation to this bid.

See *a/so* 2 C.F.R. part 180 and 2 C.F.R. § 200.342.

28. EDA PROJECT SIGN

The Contractor shall supply, erect, and maintain in good condition a Project sign according to the specifications provided by EDA. To the extent practical, the sign should be a free standing sign. Project signs shall not be located on public highway rights-of-way. Location and height of signs will be coordinated with the local agency responsible for highway or street safety in the Project area, if any possibility exists for obstructing vehicular traffic line of sight. Whenever the EDA site sign specifications conflict with State law or local ordinances, the EDA Regional Director will permit such conflicting specifications to be modified so as to comply with State law or local ordinance.

29. BUY AMERICA

To the greatest extent practicable, contractors are encouraged to purchase American-made equipment and products with funding provided under EDA financial assistance awards.

**NOTICE OF REQUIREMENTS FOR AFFIRMATIVE ACTION  
TO ENSURE EQUAL EMPLOYMENT OPPORTUNITY  
(EXECUTIVE ORDER 11246 AND 41 CFR PART 60-4)**

The following Notice shall be included in, and shall be a part of all solicitations for offers and bids on all Federal and federally assisted construction contracts or subcontracts in excess of \$10,000.

The Offeror's or Bidder's attention is called to the "Equal Opportunity Clause" and the "Standard Federal Equal Employment Opportunity Construction Contract Specifications" set forth herein.

The goals and timetables for minority and female participation, expressed in percentage terms for the Contractor's aggregate workforce in each trade on all construction work in the covered area, are as follows:

<b>Goals for minority participation for each trade</b>	<b>Goals for female participation for each trade</b>
<b>3%</b>	<b>6.9%</b>

These goals are applicable to all the Contractor's construction work (whether or not it is Federal or federally assisted) performed in the covered area. If the contractor performs construction work in a geographical area located outside of the covered area, it shall apply the goals established for such geographical area where the work is actually performed. With regard to this second area, the contractor also is subject to the goals for both its federally involved and non-federally involved construction. The Contractor's compliance with the Executive Order and the regulations in 41 CFR Part 60-4 shall be based on its implementation of the Equal Opportunity Clause, specific affirmative action obligations required by the specifications set forth in 41 CFR 60- 4.3(a), and its efforts to meet the goals. The hours of minority and female employment and training must be substantially uniform throughout the length of the contract, and in each trade and the contractor shall make a good faith effort to employ minorities and women evenly on each of its projects. The transfer of minority or female employees or trainees from Contractor to Contractor or from project to project for the sole purpose of meeting the Contractor's goals shall be a violation of the contract, the Executive Order, and the regulations in 41 CFR Part 60-4. Compliance with the goals will be measured against the total work hours performed.

The Contractor shall provide written notification to the Director of the Office of Federal Contract Compliance Programs within 10 working days of award of any construction subcontract in excess of \$10,000 at any tier for construction work under the contract resulting from this solicitation. The notification shall list the name, address and telephone number of the subcontractor; employer identification number of the subcontractor; estimated dollar amount of the subcontract; estimated starting and completion dates of the subcontract; and the geographical area in which the subcontract is to be performed. As used in this Notice, and in the contract resulting from this solicitation, the "covered area" is:

State of **RHODE ISLAND**

County of **PROVIDENCE**

City of **PAWTUCKET**

## **ANTI-KICKBACK ACKNOWLEDGMENT**

### **ALL BIDDERS/OFFERORS MUST ATTEST TO THE FOLLOWING:**

The vendor acknowledges, under the pains and penalties of perjury, that he/she has not been offered, paid, or solicited for any contribution or compensation, nor has he/she been granted a gift, gratuity, or other consideration, either directly or indirectly by any officer, employee or member of the governing body of the City of Pawtucket who exercises any functions or responsibilities in connection with either the award or execution of the project to which this contract pertains.

Further, the vendor acknowledges, under the pains and penalties of perjury, that he/she has not offered, paid, or solicited by way of any contribution or compensation, nor has he/she granted a gift, gratuity or other consideration either directly or indirectly to any officer, employee, or member of the governing body of the City of Pawtucket who exercises any functions or responsibilities in connection with either the award or execution of the project to which this project or contract pertains.

\_\_\_\_\_  
SIGNATURE OF OFFEROR

\_\_\_\_\_  
DATE

\_\_\_\_\_  
TITLE

\_\_\_\_\_  
COMPANY

Title of RFP:

\_\_\_\_\_

**(submit at time of bid submission)**



## Appendix B

### CITY OF PAWTUCKET GENERAL TERMS AND CONDITIONS OF PURCHASE

#### *Preamble*

The City of Pawtucket's Purchasing Office may, from time to time, make amendments to the General Terms and Conditions when the City of Pawtucket's Purchasing Agent determines that such amendments are in the best interest of the City of Pawtucket. Amendments shall be made available for public inspection at the Purchasing Office located in Pawtucket City Hall but shall not require formal public notice and hearing. Copies of the Terms and Conditions shall be provided to any individual or firm requesting them.

#### **CITY OF PAWTUCKET'S PURCHASING OFFICE GENERAL CONDITIONS OF PURCHASE**

All City of Pawtucket purchase orders, contracts, solicitations, delivery orders and service requests shall incorporate and be subject to the provisions of Rhode Island General Laws 8-15-4 and the City of Pawtucket purchasing rules and regulations adopted pursuant thereto, all other applicable provisions of the Rhode Island General Laws, the Pawtucket City Charter, specific requirements described in the Request or Contract, and the following General Conditions of Purchase:

##### **1. GENERAL**

All purchase orders, contracts, solicitations, delivery orders, and service requests are for specified goods and services, in accordance with express terms and conditions of purchase, as defined herein. For the purposes of this document, the terms "bidder" and "contractor" refer to any individual, firm, corporation, or other entity presenting a proposal indicating a desire to enter into contracts with the City of Pawtucket, or with whom a contract is executed by the City of Pawtucket's Purchasing Agent, and the term "contractor" shall have the same meaning as "vendor".

##### **2. ENTIRE AGREEMENT**

The City of Pawtucket's Purchase Order, or other City of Pawtucket contract endorsed by the City of Pawtucket Purchasing Office, shall constitute the entire and exclusive agreement between the City of Pawtucket and any contractor receiving an award. In the event any conflict between the bidder's standard terms of sale, these conditions or more specific provisions contained in the solicitation shall govern. All communication between the City of Pawtucket and any contractor pertaining to any award or contract shall be accomplished in writing.

a. Each proposal will be received with the understanding that the acceptance, in writing, by contract or Purchase Order by the City of Pawtucket Purchasing Agent of the offer to do work or to furnish any or all the materials, equipment, supplies or services described therein shall constitute a contract between the bidder and the City of Pawtucket. This shall bind the bidder on his part to furnish and deliver at the prices and in accordance with the conditions of said accepted proposal and detailed specifications and the City of Pawtucket on its part to order from such contractor (except in case of emergency) and to pay for at the agreed prices, all materials, equipment, supplies or services specified and delivered. A contract shall be deemed executory only to the extent of funds available for payment of the amounts shown on Purchase Orders issued by the City of Pawtucket to the contractors.

b. No alterations or variations of the terms of the contract shall be valid or binding upon the City of Pawtucket unless submitted in writing and accepted by the City of Pawtucket Purchasing Agent. All orders and changes thereof must emanate from the City of Pawtucket Purchasing Office: no oral agreement or arrangement made by a contractor with a department or employee will be considered to be binding on the City of Pawtucket Purchasing Agent, and may be disregarded.

c. Contracts will remain in force for the contract period specified or until all articles or services ordered before date of termination shall have been satisfactorily delivered or rendered and accepted and thereafter until all terms and conditions have been met, unless:

1. terminated prior to expiration date by satisfactory delivery against orders of entire quantities, or
2. extended upon written authorization of the City of Pawtucket Purchasing Agent and accepted by the contractor, to permit ordering of the unordered balances or additional quantities at the contract price and in accordance with the contract terms, or
3. canceled by the City of Pawtucket in accordance with other provisions stated herein.

d. It is mutually understood and agreed that the contractor shall not assign, transfer, convey, sublet or otherwise dispose of this contract or his right, title or interest therein, or his power to execute such contract, to any other person, company or corporation, without the previous consent, in writing, of the City of Pawtucket Purchasing Agent.

e. If, subsequent to the submission of an offer or issuance of a purchase order or execution of a contract, the bidder or contractor shall merge with or be acquired by another entity, the contract may be terminated, except as a corporate resolution prepared by the contractor and the new entity ratifying acceptance of the original bid or contract terms, condition, and pricing is submitted to the City of Pawtucket Purchasing Office, and expressly accepted.

f. The contractor or bidder further warrants by submission of an offer or acceptance of a purchase order or other contract that he has no knowledge at the time of such action of any outstanding and delinquent or otherwise unsettled debt owed by him to the City of Pawtucket, and agrees that later discovery by the City of Pawtucket Purchasing Agent that this warranty was given in spite of such knowledge, except where the matter is pending in hearing or from any appeal therefrom, shall form reasonable grounds for termination of the contract.

### 3. SUBCONTRACTS

No subcontracts or collateral agreements shall be permitted, except with the City of Pawtucket's express written consent. Upon request, contractors must submit to the City of Pawtucket Purchasing Office a list of all subcontractors to be employed in the performance of any Purchase Order or other contract arising from this Request.

### 4. RELATIONSHIP OF PARTIES

The contractor or bidder warrants, by submission of an offer or acceptance of a purchase order or other contract, that he is not an employee, agent, or servant of the City of Pawtucket, and that he is fully qualified and capable in all material regards to provide the specified goods and services. Nothing herein shall be construed as creating any contractual relationship or obligation between the City of Pawtucket and any sub-bidder, subcontractor, supplier, or employee of the contractor or offeror.

### 5. COSTS OF PREPARATION

All costs associated with the preparation, development, or submission of bids or other offers will be borne by the offeror. The City of Pawtucket will not reimburse any offeror for such costs.

### 6. SPECIFIED QUANTITY REQUIREMENT

Except where expressly specified to the contrary, all solicitations and contracts are predicated on a specified quantity of goods or services, or for a specified level of funding.

- a. The City of Pawtucket reserves the right to modify the quantity, scope of service, date of delivery or completion, or funding of any contract, with no penalty or charge, by written notice to the contractor, except where alternate terms have been expressly made a part of the contract.
- b. The City of Pawtucket shall not accept quantities in excess of the specified quantity except where the item is normally sold by weight (where sold by weight, the City of Pawtucket will not accept quantities greater than ten per cent [10%] of the

specified quantity), or where the Request or Contract provides for awards for other than exact quantities.

- c. Purchase Orders or other contracts may be increased in quantity or extended in term without subsequent solicit with the mutual consent of the contractor and the City of Pawtucket, where determined by the City of Pawtucket Purchasing Agent to be in the City of Pawtucket's best interest.

7. **TERM AND RENEWAL**

Where offers have been requested or contracts awarded for terms exceeding periods of twelve (12) months, it is mutually understood and agreed that the City of Pawtucket's commitment is limited to a base term not to exceed twelve (12) months, subject to renewal annually at the City of Pawtucket's sole option for successive terms as otherwise described, except where expressly specified to the contrary. Purchase orders appearing to commit to obligations of funding or terms of performance may be executed for administrative convenience, but are otherwise subject to this provision, and in such cases the City of Pawtucket's renewal shall be deemed to be automatic, conditional on the continued availability of appropriated funds for the purpose, except as written notice of the City of Pawtucket's intent not to renew is served.

8. **DELIVERY/COMPLETION**

Delivery must be made as ordered and/or projects completed in accordance with the proposal. If delivery qualifications do not appear on the bidder's proposal, it will be interpreted to mean that goods are in stock and that shipment will be made within seven (7) calendar days. If the project completion date is not specified in the proposal, the date shall be determined by the City of Pawtucket Purchasing Agent. The decision of the City of Pawtucket Purchasing Agent, as to reasonable compliance with the delivery terms, and date of completion shall be final. Burden of proof of delay in receipt of order shall rest with the contractor. No delivery charges shall be added to invoices except when authorized on the Purchase Order.

9. **FOREIGN CORPORATIONS**

In accordance with Title 7 Chapter 1.1 ("Business Corporations") of the General Laws of Rhode Island, no foreign corporation shall have the right to transact business in this state until it shall have procured a certificate of authority so to do from the Secretary of State.

10. **PRICING**

All pricing offered or extended to the City of Pawtucket is considered to be firm and fixed unless expressly provided for to the contrary. All prices shall be quoted F.O.B. Destination with freight costs included in the unit cost to be paid by the City of Pawtucket, except, where the Request or Contract permits, offers reflecting F.O.B. Shipping Point will be considered, and freight costs may then be prepaid and added to the invoice.

11. **COLLUSION**

Bidder or contractor warrants that he has not, directly or indirectly, entered into any agreements or participated in any collusion or otherwise taken any action in restraint of full competitive bidding. In special circumstances, an executed affidavit will be required as a part of the bid.

12. **PROHIBITION AGAINST CONTINGENT FEES AND GRATUITIES**

Bidder or contractor warrants that he has not paid, and agrees not to pay, any bonus, commission, fee, or gratuity to any employee or official of the City of Pawtucket for the purpose of obtaining any contract or award issued by the City of Pawtucket. Bidder or contractor further warrants that no commission or other payment has been or will be received from or paid to any third party contingent on the award of any contract by the City of Pawtucket, except as shall have been expressly communicated to the City of Pawtucket

Purchasing Agent in writing prior to acceptance of the contract or award in question. Subsequent discovery by the City of Pawtucket of non-compliance with these provisions shall constitute sufficient cause for immediate termination of all outstanding contracts and suspension or debarment of the bidder(s) or contractor(s) involved.

13. AWARDS

Awards will be made with reasonable promptness and by written notice to the successful bidder (only); bids are considered to be irrevocable for a period of ninety (90) days following the bid opening unless expressly provided for to the contrary in the Request, and may not be withdrawn during this period without the express permission of the City of Pawtucket Purchasing Agent.

- a. Awards shall be made to the bidder(s) whose offer(s) constitutes the lowest responsive price offer (or lowest responsive price offer on an evaluated basis) for the item(s) in question or for the Request as a whole, at the option of the City of Pawtucket. The City of Pawtucket reserves the right to determine those offers which are responsive to the Request, or which otherwise serve its best interests.
- b. The City of Pawtucket reserves the right, before making award, to initiate investigations as to whether or not the materials, equipment, supplies, qualifications or facilities offered by the bidder meet the requirements set forth in the proposal and specification, and are ample and sufficient to insure the proper performance of the contract in the event of award. If upon such examination it is found that the conditions of the proposal are not complied with or that articles or equipment proposed to be furnished do not meet the requirements called for, or that the qualifications or facilities are not satisfactory, the City of Pawtucket may reject such a bid. It is distinctly understood, however, that nothing in the foregoing shall mean or imply that it is obligatory upon the City of Pawtucket to make any examinations before awarding a contract; and it is further understood that if such examination is made, it in no way relieves the contractor from fulfilling all requirements and conditions of the contract.
- c. Qualified or conditional offers which impose limitations of the bidder's liability or modify the requirements of the bid, offers for alternate specifications, or which are made subject to different terms and conditions than those specified by the City of Pawtucket may, at the option of the City of Pawtucket, be
  1. rejected as being non-responsive, or
  2. set aside in favor of the City of Pawtucket's terms and conditions (with the consent of the bidder), or
  3. accepted, where the City of Pawtucket Purchasing Agent determines that such acceptance best serves the interests of the City of Pawtucket.Acceptance or rejection of alternate or counter-offers by the City of Pawtucket shall not constitute a precedent which shall be considered to be binding on successive solicitations or procurements.
- d. Bids submitted in pencil, or which do not bear an original signature, in ink, by an owner or authorized agent thereof, will not be accepted.
- e. Bids must be extended in the unit of measure specified in the Request. In the event of any discrepancy between unit prices and their extensions, the unit price will govern.
- f. The City of Pawtucket Purchasing Agent reserves the right to determine the responsibility of any bidder for a particular procurement.
- g. The City of Pawtucket Purchasing Agent reserves the right to reject any and all bids in whole or in part, to waive technical defects, irregularities, and omissions, and to give consideration to past performance of the offerors where, in his judgment the best interests of the City of Pawtucket will be served by so doing.
- h. The City of Pawtucket Purchasing Agent reserves the right to make awards by items, group of items or on the total low bid for all the items specified as indicated

in the detailed specification, unless the bidder specifically indicates otherwise in his bid.

- i. Preference may be given to bids on products raised or manufactured in the City of Pawtucket or State of Rhode Island, other things being equal.
- j. The impact of discounted payment terms shall not be considered in evaluating responses to any Request.
- k. The City of Pawtucket Purchasing Agent reserves the right to act in the City of Pawtucket's best interests regarding awards caused by clerical errors by the City of Pawtucket Purchasing Office.

#### 14. SUSPENSION AND DEBARMENT

The City of Pawtucket Purchasing Agent may suspend or debar any vendor or potential bidder, for good cause shown:

- a. A debarment or suspension against a part of a corporate entity constitutes debarment or suspension of all of its divisions and all other organizational elements, except where the action has been specifically limited in scope and application, and may include all known corporate affiliates of a contractor, when such offense or act occurred in connection with the affiliate's performance of duties for or on behalf of the contractor, or with the knowledge, approval, or acquiescence of the contractor or one or more of its principals or directors (or where the contractor otherwise participated in, knew of, or had reason to know of the acts).
- b. The fraudulent, criminal or other serious improper conduct of any officer, director, shareholder, partner, employee, or any other individual associated with a contractor may be imputed to the contractor when the conduct occurred in connection with the individual's performance of duties for or on behalf of the contractor, or with the contractor's knowledge, approval or acquiescence. The contractor's acceptance of benefits derived from the conduct shall be evidence of such knowledge, approval, or acquiescence.
- c. A vendor or contractor who knowingly engages as a subcontractor for a contract awarded by the City of Pawtucket to a vendor or contractor then under a ruling of suspension or debarment by the City of Pawtucket shall be subject to disallowance of cost, annulment or termination of award, issuance of a stop work order, or debarment or suspension, as may be judged to be appropriate by the City of Pawtucket's Purchasing Agent.

#### 15. PUBLIC RECORDS

Contractors and bidders are advised that certain documents, correspondence, and other submissions to the City of Pawtucket's Purchasing Office may be voluntarily made public by the City of Pawtucket absent specific notice that portions of such submittals may contain confidential or proprietary information, such that public access to those items should be withheld.

#### 16. PRODUCT EVALUATION

In all specifications, the words "or equal" are understood after each article when manufacturer's name or catalog are referenced. If bidding on items other than those specified, the bidder must, in every instance, give the trade designation of the article, manufacturer's name and detailed specifications of the item the bidder proposes to furnish; otherwise, the bid will be construed as submitted on the identical commodity described in the detailed specifications. The City of Pawtucket's Purchasing Agent reserves the right to determine whether or not the item submitted is the approved equal the detailed specifications.

- a. Any objections to specifications must be filed by a bidder, in writing, with the City of Pawtucket's Purchasing Agent at least 96 hours before the time of bid opening

to enable the City of Pawtucket's Purchasing Office to properly investigate the objections.

- b. All standards are minimum standards except as otherwise provided for in the Request or Contract.
- c. Samples must be submitted to the City of Pawtucket's Purchasing Office in accordance with the terms of the proposals and detailed specifications. Samples must be furnished free of charge and must be accompanied by descriptive memorandum invoices indicating whether or not the bidder desires their return and specifying the address to which they are to be returned (at the bidder's risk and expense), provided they have not been used or made useless by tests; and absent instructions, the samples shall be considered to be abandoned. Award samples may be held for comparison with deliveries.
- d. All samples submitted are subject to test by any laboratory the City of Pawtucket's Purchasing Agent may designate.

17. **PRODUCT ACCEPTANCE**

All merchandise offered or otherwise provided shall be new, of prime manufacture, and of first quality unless otherwise specified by the City of Pawtucket. The City of Pawtucket reserves the right to reject all nonconforming goods, and to cause their return for credit or replacement, at the City of Pawtucket's option. Contract deliverables specified for procurements of services shall be construed to be work products, and subject to the provisions of this section.

- a. Failure by the City of Pawtucket to discover latent defect(s) or concealed damage or non-conformance shall not foreclose the City of Pawtucket's right to subsequently reject the goods in question.
- b. Formal or informal acceptance by the City of Pawtucket of non-conforming goods shall not constitute a precedent for successive receipts or procurements.
- c. Where the contractor fails to promptly cure the defect or replace the goods, the City of Pawtucket reserves the right to cancel the Purchase Order, contract with a different contractor, and to invoice the original contractor for any differential in price over the original contract price.
- d. When materials, equipment or supplies are rejected, the same must be removed by the contractor from the premises of the City of Pawtucket within forty-eight (48) hours of notification. Rejected items left longer than two days will be regarded as abandoned and the City of Pawtucket shall have the right to dispose of them as its own property.

18. **PRODUCT WARRANTIES**

All product or service warranties normally offered by the contractor or bidder shall accrue to the City of Pawtucket's benefit, in addition to any special requirements which may be imposed by the City of Pawtucket. Every unit delivered must be guaranteed against faulty material and workmanship for a period of one year unless otherwise specified, and the City of Pawtucket may, in the event of failure, order its replacement, repair, or return for full credit, at its sole option.

19. **PAYMENT**

Unless otherwise provided for by the Request or Contract, payment shall not be made until delivery has been made, or services performed, in full, and accepted. Payment shall not be due prior to thirty (30) working days following the latest of completion, acceptance, or the rendering of a properly submitted invoice.

- a. Payment terms other than the foregoing may be rejected as being nonresponsive.
- b. No partial shipments, or partial completion will be accepted, unless provided for by the Request or Contract.

- c. Where a question of quality is involved, or failure to complete a project by the specified due date, payment in whole or part against which to charge back any adjustment required, shall be withheld at the direction of the City of Pawtucket Purchasing Agent. In the event a cash discount is stipulated, the withholding of payments, as herein described, will not deprive the City of Pawtucket from taking such discount.
- d. Payments for used portion of inferior delivery or late delivery will be made by the City of Pawtucket on an adjusted price basis.
- e. Payments on contracts under architectural or engineering supervision must be accompanied by a Certificate of Payment and Statement of Account signed by the architect or engineer and submitted to the City of Pawtucket Purchasing Office for approval.

20. **THIRD PARTY PAYMENTS**

The City of Pawtucket recognizes no assigned or collateral rights to any purchase agreement except as may be expressly provided for in the bid or contract documents, and will not accede to any request for third party or joint payment(s), except as provided for in specific orders by a court of competent jurisdiction, or by express written permission of the City of Pawtucket's Purchasing Agent. Where an offer is contingent upon such payment(s), the offeror is obligated to serve affirmative notice in his bid submission.

21. **SET-OFF AGAINST PAYMENTS**

Payments due the contractor may be subject to reduction equal to the amount of unpaid and delinquent state taxes (or other just debt owed to the State), except where notice of delinquency has not been served or while the matter is pending in hearing or from any appeal therefrom.

22. **CLAIMS**

Any claim against a contractor may be deducted by the City of Pawtucket from any money due him in the same or other transactions. If no deduction is made in such fashion, the contractor shall pay the City of Pawtucket the amount of such claim on demand. Submission of a voucher and payment, thereof, by the City of Pawtucket shall not preclude the City of Pawtucket's Purchasing Agent from demanding a price adjustment in any case when the commodity delivered is later found to deviate from the specifications and proposal.

- a. The City of Pawtucket's Purchasing Agent may assess dollar damages against a vendor or contractor determined to be non-performing or otherwise in default of their contractual obligations equal to the cost of remedy incurred by the City of Pawtucket, and make payment of such damages a condition for consideration for any subsequent award. Failure by the vendor or contractor to pay such damages shall constitute just cause for disqualification and rejection, suspension, or debarment.

23. **CERTIFICATION OF FUNDING**

The Director of Finance shall provide certification as to the availability of funds to support the procurement for the current fiscal year ending June 30th only. Where delivery or service requirements extend beyond the end of the current fiscal year, such extensions are subject to both the availability of appropriated funds and a determination of continued need.

24. **UNUSED BALANCES**

Unless otherwise specified, all unused Blanket Order quantities and/or unexpended funds shall be automatically canceled on the expiration of the specified term. Similarly, for orders encompassing more than one fiscal year, unexpended balances of funding allotted for an

individual fiscal year may be liquidated at the close of that fiscal year, at the City of Pawtucket's sole option.

25. **MINORITY BUSINESS ENTERPRISES**

Pursuant to the provisions of Title 37 Chapter 14.1 of the General Laws, the City of Pawtucket reserves the right to apply additional consideration to offers, and to direct awards to bidders other than the responsive bid representing the lowest price where:

- a. the offer is fully responsive to the terms and conditions of the Request, and
- b. the price offer is determined to be within a competitive range (not to exceed 5% higher than the lowest responsive price offer) for the product or service, and
- c. the firm making the offer has been certified by the R.I. Department of Economic Development to be a small business concern meeting the criteria established to be considered a Minority Business Enterprise.

26. **PREVAILING WAGE REQUIREMENT**

In accordance with Title 37 Chapter 13 of the General Laws of Rhode Island, payment of the general prevailing rate of per diem wages and the general prevailing rate for regular, overtime and other working conditions existing in the locality for each craft, mechanic, teamster, or type of workman needed to execute this work is a requirement for both contractors and subcontractors for all public works projects.

The rates of pay set forth under this contract, are the minimum to be paid during the life of the Contract. It is therefore, the responsibility of Bidders to inform themselves as to local labor conditions, such as the length of work day and work week, overtime compensation, health and welfare contributions, labor supply and prospective changes or adjustments of rates.

Certified weekly payrolls and statement of compliance forms are required from contractors and subcontractors. Submit on State of Rhode Island Department of Labor and Training forms.

27. **EQUAL OPPORTUNITY COMPLIANCE, HANDICAPPED ACCESS AND AFFIRMATIVE ACTION**

Contractors of the City of Pawtucket are required to demonstrate the same commitment to equal opportunity as prevails under federal contracts controlled by Federal Executive Orders 11246, 11625, 11375 and 11830, and Title 28 Chapter 5.1 of the General Laws of Rhode Island.

Affirmative action plans shall be submitted by the contractor for review by the State Equal Opportunity Office. A contractor's failure to abide by the rules, regulations, contract terms and compliance reporting provisions as established shall be grounds for forfeiture and penalties as shall be established, including but not limited to suspension.

28. **DRUG-FREE WORKPLACE REQUIREMENT**

Contractors who do business with the City of Pawtucket and their employees shall abide by the State's drug-free workplace policy and the contractor shall so attest by signing a certificate of compliance.

29. **TAXES**

The City of Pawtucket is exempt from payment of excise, transportation and sales tax imposed by the Federal or State Government. These taxes should not be included in the proposal price. Exemption Certificates will be furnished upon request.

30. **INSURANCE**

All construction contractors, independent tradesmen, or firms providing any type of maintenance, repair, or other type of service to be performed on City of Pawtucket



premises, buildings, or grounds are required to purchase and maintain coverage with a company or companies licensed to do business in the state as follows:

- a. Comprehensive General Liability Insurance  
Combined Single Limit not less than \$1,000,000 each occurrence for bodily Injury and property damage.
  - Independent Contractors;
  - Contractual - including construction hold harmless and other types of contracts or agreements in effect for insured operations;
  - Products and Completed Operations;
  - Personal Injury (with employee exclusion deleted)
- b. Automobile Liability Insurance  
Combined Single Limit not less than \$1,000,000 each occurrence for bodily Injury and property damage including non-owned and/or hired vehicle coverage.

OR

Bodily Injury, per person, \$500,000/ Bodily Injury, \$1,000,000 per accident/  
Property Damage, \$500,000 per accident including non-owned and/or hired  
vehicle coverage.

- c. Workers' Compensation Insurance  
As required by the General Laws of Rhode Island.
  - Employers liability \$500,000

The City of Pawtucket shall be named as an additional insured on the vendor's Comprehensive General Liability Policy and Automobile Liability Policy.

The City of Pawtucket's Purchasing Agent reserves the right to consider and accept alternate forms and plans of insurance or to require additional or more extensive coverage for any individual requirement. Successful bidders shall provide certificates of coverage, reflecting the City of Pawtucket as an additional insured, to the City of Pawtucket Purchasing Office, forty-eight (48) hours prior to the commencement of work, as a condition of award. Failure to comply with this provision shall result in rejection of the offeror's bid.

31. BID SURETY

When requested, a bidder must furnish a Bid Bond or Certified Check for 5% of his bid, or for the stated amount shown in the solicitation. Bid Bonds must be executed by a reliable Surety Company authorized to do business in the State of Rhode Island. Failure to provide Bid Surety with bid may be cause for rejection of bid. The Bid Surety of any three bidders in contention will be held until an award has been made according to the specifications of each proposal. All others will be returned by mail within 48 hours following the bid opening. Upon award of a contract, the remaining sureties will be returned by mail unless instructed to do otherwise.

32. PERFORMANCE AND LABOR AND PAYMENT BONDS

A performance bond and labor and payment bond of up to 100% of an award may be required by the City of Pawtucket's Purchasing Agent. Bonds must meet the following requirements:

- a. Corporation: The Bond must be signed by an official of the corporation above his/her official title and the corporate seal must be affixed over his/her signature.

- b. Firm or Partnership: The Bond must be signed by all of the partners and must indicate that they are " Doing Business As (name of firm)."
- c. Individual: The Bond must be signed by the individual owning the business and indicate "Owner."
- d. The Surety Company executing the Bond must be licensed to do business in the State of Rhode Island or Bond must be countersigned by a company so licensed.
- e. The Bond must be signed by an official of the Surety Company and the corporate seal must be affixed over his signature.
- f. Signatures of two witnesses for both the principal and the Surety must appear on the Bond.
- g. A Power of Attorney for the official signing of the Bond for the Surety Company must be submitted with the Bond.

### 33. SUSPENSION, DEFAULT AND TERMINATION

#### a. Suspension of a Contract by the City of Pawtucket

The City of Pawtucket reserves the right at any time and for any reason to suspend all or part of this contract, for a reasonable period, not to exceed sixty days, unless the parties agree to a longer period. The City of Pawtucket shall provide the contractor with written notice of the suspension order signed by the Purchasing Agent or his or her designee, which shall set forth the date upon which the suspension shall take effect, the date of its expiration, and all applicable instructions. Upon receipt of said order, the contractor shall immediately comply with the order and suspend all work under this contract as specified in the order. The contractor shall take all reasonable steps to mitigate costs and adverse impact to the work specified in the contract during the suspension period. Before the order expires, the City of Pawtucket shall either:

- 1. cancel the suspension order;
- 2. extend the suspension order for a specified time period not to exceed thirty (30) days; or
- 3. terminate the contract as provided herein.

The contractor shall resume performance once a suspension order issued under this section is canceled or expires. If as a result of the suspension of performance, there is a financial or schedule impact upon the contract, an appropriate adjustment may be made by, or with the approval of, the City of Pawtucket's Purchasing Agent. Any adjustment shall be set forth in writing. After a suspension order has been canceled or expires, the contractor shall provide any request for adjustment to the City of Pawtucket's Purchasing Agent within thirty (30) days after resuming work performance.

#### b. Termination of a Contract by the City of Pawtucket

##### 1. Termination for Default or Nonperformance

If, for any reason, the contractor breaches the contract by failing to satisfactorily fulfill or perform any obligations, promises, terms, or conditions, and having been given reasonable notice of and opportunity to cure such default, fails to take satisfactory corrective action within the time specified by the City of Pawtucket, the City of Pawtucket may terminate the contract, in whole or in part, the termination of all outstanding contracts or sub-contracts held by the contractor, and the suspension or debarment of the contractor from future procurements by giving written notice to the contractor specifying the date for termination. The City of Pawtucket shall endeavor to provide such notice at least seven (7) calendar days before the effective date of the termination.

A contractor who fails to commence within the time specified or complete an award made for repairs, alterations, construction, or any other service will be considered in default of contract. If contractor consistently fails to deliver quantities or otherwise perform as specified, the City of Pawtucket's Purchasing Agent reserves

the right to terminate the contract and contract for completion of the work with another contractor and seek recourse from the defaulting contractor or his surety. In the event of a termination for default or nonperformance, in whole or in part, the City of Pawtucket may procure similar goods or services in a manner and upon terms it deems appropriate, and the contractor shall be liable for the excess costs incurred by the City of Pawtucket as a result of the contractor's default. The contractor, or its surety, agrees to promptly reimburse the City of Pawtucket for the excess costs, but shall have no claim to the difference should the replacement cost be less.

## 2. Termination Without Cause

The City of Pawtucket may terminate the contract in whole or in part without cause at any time by giving written notice to the contractor of such termination at least thirty (30) days before the effective date of such termination. The notice shall specify the part(s) of the contract being terminated and the effective termination date.

Within thirty (30) days of the effective date of the termination of the contract the contractor shall compile and submit to the City of Pawtucket an accounting of the work performed up to the date of termination. The City of Pawtucket may consider the following claims in determining reasonable compensation owed to the contractor for work performed up to the date of termination:

- a. contract prices for goods or services accepted under the contract;
- b. costs incurred in preparing to perform and performing the terminated portion of the contract; or
- c. any other reasonable costs incurred by the contractor as a result of the termination.

The total sum to be paid to the contractor shall not exceed the total contract price, less any payments previously made to the contractor, the proceeds from any sales of goods or manufacturing materials, and the contract price for work not terminated.

## 3. Contractor's Obligations in the Event of Termination

If the contract is terminated for any reason, or expires pursuant to its terms, the contractor shall transfer and deliver to the City of Pawtucket in the manner and to the extent directed by the City of Pawtucket:

- a. all finished or unfinished material prepared by the contractor; and
- b. all material, if any, provided to the contractor by the City of Pawtucket.

For the purposes of the contract, "material" shall include, but is not limited to, goods, supplies, parts, tools, machinery, equipment, furniture, fixtures, information, data, reports, summaries, tables, maps, charts, photographs, studies, recommendations, files, audiotapes, videotapes, records, keys, security badges, and documents.

If the contract is terminated for cause, the contractor shall not be relieved of liability to the City of Pawtucket for damages sustained because of any breach by the contractor. In such event, the City of Pawtucket may retain any amounts which may be due and owing to the contractor until such time as the exact amount of damages due the City of Pawtucket from the contractor has been determined by the City of Pawtucket Purchasing Agent. The City of Pawtucket may also set off any damages so determined against the amounts retained.

Upon termination of the contract, the contractor shall stop performance on the date specified, terminate any outstanding orders and subcontracts applicable to the terminated portion of the contract, and shall incur no further commitments or obligations in connection with the terminated performance. The contractor shall settle all liabilities and claims arising out of the termination of subcontracts and order generating from the terminated performance. The City of Pawtucket may direct the contractor to assign the contractor's right, title and interest under terminated orders or subcontracts to the City of Pawtucket or a third party.

Terminations of Purchase Order Contracts or Master Pricing Agreements shall require the signature of the City of Pawtucket Purchasing Agent or his designee. Notice of termination by either party shall be submitted in writing to the other party in accordance with the termination clause of the contract, or where no specific termination clause is included, written notice shall be provided no later than thirty (30) days before the expiration of the contract.

34. INDEMNITY

The contractor guarantees:

- a. To save the City of Pawtucket, its agents and employees, harmless from any liability imposed upon the City of Pawtucket arising from the negligence, either active or passive, of the contractor, as well as for the use of any copyrighted or uncopyrighted composition, secret process, patented or unpatented invention, article or appliance furnished or used in the performance of the contract of which the contractor is not the patentee, assignee or licensee.
- b. To pay for all permits, licenses and fees and give all notices and comply with all laws, ordinances, rules and regulations of the City of Pawtucket and of the State of Rhode Island.
- c. That the equipment offered is standard new equipment, latest model of regular stock product with all parts regularly used with the type of equipment offered; also, that no attachment or part has been substituted or applied contrary to manufacturer's recommendations and standard practice.

35. CONTRACTOR'S OBLIGATIONS

In addition to the specific requirements of the contract, construction and building repair contractors bear the following standard responsibilities:

- a. To furnish adequate protection from damage for all work and to repair damages of any kind, for which he or his workmen are responsible, to the building or equipment, to his own work, or to the work of other contractors;
- b. The contractor, its subcontractor(s) and their employees and/or agents, shall protect and preserve property in the contractor or subcontractor's possessions in which the City of Pawtucket has an interest, and any and all materials provided to the contractor or subcontractor by the City of Pawtucket;
- c. To clear and remove all debris and rubbish resulting from his work from time to time, as directed or required, a completion of the work leave the premises in a neat unobstructed condition, broom clean, and in satisfactory order and repair;
- d. To store equipment, supplies, and material at the site only upon approval by the City of Pawtucket, and at his own risk;
- e. To perform all work so as to cause the least inconvenience to the City of Pawtucket, and with proper consideration for the rights of other contractors and workmen;
- f. To acquaint themselves with conditions to be found at the site, and to assume responsibility for the appropriate dispatching of equipment and supervision of his employees during the conduct of the work;
- g. To ensure that his employees are instructed with respect to special regulations, policies, and procedures in effect for any City of Pawtucket facility or site, and that

they comply with such rules, including but not limited to security policies or practices and/or criminal background checks for any employees and/or subcontractors;

- h. The contractor shall ensure that its employees or agents are experienced and fully qualified to engage in the activities and services required under the contract;
- i. The contractor shall ensure that at all times while services are being performed under this contract at least one of its employees or agents on the premises has a good command of the English language and can effectively communicate with the City of Pawtucket and its staff;
- j. The contractor and contractor's employees or agents shall comply with all applicable licensing and operating requirements required by federal or state law and shall meet accreditation and other generally accepted standards of quality in the applicable field of activity;
- k. The contractor shall secure and retain all employee-related insurance coverage for its employees and agents as required by law; and
- l. The contractor, subcontractor, and his or her employees and agents shall not disclose any confidential information of the City of Pawtucket to a third party. Confidential information means:

(1) any information of a sensitive or proprietary nature, whether or not specially identified as confidential or proprietary; or

(2) any information about the City of Pawtucket gained during the performance of a contract that is not already lawfully in the public domain.

36. **FORCE MAJEURE**

All orders shall be filled by the contractor with reasonable promptness, but the contractor shall not be held responsible for any losses resulting if the fulfillment of the terms of the contract shall be delayed or prevented by wars, acts of public enemies, strikes, fires, floods, acts of God, or for any other acts not within the control of the contractor and which by the exercise of reasonable diligence, the contractor is unable to prevent.

## Appendix C

### General Wage Rate Decision Davis Bacon

The current wage determination (Heavy Construction, Providence County), as obtained from the Rhode Island Department of Labor and Training on today's date, is bound as part of this Project Manual.

"General Decision Number: RI20230001 09/01/2023

Superseded General Decision Number: RI20220001

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: Contracts subject to the Davis-Bacon Act are generally required to pay at least the applicable minimum wage rate required under Executive Order 14026 or Executive Order 13658. Please note that these Executive Orders apply to covered contracts entered into by the federal government that are subject to the Davis-Bacon Act itself, but do not apply to contracts subject only to the Davis-Bacon Related Acts, including those set forth at 29 CFR 5.1(a)(2)-(60).

If the contract is entered into on or after January 30, 2022, or the contract is renewed or extended (e.g., an option is exercised) on or after January 30, 2022:	Executive Order 14026 generally applies to the contract.	The contractor must pay all covered workers at least \$16.20 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 2023.
If the contract was awarded on or between January 1, 2015 and	Executive Order 13658 generally applies to the	

January 29, 2022, and the contract. The contractor must pay all  
 contract is not renewed or . The contractor must pay all  
 extended on or after January covered workers at least  
 30, 2022: \$12.15 per hour (or the  
 applicable wage rate listed  
 on this wage determination,  
 if it is higher) for all  
 hours spent performing on  
 that contract in 2023.

The applicable Executive Order minimum wage rate will be  
 adjusted annually. If this contract is covered by one of the  
 Executive Orders and a classification considered necessary for  
 performance of work on the contract does not appear on this  
 wage determination, the contractor must still submit a  
 conformance request.

Additional information on contractor requirements and worker  
 protections under the Executive Orders is available at  
<http://www.dol.gov/whd/govcontracts>.

Modification Number	Publication Date
0	01/06/2023
1	01/13/2023
2	02/03/2023
3	03/17/2023
4	04/14/2023
5	05/12/2023
6	06/02/2023
7	06/16/2023
8	06/30/2023
9	08/25/2023
10	09/01/2023

ASBE0006-006 06/01/2023

Rates	Fringes
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#### 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).....\$ 39.80 26.05

ASBE0006-008 09/01/2021

Rates	Fringes
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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

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BRR0003-001 06/01/2022

	Rates	Fringes
Bricklayer, Stonemason, Pointer, Caulker & Cleaner.....	\$ 46.86	29.14

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BRR0003-002 09/01/2022

	Rates	Fringes
Marble Setter, Terrazzo Worker & Tile Setter.....	\$ 46.54	30.34

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BRR0003-003 09/01/2022

	Rates	Fringes
Marble, Tile & Terrazzo Finisher.....	\$ 38.78	29.61

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CARP0330-001 06/05/2023

	Rates	Fringes
CARPENTER (Includes Soft Floor Layer).....	\$ 42.78	30.00
Diver Tender.....	\$ 43.78	30.00
DIVER.....	\$ 55.93	30.00
Piledriver.....	\$ 41.53	29.35
WELDER.....	\$ 43.78	30.00

#### 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.

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CARP1121-002 01/02/2023

	Rates	Fringes
MILLWRIGHT.....	\$ 41.54	30.73

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ELEC0099-002 06/01/2023

	Rates	Fringes
ELECTRICIAN.....	\$ 48.61	50.44%
Teledata System Installer.....	\$ 36.46	11.59%+15.31

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.

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ELEV0039-001 01/01/2023

	Rates	Fringes
ELEVATOR MECHANIC.....	\$ 59.36	37.335+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 or 6% basic hourly rate for 6 months to 5 years of service as vacation pay credit.

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	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.....	\$ 45.55	29.45
GROUP 2.....	\$ 43.55	29.45
GROUP 3.....	\$ 39.17	29.45
GROUP 4.....	\$ 36.32	29.45
GROUP 5.....	\$ 42.60	29.45
GROUP 6.....	\$ 33.40	29.45
GROUP 7.....	\$ 27.40	29.45
GROUP 8.....	\$ 39.25	29.45
GROUP 9.....	\$ 43.17	29.45

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, econobile 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.

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ENGI0057-002 05/01/2023

	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.....	\$ 40.70	29.25
GROUP 2.....	\$ 33.40	29.25
GROUP 3.....	\$ 20.00	29.25
GROUP 4.....	\$ 33.98	29.25
GROUP 5.....	\$ 37.68	29.25
GROUP 6.....	\$ 37.68	29.25
GROUP 7.....	\$ 32.95	29.25
GROUP 8.....	\$ 32.33	29.25
GROUP 9.....	\$ 34.28	29.25

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 06/01/2023

## BUILDING CONSTRUCTION

	Rates	Fringes
Power Equipment Operator		
GROUP 1.....	\$ 44.82	29.90
GROUP 2.....	\$ 42.82	29.90
GROUP 3.....	\$ 42.60	29.90
GROUP 4.....	\$ 38.60	29.90
GROUP 5.....	\$ 35.75	29.90
GROUP 6.....	\$ 41.90	29.90
GROUP 7.....	\$ 41.47	29.90
GROUP 8.....	\$ 38.79	29.90

### 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 03/16/2023

	Rates	Fringes
IRONWORKER.....	\$ 39.50	32.08

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LABO0271-001 11/27/2022

## BUILDING CONSTRUCTION

	Rates	Fringes
LABORER		
GROUP 1.....	\$ 35.50	26.85
GROUP 2.....	\$ 35.75	26.85
GROUP 3.....	\$ 36.25	26.85
GROUP 4.....	\$ 36.50	26.85
GROUP 5.....	\$ 37.50	26.85
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

#### 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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LABO0271-002 11/27/2022

#### HEAVY AND HIGHWAY CONSTRUCTION

	Rates	Fringes
LABORER		
COMPRESSED AIR		
Group 1.....	\$ 55.40	24.15
Group 2.....	\$ 52.93	24.15
Group 3.....	\$ 42.45	24.15
FREE AIR		
Group 1.....	\$ 44.05	24.15
Free Air		
Group 1.....	\$ 46.00	24.15
FREE AIR		

Group 2.....	\$ 43.05	24.15
Free Air		
Group 2.....	\$ 45.00	24.15
FREE AIR		
Group 3.....	\$ 40.50	24.15
Free Air		
Group 3.....	\$ 42.45	24.15
LABORER		
Group 1.....	\$ 35.50	24.85
Group 2.....	\$ 35.75	24.85
Group 3.....	\$ 36.50	24.85
Group 4.....	\$ 29.00	24.85
Group 5.....	\$ 37.50	24.85
OPEN AIR CAISSON, UNDERPINNING WORK AND BORING CREW		
Bottom Man.....	\$ 41.50	24.15
Top Man & Laborer.....	\$ 35.60	24.15
TEST BORING		
Driller.....	\$ 41.95	24.15
Laborer.....	\$ 41.95	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

## 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 06/01/2023

	Rates	Fringes
PAINTER		
Brush and Roller.....	\$ 37.62	22.85
Epoxy, Tanks, Towers, Swing Stage & Structural Steel.....	\$ 39.62	22.85
Spray, Sand & Water Blasting.....	\$ 40.62	22.85
Taper.....	\$ 38.37	22.85
Wall Coverer.....	\$ 38.12	22.85

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PAIN0011-006 06/01/2022

	Rates	Fringes
GLAZIER.....	\$ 40.78	23.40

### FOOTNOTES:

SWING STAGE: \$1.00 per hour additional.

PAID HOLIDAYS: Labor Day & Christmas Day.

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PAIN0011-011 06/01/2023

	Rates	Fringes
Painter (Bridge Work).....	\$ 56.25	23.45

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PAIN0035-008 06/01/2011

Rates	Fringes
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Sign Painter.....	\$ 24.79	13.72
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PLAS0040-001 06/05/2023

BUILDING CONSTRUCTION

	Rates	Fringes
CEMENT MASON/CONCRETE FINISHER...	\$ 42.77	29.63

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.

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PLAS0040-002 07/01/2023

HEAVY AND HIGHWAY CONSTRUCTION

	Rates	Fringes
CEMENT MASON/CONCRETE FINISHER...	\$ 37.45	24.85

-----  
PLAS0040-003 06/05/2023

	Rates	Fringes
PLASTERER.....	\$ 42.77	29.63

-----  
\* PLUM0051-002 08/28/2023

	Rates	Fringes
Plumbers and Pipefitters.....	\$ 50.59	32.75

-----  
ROOF0033-004 08/01/2023

	Rates	Fringes
ROOFER.....	\$ 50.03	33.69

-----  
SFRI0669-001 04/01/2023

	Rates	Fringes
SPRINKLER FITTER.....	\$ 47.55	32.27

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

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

-----  
TEAM0251-001 05/01/2023

## HEAVY AND HIGHWAY CONSTRUCTION

	Rates	Fringes
TRUCK DRIVER		
GROUP 1.....	\$ 29.71	34.602+A+B
GROUP 2.....	\$ 29.86	34.602+A+B
GROUP 3.....	\$ 29.91	34.602+A+B
GROUP 4.....	\$ 29.96	34.602+A+B
GROUP 5.....	\$ 30.06	34.602+A+B
GROUP 6.....	\$ 30.46	34.602+A+B
GROUP 7.....	\$ 30.66	34.602+A+B
GROUP 8.....	\$ 30.16	34.602+A+B
GROUP 9.....	\$ 30.41	34.602+A+B
GROUP 10.....	\$ 30.21	34.602+A+B

### 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 <https://www.dol.gov/agencies/whd/government-contracts>.

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 National Office because National Office has 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.

***“END OF GENERAL DECISION”***



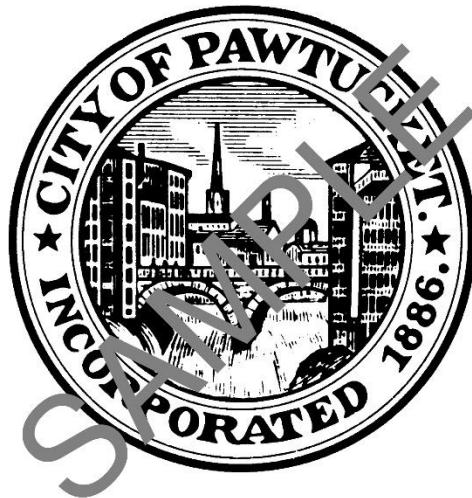
## **Appendix D**

### **City of Pawtucket Standard Form of Agreement (Sample)**



**CONTRACT AGREEMENT  
FOR:**

**PROJECT\_TITLE**



**PAWTUCKET, RHODE ISLAND**

PURCHASING DIVISION  
137 ROOSEVELT AVE.  
PAWTUCKET, RHODE ISLAND

MM/DD/YYYY

## **CONTRACT AGREEMENT**

### **PROJECT\_TITLE**

Pawtucket, Rhode Island

#### **1. AGREEMENT FOR SERVICES**

This Agreement for Services (hereinafter the "Agreement" or "Contract") made this ##th day of ####, 2015 between the City of Pawtucket, a municipal corporation of the State of Rhode Island, with a business address of 137 Roosevelt Avenue, Pawtucket, Rhode Island (hereinafter the "City") and VENDOR, a company authorized to do business in the State of Rhode Island, with a business address of ##### (hereinafter the "Consultant").

#### **2. SCOPE OF CONSULTANT SERVICES**

This is a contract to provide the City with consulting services as specified herein and as set forth in the following Exhibits, all of which are attached hereto and incorporated into this Agreement by reference herein:

- Exhibit 1 – RFP #####;
- Exhibit 2 – Rhode Island Department of Labor and Training Municipal Contract Addendum;

and all addenda issued and any resulting negotiations, and the RFP response received by the City from the Consultant.

#### **3. COMPENSATION FOR SERVICES**

The City shall pay the Consultant in the following sums for work performed under this Agreement after the effective date as set out below:

\$:#####

The payment and performance of any obligations under this contract for years beyond the first fiscal year are subject to the availability of funds. Payment will not be made until services have been fully performed and accepted, and upon a properly submitted invoice. All invoices must clearly display the purchase order number.

#### **4. RHODE ISLAND LAW AND FORUM**

(a) This Agreement shall be construed according to the law of the State of Rhode Island.

(b) Any litigation between the City and the Consultant arising under this Agreement or out of work performed under this Agreement shall occur, if in the state courts, in the Providence County Superior Court, and in the federal courts, in the United States District Court for the District of Rhode Island.

#### **5. NOTICE**

Any notice provided for under this Agreement shall be sufficient if in writing and delivered personally to the following addressee or deposited in the United States mail, postage prepaid, certified mail, return receipt requested, addressed as follows, or to such other address as the receiving party hereafter shall specify in writing:

If to the City:

Andrew Silvia, PE, Chief of Project Development  
250 Armistice Boulevard  
Pawtucket, RI 02860

If to the Consultant:

#####

**6. COMPLIANCE WITH LAWS**

Consultant shall materially comply with any and all Federal, state and local laws and regulations now in force and which may hereafter during the term of this contract, be enacted and become effected which are applicable, as well as obtaining any and all required permits and licenses.

**7. TIMEFRAME TO COMPLETE**

The Consultant shall complete the consulting services located in the City of Pawtucket, Rhode Island no later than #####.

**8. WAIVERS**

No waiver of any breach or any one or more of the conditions or covenants of this Contract by City or Consultant shall be deemed to imply or to constitute a waiver of any prior or succeeding breach; and the failure of City or Consultant to insist upon the strict performance of the terms, covenants, agreements and conditions herein contained or any one of them shall not constitute or be construed as a waiver or relinquishment of City's or Consultant's right to thereafter enforce any such default, or any term, covenants, agreement or condition.

**CONSULTANT (VENDOR)**

\_\_\_\_\_  
WITNESS

Subscribed and sworn to before me in the \_\_\_\_\_  
on this \_\_\_\_\_ day of \_\_\_\_\_, 2015.

\_\_\_\_\_  
NOTARY PUBLIC  
My Commission Expires:

**CITY OF PAWTUCKET**

\_\_\_\_\_  
WITNESS

Subscribed and sworn to before me in the \_\_\_\_\_  
on this \_\_\_\_\_ day of \_\_\_\_\_, 2015.

\_\_\_\_\_  
NOTARY PUBLIC  
My Commission Expires:

**EXHIBIT 1:**

**RFP #####**

**SAMPLE**

**EXHIBIT 2:**

**RHODE ISLAND DLT MUNICIPAL CONTRACT ADDENDUM**

SAMPLE

**MUNICIPAL CONTRACT ADDENDUM**  
**RHODE ISLAND DEPARTMENT OF LABOR AND TRAINING**  
**PREVAILING WAGE REQUIREMENTS**  
**(37-13-1 ET SEQ.)**

The prevailing wage requirements are generally set forth in RIGL 37-13-1 et seq. These requirements refer to the prevailing rate of pay for regular, holiday, and overtime wages to be paid to each craftsmen, mechanic, teamster, laborer, or other type of worker performing work on public works projects when state or municipal funds exceed one thousand dollars (\$1,000).

All Prevailing Wage Contractors and Subcontractors are required to:

1. Submit to the Awarding Authority a list of the contractor's subcontractors for any part or all of the prevailing wage work in accordance with RIGL § 37-13-4;
2. Pay all prevailing wage employees at least once per week and in accordance with RIGL §37-13-7 (see Appendix B attached);
3. Post the prevailing wage rate scale and the Department of Labor and Training's prevailing wage poster in a prominent and easily accessible place on the work site in accordance with RIGL §37-13-11; posters may be downloaded at [www.dlt.ri.gov/pw/Posters.htm](http://www.dlt.ri.gov/pw/Posters.htm), poster/htm or obtained from the Department of Labor and Training, Center General Complex, 1511 Pontiac Avenue, Cranston, Rhode Island;
4. Access the Department of Labor and Training website, at [www.dlt.ri.gov](http://www.dlt.ri.gov) on or before July 1<sup>st</sup> of each year, until such time as the contract is completed, to ascertain the current prevailing wage rates and the amount of payment or contributions for each covered prevailing wage employee and make any necessary adjustments to the covered employee's prevailing wage rates effective July 1<sup>st</sup> of each year in compliance with RIGL §37-13-8;
5. Attach a copy of this CONTRACT ADDENDUM and its attachments as a binding obligation to any and all contracts between the contractor and any subcontractors and their assignees for prevailing wage work performed pursuant to this contract;
6. Provide for the payment of overtime for prevailing wage employees who work in excess of eight (8) hours in any one day or forty (40) hours in any one week as provided by RIGL §37-13-10;

7. Maintain accurate prevailing wage employee payroll records on a Rhode Island Certified Weekly Payroll form available for download at [www.dlt.ri.gov/pw.forms/htm](http://www.dlt.ri.gov/pw.forms/htm), as required by RIGL §37-13-13, and make those records available to the Department of Labor and Training upon request;
8. Furnish the fully executed RI Certified Weekly Payroll Form to the awarding authority on a monthly basis for all work completed in the preceding month.
9. For general or primary contracts one million dollars (\$1,000,000) or more, shall maintain on the work site a fully executed RI Certified Prevailing Wage Daily Log listing the contractor's employees employed each day on the public works site; the RI Certified Prevailing Wage Daily Log shall be available for inspection on the public works site at all times; this rule shall not apply to road, highway, or bridge public works projects. Where applicable, furnish both the Rhode Island Certified Prevailing Wage Daily Log together with the Rhode Island Weekly Certified Payroll to the awarding authority.
10. Assure that all covered prevailing wage employees on construction projects with a total project cost of one hundred thousand dollars (\$100,000) or more has a OSHA ten (10) hour construction safety certification in compliance with RIGL § 37-23-1;
11. Assure that all prevailing wage employees who perform work which requires a Rhode Island trade license possess the appropriate Rhode Island trade license in compliance with Rhode Island laws and
12. Comply with all applicable provisions of RIGL §37-13-1, et. seq;

Any questions or concerns regarding this CONTRACT ADDENDUM should be addressed to the contractor or subcontractor's attorney. Additional Prevailing Wage information may be obtained from the Department of Labor and Training at [www.dlt.ri.gov/pw](http://www.dlt.ri.gov/pw).

### **CERTIFICATION**

I hereby certify that I have reviewed this CONTRACT ADDENDUM and understand my obligations as stated above.

By: \_\_\_\_\_

Title: \_\_\_\_\_

Subscribed and sworn before me this \_\_\_\_ day of \_\_\_\_\_, 20\_\_.

\_\_\_\_\_  
Notary Public

My commission expires: \_\_\_\_\_

SAMPLE



## **Appendix E**

### **Rhode Island General Laws Title 37**

# Title 37

## Public Property and Works

### Chapter 13

#### Labor and Payment of Debts by Contractors

R.I. Gen. Laws § 37-13-5

#### **§ 37-13-5. Payment for trucking or materials furnished — Withholding of sums due.**

A contractor or subcontractor on public works authorized by a proper authority shall pay any obligation or charge for trucking and material which have been furnished for the use of the contractor or subcontractor, in connection with the public works being performed by him or her, within ninety (90) days after the obligation or charge is incurred or the trucking service has been performed or the material has been delivered to the site of the work, whichever is later. When it is brought to the notice of the proper authority in a city or town, or the proper authority in the state having supervision of the contract, that the obligation or charge has not been paid by the contractor or subcontractor, the proper authority may deduct and hold for a period not exceeding sixty (60) days, from sums of money due to the contractor or subcontractor, the equivalent amount of such sums certified by a trucker or materialman creditor as due him or her, as provided in this section, and which the proper authority determines is reasonable for trucking performed or materials furnished for the public works.

History of Section.

P.L. 1936, ch. 2361, §§ 2, 3; G.L. 1938, ch. 290, §§ 2, 3; G.L. 1938, ch. 290, § 4; P.L. 1955, ch. 3580, § 1; G.L. 1956, § 37-13-5; P.L. 1965, ch. 77, § 1.

# **Title 37**

## **Public Property and Works**

### **Chapter 13**

#### **Labor and Payment of Debts by Contractors**

R.I. Gen. Laws § 37-13-7

#### **§ 37-13-7. Specification in contract of amount and frequency of payment of wages.**

(a) Every call for bids for every contract in excess of one thousand dollars (\$1,000), to which the state of Rhode Island or any political subdivision thereof or any public agency or quasi-public agency is a party, for the transportation of public and private school pupils pursuant to §§ 16-21-1 and 16-21.1-8, or for construction, alteration, and/or repair, including painting and decorating, of public buildings or public works of the state of Rhode Island or any political subdivision thereof, or any public agency or quasi-public agency and that requires or involves the employment of employees, shall contain a provision stating the minimum wages to be paid various types of employees which shall be based upon the wages that will be determined by the director of labor and training to be prevailing for the corresponding types of employees employed on projects of a character similar to the contract work in the city, town, village, or other appropriate political subdivision of the state of Rhode Island in which the work is to be performed. Every contract shall contain a stipulation that the contractor or his or her subcontractor shall pay all the employees employed directly upon the site of the work, unconditionally and not less often than once a week, and without subsequent deduction or rebate on any account, the full amounts accrued at time of payment computed at wage rates not less than those stated in the call for bids, regardless of any contractual relationships that may be alleged to exist between the contractor or subcontractor and the employees, and that the scale of wages to be paid shall be posted by the contractor in a prominent and easily accessible place at the site of the work; and the further stipulation that there may be withheld from the contractor so much of the accrued payments as may be considered necessary to pay to the employees employed by the contractor, or any subcontractor on the work, the difference between the rates of wages required by the contract to be paid the employees on the work and the rates of wages received by the employees and not refunded to the contractor, subcontractors, or their agents.

(b) The terms “wages,” “scale of wages,” “wage rates,” “minimum wages,” and “prevailing wages” shall include:

(1) The basic hourly rate of pay; and

(2) The amount of:

(i) The rate of contribution made by a contractor or subcontractor to a trustee or to a third person pursuant to a fund, plan, or program; and

(ii) The rate of costs to the contractor, subcontractor, vendor, or provider that may be reasonably anticipated in providing benefits to employees pursuant to an enforceable commitment to carry out a financially responsible plan or program that was communicated in writing to the employees affected, for medical or hospital care, pensions on retirement or death, compensation for injuries or illness resulting from occupational activity, or insurance to provide any of the foregoing, for unemployment benefits, life insurance, disability and sickness insurance, or accident insurance, for vacation and holiday pay, for defraying costs of apprenticeship or other similar programs, or for other bona fide fringe benefits, but only where the contractor or subcontractor is not required by other federal, state, or local law to provide any of the benefits; provided, that the obligation of a

contractor or subcontractor to make payment in accordance with the prevailing wage determinations of the director of labor and training insofar as this chapter of this title and other acts incorporating this chapter of this title by reference are concerned may be discharged by the making of payments in cash, by the making of contributions of a type referred to in subsection (b)(2), or by the assumption of an enforceable commitment to bear the costs of a plan or program of a type referred to in this subdivision, or any combination thereof, where the aggregate of any payments, contributions, and costs is not less than the rate of pay described in subsection (b)(1) plus the amount referred to in subsection (b)(2).

(c) The term “employees,” as used in this section, shall include:

(1) Employees of contractors or subcontractors performing jobs on various types of public works including mechanics, apprentices, teamsters, chauffeurs, and laborers engaged in the transportation of gravel or fill to the site of public works, the removal and/or delivery of gravel or fill or ready-mix concrete, sand, bituminous stone, or asphalt flowable fill from the site of public works, or the transportation or removal of gravel or fill from one location to another on the site of public works, and the employment of the employees shall be subject to the provisions of subsections (a) and (b); and

(2) Persons employed by a provider contracted for the purpose of transporting public and private school pupils pursuant to §§ 16-21-1 and 16-21.1-8 shall be subject to the provisions of subsections (a) and (b) of this section. For the purposes of this subsection the term employee includes school bus drivers, aides, and monitors who are directly providing transportation services; the term employee does not include mechanics, dispatchers, or other personnel employed by the vendor whose duties are normally performed at a fixed location.

(d) The terms “public agency” and “quasi-public agency” shall include, but not be limited to: the Rhode Island industrial recreational building authority, the Rhode Island commerce corporation, the Rhode Island airport corporation, the Rhode Island industrial facilities corporation, the Rhode Island refunding bond authority, the Rhode Island housing and mortgage finance corporation, the Rhode Island resource recovery corporation, the Rhode Island public transit authority, the Rhode Island student loan authority, the water resources board corporate, the Rhode Island health and education building corporation, the Rhode Island turnpike and bridge authority, the Narragansett Bay water quality management district commission, the Rhode Island telecommunications authority, the convention center authority, the council on postsecondary education, the council on elementary and secondary education, the capital center commission, the housing resources commission, the Quonset Point-Davisville management corporation, the Rhode Island children’s crusade for higher education, the Rhode Island depositors economic protection corporation, the Rhode Island lottery commission, the Rhode Island partnership for science and technology, the Rhode Island public building authority, and the Rhode Island underground storage tank board.

History of Section.

P.L. 1974, ch. 237, § 3; P.L. 1976, ch. 193, § 1; P.L. 1999, ch. 75, § 1; P.L. 2001, ch. 321, § 1; P.L. 2015, ch. 141, art. 7, § 16; P.L. 2021, ch. 292, § 3, effective July 9, 2021; P.L. 2021, ch. 293, § 3, effective July 9, 2021.

# Appendix F

## Project Permits





**RHODE ISLAND DEPARTMENT OF ENVIRONMENTAL MANAGEMENT**  
**OFFICE OF WATER RESOURCES**

235 Promenade Street  
Providence, Rhode Island 02908

July 12, 2023

City of Pawtucket  
Chris Crawley, DPW Director  
250 Armistice Boulevard  
Pawtucket, RI 02860

**Freshwater Wetlands Permit**

Re: Application No. **23-0034** for the property and project located:

Approximately 100 feet south of Exchange Street and approximately 140-feet southeast of Exchange Street and its intersection with Roosevelt Avenue, Assessor's Plat 43A, Lot 485, and off-site within the Grant of Easement on portions of at least Plat 43A, Lot 566 as depicted as Project Area 2 on the site plans, in Pawtucket, RI.

Dear Mr. Crawley:

Kindly be advised that the Department of Environmental Management's ("DEM") Freshwater Wetlands Program ("Program") has completed its review of your **Application for a Freshwater Wetlands Permit** as described in Rule 3.11 of the Rules and Regulations Governing the Administration and Enforcement of the Fresh Water Wetlands Act, 250-RICR-150-15-3 ("Rules"). This review included a site inspection of the above referenced property ("subject property") and an evaluation of the proposed construction of new shared use paths, drainage, widening of existing ramps, installation of new lighting, modifications to existing hardscapes and construction of new hardscapes, demolition of existing bus shelter, and reconstruction/relocation of two catch basins, with clearing, grading, landscaping and associated site alterations as illustrated and detailed on site plans submitted with your application. These site plans were received by the DEM on February 10, 2023.

Our observations of the subject property, review of the site plans and evaluation of the proposed project reveals that alterations of jurisdictional areas are proposed. However, pursuant to Rule 3.7 of the Rules, this project meets all Standards, and a **Freshwater Wetlands Permit** may be issued under the following terms and conditions:

Terms and Conditions for Wetlands Application No. **23-0034**:

1. This letter is the DEM's permit for this project under the R.I. Fresh Water Wetlands Act, R.I. Gen. Laws § 2-1-18 et seq.
2. This permit is specifically limited to the project, site alterations and limits of disturbance as detailed on the site plans submitted with your application and received by the DEM on February 10, 2023. A copy of the site plans stamped approved by the DEM is enclosed. Changes or revisions to the project that would alter jurisdictional areas are not authorized without a permit from the DEM.

Application No. 23-0034

Page 2

3. Where the terms and conditions of the permit conflict with the approved site plans, these terms and conditions shall be deemed to supersede the site plans.
4. You must notify this Program in writing of the anticipated start date, and of your contractor's contact information, by submitting the Notice of Start of Construction Form prior to commencement of any permitted site alterations or construction activity. You must also notify this Program in writing upon completion of the project. The Start of Construction Form can be found on the webpage: [dem.ri.gov/stormwaterconstruction](http://dem.ri.gov/stormwaterconstruction).
5. A copy of the stamped approved site plans and a copy of this permit must be kept at the site at all times during site preparation, construction, and final stabilization. Copies of this permit and the stamped approved plans must be made available for review by any DEM or city representative upon request.
6. Within ten (10) days of the receipt of this permit, you must record this permit in the land evidence records of the City of Pawtucket and supply this Program with written documentation obtained from the City showing this permit was recorded.
7. The effective date of this permit is the date this letter was issued. This permit expires five (5) years from the date of this letter unless renewed pursuant to the Rules.
8. Any material utilized in this project must be clean and free of matter that could pollute any jurisdictional area.
9. Prior to commencement of site alterations, you shall erect or post a sign resistant to the weather and at least twelve (12) inches wide and eighteen (18) inches long, which boldly identifies the initials "DEM" and the application number of this permit. This sign must be maintained at the site in a conspicuous location until such time that the project is complete.
10. Temporary erosion and sediment controls detailed or described on the approved site plans shall be properly installed at the site prior to or commensurate with site alterations. Such controls shall be properly maintained, replaced, supplemented, or modified as necessary throughout the life of this project to minimize soil erosion and to prevent sediment from being deposited in any freshwater wetland, buffer, floodplain, area subject to storm flowage, or area subject to flooding or other jurisdictional areas not subject to disturbance under this permit.
11. Upon permanent stabilization of all disturbed soils, temporary erosion and/or sediment controls must be removed.
12. You are responsible for the proper installation, operation, maintenance and stability of any mitigative features, stormwater treatment facilities, and systems of treatment and control that are installed or used in compliance with this permit to prevent harm to adjacent freshwater wetland, buffer or floodplain, area subject to storm flowage, or area subject to flooding or other jurisdictional areas until documentation is provided that this responsibility has been assigned to another entity. The long-term operation and maintenance plan shall be strictly followed. The long-term O & M Plan shall be that entitled "Appendix C – Stormwater System Operation and Maintenance Plan: Pawtucket, RI-Blackstone River Bikeway Contract 1: Area 1 and Area 2 – February 2023" submitted in February 2023 by BETA Group located at 701 George Washington Highway in Lincoln, Rhode Island 02865.
13. You are obligated to install, utilize, follow and maintain all best management practices detailed or described on the approved site plans in the construction of the project to minimize or prevent adverse



Application No. 23-0034  
Page 3

- impacts to any adjacent freshwater wetland, buffer or floodplain or other jurisdictional areas and the functions and values provided by such freshwater wetlands, buffers or floodplain.
14. Artificial lighting must be directed away from all vegetated wetland, the river and buffer areas. Where this is not possible, the use of deflectors to concentrate lighting away from vegetated wetlands, river and buffer must be employed.
  15. You must provide written certification from a registered land surveyor or registered professional engineer that the stormwater drainage system including any and all basins, piping systems, catch basins, culverts, swales and any other stormwater management control features have been constructed/installed in accordance with the site plans approved by this permit. This written certification must be submitted to this Program within twenty (20) days of its request or upon completion of the project.
  16. All work within Project Area 2 on property owned by others is to occur only within the Grant of Easement dated March 24, 2021 and as described in the easement document provided to this Program.

You are required to comply with the terms and conditions of this permit and to carry out this project in compliance with the Rules at all times. Failure to do so may result in an enforcement action by this Department.

In permitting the proposed alterations, the DEM assumes no responsibility for damages resulting from faulty design or construction.

Kindly be advised that this permit is not equivalent to a verification of the type or extent of freshwater wetlands or jurisdictional areas on site. Should you wish to have the types and extent of freshwater wetlands verified, you may submit the appropriate application in accordance with 250-RICR-150-15-3.9.3.

This permit does not remove your obligation to obtain any local, state, or federal approvals or permits required by ordinance or law and does not relieve you from any duties owed to adjacent landowners with specific reference to any changes in drainage.

Please contact Sam Dufresne of this office (telephone: 401-222-6820, ext. 2777275) should you have any questions regarding this letter.

Sincerely,



Nancy L. Freeman, Environmental Scientist III  
Office of Water Resources  
Freshwater Wetlands Program

NLF/SGD/sgd

Enclosure: Approved site plans

cc: Nicole B. Iannuzzi, PE, Vice President, BETA Group, Inc.  
Wm. Eric Breitreutz, Superintendent, Blackstone River Valley National Historical Park, Roger  
Williams National Memorial

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## **Appendix G**

### **Transportation Management Plan**





**LEVEL 3  
TRANSPORTATION  
MANAGEMENT  
PLAN**

Project Name: **Blackstone River Bikeway Segment 3A-1 Contract 1**

RI Design Contract No(s):

RI Construction Contract No(s):

PTSID #

Submission: **ADV**

Date: **9/25/2023**

**PROJECT INFORMATION**

**Brief Project Description:** The project area is within the City of Pawtucket's right-of-way associated with the intersection of Roosevelt Avenue and Exchange Street. The work is being proposed within the existing Veterans Memorial park area, and it includes regrading, landscaping, and construction of shared use pathway. Additionally, the pedestrian ramps at the northwest, southwest, and southeast corners of the intersection will be reconstructed to meet ADA requirements, and segments of sidewalk along the northbound side of Roosevelt Avenue will be reconstructed to include a shared use pathway.

**General Work Limits:** Northbound sidewalk along Roosevelt Avenue from intersection with Main Street northward to Exchange Street, within Pawtucket Veterans Memorial Park, ramps and crosswalks at the intersection of Roosevelt Avenue at Exchange Street

**WORK ZONE LOCATIONS**

ROADWAY NAME or INTERSECTION	FROM	TO	APPROX. LENGTH
<b>Roosevelt Avenue</b>	Main Street	Exchange Street	0.22 mi

**General Project Schedule\*:**

\*The information in this section is not intended to and shall not supersede the approved schedule and milestone/completion dates for the project.

**TRAFFIC-RELATED WORK RESTRICTIONS**

**General Restrictions:** See Attachment "A" - General Restrictions

Note: Traffic control set ups/break downs shall not be allowed during the restricted time periods.

**Holiday Restrictions:** New Year's Day (if on weekend, the State celebrates on the Monday after) -- No lane closures on 13:00 New Year's Eve Day through 0:00 day after New Year's (or the Monday if on a weekend)

Martin Luther King Day - No lane closures on the Holiday.

Presidents Day - No lane closures on the Holiday.

Easter Day - No lane closures on the Holiday.

Memorial Day - No lane closures from 13:00 Friday Before to 00:00 Tuesday after the Holiday.

Juneteenth National Freedom Day - No lane closures on the Holiday (if the Holiday falls on the weekend the holiday is recognized on the Monday following the Holiday.)

Independence Day - No lane closures from 13:00 day before until 00:00 the day after the holiday.

Victory Day - No lane closures on the Holiday.

Labor Day - No lane closures from 13:00 day before until 00:00 the day after the holiday

Columbus Day - No lane closures on the holiday.

Veteran's Day - No lane closures on the holiday.

Election Day (If its an Observed RI State Holiday) - No lane closures on the holiday.













































Thanksgiving Day - No lane closures shall be performed by the contractor on Wednesday through Sunday of Thanksgiving Week. Work can resume at 00:00 on Monday after the Holiday weekend.

Christmas Day (if on weekend, the Holiday is recognized the Monday after) - No lane closures from 13:00 on Christmas Eve through 0:00 day after Christmas



## TEMPORARY TRAFFIC CONTROL PLANS

*These RIDOT- and/or Designer-Developed TTC Plans will be used during the work on this project*

RIDOT TYPICAL TTC PLANS		Included in:		DESIGNER-DEVELOPED TTC PLANS		Included in:	
		TMP	Plan Set			TMP	Plan Set
	Mobile Operation			Typical Lane Closure for Work at Intersection Corner			X
	Work Beyond the Shoulder			Typical Short-Term Lane Closure			X
	Shoulder Closure - Two Lane Road			Pedestrian Detours			X
	Shoulder Closure - Limited Access			Pedestrian Bypass			X
	1-Side Lane Shift - Two Lane Road						
	2-Side Lane Shift - Two Lane Road						
	Lane Shift - Limited Access						
	Lane Closure - Two Lane Road						
	Lane Closure - Four Lane Road						
	Lane Closure - Limited Access						
	Double Lane Closure - Limited Access						

PUBLIC INFORMATION PLAN

*These strategies will be used to provide information concerning the project to road users and the community*

SELECTED STRATEGIES	RESPONSIBILITIES / REQUIREMENTS / SPECIAL CONSIDERATIONS
<b>RIDOT travel advisories news releases</b>	RIDOT TMP Imp. Mngr. to send RIDOT notification form to Communications min. 48 hrs. in advance of restrictions.
<b>RIDOT travel advisories web site</b>	RIDOT TMP Imp. Mngr. to send RIDOT notification form to Communications min. 48 hrs. in advance of restrictions.
<b>RIDOT 511 traveler information system</b>	RIDOT TMP Imp. Mngr. to send RIDOT notification form to RIDOT TMC min. 48 hrs. in advance of restrictions.

# TRANSPORTATION OPERATIONS PLAN

*These strategies will be used to provide improved transportation operations/safety within project work zones*

[illegible]

## PERFORMANCE MONITORING, CHANGES TO TMP, & CONTINGENCIES

The Contractor's TMP Implementation Manager is responsible for keeping the portion of the project being used by public traffic in a condition that (1) safely and adequately accommodates such traffic and (2) is in accordance with the Traffic-Related Work Restrictions, the Temporary Traffic Control Plans, and where appropriate, the other transportation management strategies identified above.

The RIDOT TMP Implementation Manager or his/her responsible designee should (1) inspect the project work zones for conformance with the Temporary Traffic Control Plans, the ATSSA Quality Guidelines for Temporary Traffic Control Devices and Features, and where applicable, the other transportation management strategies identified above and (2) document all work zone-related feedback and complaints that are received from the public.

If at any time (1) a deviation from any of the strategies included in the TMP (e.g., the use of an alternate construction sequence) is desired by one or more members of the project implementation team, (2) field observations and/or data suggest that impacts to road users are or will be unacceptable, or (3) one or more performance requirements established in the TMP are not being met in the field, the RIDOT TMP Implementation Manager and/or Project Manager shall report the situation to his/her supervisor. The Project Manager will coordinate with the Design Consultant of record and present the changes to the State Traffic Safety Engineer, Administrator of Project Management, the Chief Engineer of Infrastructure, and/or other interested parties as appropriate and/or necessary to consider and determine whether revised alternate strategies should be implemented in an effort to lessen the adverse safety and mobility impacts of the project. If any changes should be implemented, the changes shall be documented in a revised version of the TMP. Any changes implemented can be removed at any time, at RIDOT's discretion, if unexpected adverse impacts to traffic occur.

If a deviation from any of the strategies included in the TMP is requested by the Contractor, the Contractor is responsible for preparing and submitting to the RIDOT TMP Implementation Manager appropriate documentation (e.g., design calculations, analysis reports, Temporary Traffic Control Plans, etc.) showing that the requested change(s) are (1) feasible and (2) expected to result in safety and mobility impacts that are no more adverse than the impacts resulting from the strategies already included in the latest approved TMP. RIDOT will review and consider the submittal(s) as described in the preceding paragraph and will determine whether the changes should be implemented. The Contractor shall prepare and submit to the RIDOT TMP Implementation Manager a revised version of the latest approved TMP in both printed and electronic (Microsoft® Excel) format that documents all of the proposed changes. Work to implement the changes shall not begin until the revised TMP is approved.

When unexpected events (e.g., crashes, inclement weather, unforeseen traffic demands, etc.) occur in a project work zone where one or more lanes are closed, the RIDOT TMP Implementation Manager or his/her responsible designee should (1) determine whether or not the lane closure(s) can/should be removed in order to improve traffic operations and/or minimize delays and (2) if deemed appropriate, take action to remove the lane closure(s).

Other

Requirements:

--

Revision #	Initials	Date	Revision #	Initials	Date	Revision #	Initials	Date

## TMP IMPLEMENTATION MANAGERS

RIDOT Construction Manager	
Name:	
Title:	
Unit:	
Office Phone:	
Mobile Phone:	
E-Mail:	

CONTRACTOR	
Name:	
Title:	
Company/Unit:	
Office Phone:	
Mobile Phone:	
E-Mail:	



**TMP****Attachment A:  
General Restrictions Chart**

LOCATION	MINIMUM NUMBER OF LANES & SHOULDERS TO REMAIN OPEN TO TRAFFIC <sup>5</sup>								
	Time of Day		Day of Week						
	From	To	Sun	Mon	Tues	Wed	Thurs	Fri	Sat
Roosevelt Avenue (February 1 <sup>st</sup> - October 15 <sup>th</sup> )	0:00	5:00	ALL	1 L	1 L	1 L	1 L	1 L	ALL
	5:00	9:00	ALL	ALL	ALL	ALL	ALL	ALL	ALL
	9:00	15:00	ALL	1 L	1 L	1 L	1 L	1 L	ALL
	15:00	21:00	ALL	ALL	ALL	ALL	ALL	ALL	ALL
	21:00	0:00	1 L	1 L	1 L	1 L	1 L	ALL	ALL
Roosevelt Avenue (October 15 <sup>th</sup> - February 1 <sup>st</sup> )	0:00	5:00	ALL	1 L	1 L	1 L	1 L	1 L	ALL
	5:00	9:00	ALL	ALL	ALL	ALL	ALL	ALL	ALL
	9:00	15:00	ALL	1 L	1 L	1 L	1 L	1 L	ALL
	15:00	21:00	ALL	ALL	ALL	ALL	ALL	ALL	ALL
	21:00	0:00	1 L	1 L	1 L	1 L	1 L	ALL	ALL
Exchange Street (October 15 <sup>th</sup> - February 1 <sup>st</sup> )	0:00	6:00	ALL	1 L	1 L	1 L	1 L	1 L	ALL
	6:00	9:00	ALL	ALL	ALL	ALL	ALL	ALL	ALL
	9:00	15:00	ALL	1 L	1 L	1 L	1 L	1 L	ALL
	15:00	22:00	ALL	ALL	ALL	ALL	ALL	ALL	ALL
	22:00	0:00	1 L	1 L	1 L	1 L	1 L	ALL	ALL
Exchange Street (February 1 <sup>st</sup> - October 15 <sup>th</sup> )	0:00	6:00	ALL	1 L	1 L	1 L	1 L	1 L	ALL
	6:00	9:00	ALL	ALL	ALL	ALL	ALL	ALL	ALL
	9:00	15:00	ALL	1 L	1 L	1 L	1 L	1 L	ALL
	15:00	21:00	ALL	ALL	ALL	ALL	ALL	ALL	ALL
	21:00	0:00	1 L	1 L	1 L	1 L	1 L	ALL	ALL

**LEGEND**

**ALL** All travel lanes and shoulders shall remain open to traffic

**1 L** A minimum of one 11-foot wide travel lane in each direction shall remain open to traffic

**NOTES**

- 1 The set-up and break-down of temporary traffic control devices within a traveled way shall be construed as a closure of that traveled way.
- 2 The provisions noted herein shall not free the Contractor from his responsibility to conduct all work in such a manner that assures the least possible obstruction to traffic.
- 3 Refer to General Provisions/Contract Specific pages for all construction activity including additional traffic control requirements and restrictions.
- 4 At locations with a sidewalk(s), a minimum of one sidewalk on one side of the roadway shall be open to pedestrian traffic at all times.
- 5 Access to and egress from all side streets, driveways, buildings, and other pedestrian pathways intersecting the Project work zones shall be maintained at all times unless otherwise noted or shown on Plans.

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## **Appendix H**

### **Technical Specifications Issued for Bid**

## **Appendix I**

### **Plans Issued for Bid**



CITY OF PAWTUCKET  
DEPARTMENT OF PLANNING AND REDEVELOPMENT



**Blackstone River Bikeway 3A-1  
Contract 1, Areas 1, 2 & 3**

CITY OF PAWTUCKET, COUNTY OF PROVIDENCE  
RHODE ISLAND

**BID # 23-040**

**APPENDIX H  
TECHNICAL SPECIFICATIONS**

**BETA Group, Inc.**  
Engineers & Landscape Architects  
701 George Washington Highway  
Lincoln, RI 02865  
(401) 333- 2382



William P. McGrath, P.E.  
BETA Group, Inc.



# APPENDIX H

## BLACKSTONE RIVER BIKEWAY SEGMENT 3A-1

### TECHNICAL SPECIFICATIONS

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**END OF T.O.C.**

## **SECTION 01010**

### **SUMMARY OF WORK**

#### **PART 1 - GENERAL**

##### **1.1 SECTION INCLUDES**

- A. Work covered by the Contract, listing of Owner, Project location, Engineer. Sequence requirements, the Contractor's use of the premises and Owner's occupancy requirements.

##### **1.2 WORK COVERED BY CONTRACT DOCUMENTS**

- A. This project involves three areas that contribute to missing links of the Blackstone River Bikeway. Area 1 allows users a connected link between Veterans Memorial Park and the existing bike path behind city hall, Area 2 removes an existing bike shelter area extend the shared use path to the south, and Area 3 offers improvements to an existing area of the shared use path between Slater Mill and City Hall. The Work includes, but is not necessarily limited to:
- Removal of existing pavement, sidewalks, and raised areas.
  - Saw-cutting & removal of site features, excess soil, concrete, & pavements.
  - Excavation and hauling of excess soil and materials from the site.
  - Installation of site protection, temporary site fencing and erosion controls.
  - Installation of sidewalk protections.
  - Construction of cast-in-place concrete retaining walls and foundations.
  - Removal, stacking and resetting of brick paver sidewalks.
  - Installation of loam, landscape plantings, grading, seeding
  - Installation of granite cut stone elements and metal railings
  - Installation of underground conduit, wiring and site lighting components
  - Installation of hot mix asphalt pavement, installation of curbing
  - Installation of cement concrete sidewalks and new wheelchair ramp
  - Installation of pedestrian crosswalk signal actuators, restoration of loop detectors, creation of street and shared use path pavement markings
  - Safety controls & signing for lane & sidewalk closures for construction operations
  - All other incidental items included in the Contract Documents; and all as more particularly indicated, shown or described in the Drawings, Specifications, and other Contract Documents.
- B. All work performed under this contract shall be as specified and as shown on the plans. Additionally, direct reference is made to and where indicated work shall be in conformance with the Rhode Island Department of Transportation Standard Specifications for Road and Bridge Construction, most-current edition and all compilations and the State and Federal Special Provisions included in the Contract Documents. Standard details for this project are Rhode Island Standard Details, 2023 edition, with all revisions.

- C. All traffic control devices and signage to be in accordance with the U.S. Department of Transportation Federal Highway Administration Manual on Uniform Traffic Control Devices (MUTCD), latest edition at time of Bid.
- D. References within the Standard Specifications to the Owner or the Engineer shall, for the purposes of this Contract, be interpreted to mean the City of Pawtucket or its designated representative.

1.3 OWNER

- A. City of Pawtucket  
137 Roosevelt Avenue  
Pawtucket, Rhode Island 02860  
Telephone: 401-728-0500 x 477  
Contact: Michael Wilcox, Project Engineer

1.4 PROJECT LOCATION

- A. Area 1 - SE Corner of Exchange St. and Roosevelt Ave – Veterans Memorial Park and amphitheater and behind City Hall, Area 2 - Sidewalk area between Slater Mill and Main Street and Roosevelt Ave intersection, Area 3 – Existing Shared use path between Slater Mill and City Hall.

1.5 ENGINEER

- A. BETA Group, Inc.  
701 George Washington Highway  
Lincoln, Rhode Island 02865  
Telephone: 401-333-2382  
Fax: 401-333-9225  
Contacts: BETA Group Inc. William McGrath PE, Project Engineer  
BETA Group Inc. Arek Galle, RLA, AICP Project Manager

1.6 WORK SEQUENCE

- A. In order that Work may be conducted with minimum inconvenience to the public operating private businesses and parking lot areas, work under this Contract shall be coordinated with daily access and site operations and may be required to conform to changing conditions. The Contractor shall coordinate with the Engineer and Owner to determine the point or points in time when portions of work will commence or be carried on. The Owner may issue orders pertaining to the work sequence, relative to the rate of progress on several portions of the work in order to best meet the property owner's needs in addition to the needs of the general public.

B. Work operations shall be by project area, sequenced in succession as follows:

1. Area 2 - Demolition of existing bus shelter.
2. Area 3 - New and repaired sidewalk areas, new signage and striping.
3. Area 2 - Curb re-alignment, drainage system adjustments, sidewalk improvements
4. Area 1 - Improvements to construct the bikeway in Veterans Memorial Park and intersection at Roosevelt Avenue/Exchange Street.

#### 1.7 CONTRACTOR USE OF PREMISES

- A. The Contractor's use of premises shall be within the limits shown on the Drawings and as defined in Appendix E The City of Pawtucket Standard Form of Agreement (Contract Agreement) for the performance of the Work. Contractor employee parking shall be in the public parking lot across from Pawtucket City Hall.
- B. The Contractor shall assume full responsibility for security of all materials and equipment on the site, including those of his subcontractor's.
- C. If directed by the Owner, the Contractor shall move any stored items that interfere with operations of the Owner and /or Property Owner.
- D. Contractor shall be allowed to use a portion of the City owned parking lot as a lay-down area, per the Drawings. Use and limits of this area shall be coordinated and approved by the City. It is the responsibility of the Contractor to maintain and protect the lay-down area.
- E. The Contractor shall obtain and pay for use of additional storage or work areas if needed to perform the Work.

#### 1.8 OWNER OCCUPANCY REQUIREMENTS

- A. Unless otherwise specifically approved, public access and use of the private parking lot shall be kept operational at all times with the exceptions of the parking spaces identified within the laydown area. All roadways within the project area must remain in service at all times throughout the duration of the project with the exception of lane and shoulder closures and / or as otherwise approved by the City. Also, access to all private businesses and properties abutting the site must be maintained at all times.

**PART 2 - PRODUCTS – NOT USED**

**PART 3 - EXECUTION – NOT USED**

**END OF SECTION**

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**SECTION 01020**

**ALLOWANCES**

**PART 1 - GENERAL**

**1.1 SUMMARY**

**A. Section Includes**

1. Contingencies and their respective value which have been established in the BID as an estimated lump sum to facilitate comparison of bids only.

**B. Related Sections**

1. Section 11 BID FORM
2. Section 01025 - Measurement and Payment

**1.2 ALLOWANCES**

**A. The following Allowances pertain to this project. Refer to the Bid Form**

1. Allowance No.1 Allowance to Remove & Dispose Unsuitable Material
2. Allowance No.2 Allowance to Remove & Dispose Boulders In Excess of 3' Dia.
3. Allowance No.3 Allowance to Remove and Dispose Concrete Footings
4. Allowance No.4 Permit Fees
5. Allowance No.5 Material Testing Service
6. Allowance No. 6 Police Detail for Traffic Protections

**1.3 PAYMENT PROCEDURES**

- A. Under these items, the Contractor shall be reimbursed for charges for the allowances required and authorized by the Owner and Engineer, as detailed in Section 01025 - Measurement and Payment.
- B. The price for allowances is established in Section 11 - Bid Form and shall constitute full compensation for services rendered.
- C. The Contractor will be paid based on the actual quantities determined in the field by the Engineer or the actual invoiced amount from the authority in question. If the total cost for any allowance is greater or less than the allowance amount stated under this item of the BID, a debit or credit of the difference in cost shall be submitted to the Owner.



**PART 2 - PRODUCTS**

2.1 MATERIALS

- A. Materials shall conform to the Contract Documents, including any of those required or ordered by the Engineer.

**PART 3 - EXECUTION**

3.1 INSTALLATION

- A. Refer to relevant specification sections for information regarding installation and performance of the work. All work shall be per the Contract Documents. If additional guidance is required, the Contractor shall submit such requests in writing.

**END OF SECTION**

**SECTION 01025**

**MEASUREMENT AND PAYMENT**

**PART 1 - GENERAL**

**1.01 SUMMARY**

- A. Section Includes
  - 1. Measurement and payment criteria applicable to the Work performed under a unit price and/or lump sum payment method of Items listed in the BID.
- B. RELATED SECTIONS
  - 1. SECTION 11.0 Bid Form
  - 2. SECTION 12.0 General Conditions AIA A201
  - 3. SECTION 13.0 Supplementary Conditions
  - 4. SECTION 14.0 Special Conditions for EDA Contracts
  - 5. Appendix H Technical Specifications
  - 6. Appendix I Plans
  - 7. Section 01020 - Allowances
  - 8. Section 01026 - Schedule of Values

**1.02 UNIT QUANTITIES SPECIFIED**

- A. Quantities and measurements indicated in the BID FORM are for bidding and contract purposes only. Quantities and measurements supplied or placed in the Work and verified by the Engineer shall determine payment.
- B. If the actual Work results in measurable discrepancies outside the tolerances indicated and requires more or fewer quantities than those quantities indicated, provide the required quantities at the unit price furnished in the BID FORM.

**1.03 MEASUREMENTS OF QUANTITIES**

- A. Measurement by Volume: Measured by cubic dimension using mean length, width and height or thickness.
- B. Measurement by Area: Measured by square dimension using mean length and width or radius.
- C. Linear Measurement: Measured by linear dimension, along the horizontal projection of the centerline or mean chord.
- D. At appropriate points in this text, specifications are given with respect to measuring or estimating certain quantities and the sums due for the same. Except as otherwise provided, the Engineer shall determine the appropriate method for measuring and

computing each quantity, and for estimating the sums due for the various kinds of work and material, using such methods, tools and degrees of precision as are suitable for the particular measurement, Item or computation. When so requested by the Engineer, assistance in measuring or determining quantities, shall be provided by furnishing the help of unskilled laborers on the site, by furnishing copies of invoices, or by other means.

- E. For estimating quantities in which the computations of areas by analytic and geometric methods would be laborious, as determined by the Engineer, it is stipulated and agreed that the planimeter shall be considered an instrument of precision adapted to the measurement of such areas and may be used for this purpose.

#### 1.04 UNIT PRICES

- A. Payment will be computed on the basis of the unit prices indicated in Section 11 BID FORM as shown for each Item and the quantity of units completed. Unit prices are to include cost of all necessary materials, labor, equipment, overhead, profit and other applicable costs. (See Par. 1.06, this Section.)

#### 1.05 LUMP SUM PRICES

- A. Payment will be computed on the basis of the percentage of work completed on each Item in the contract BID as determined by the Engineer. Lump sum prices are to include the cost of all necessary materials, labor, equipment, overhead, profit and other applicable costs. (See Par. 1.06, this Section.)
- B. The Contractor's breakdown in the BID FORM and SCHEDULE OF VALUES of the Lump Sum bid will be used only as a guide to determine the percentage of completion.

#### 1.06 PRICES INCLUDE

- A. The prices stated in the Proposal include full compensation not only for furnishing all the labor, equipment and material needed for, and for performing the work, but also for assuming all risks of any kind for expenses arising by reason of the nature of the soil, ground water, or the action of the elements; for all excavation and backfilling; for the removal of and delay or damage occasioned by trees, stumps, pipes, ducts, timber, masonry or other obstacles; for removing, protecting, repairing, or restoring, without cost to the Owner, all pipes, ducts, drains, sewers, culverts, conduits, curbs, gutters, walks, fences, tracks, or other obstacles, road pavements and other ground surfacing whether shown on plans or not for draining, damming, pumping or otherwise handling and removing, without damage to the work or to other parties, and without needless nuisance, all water or sewage from whatever source which might affect the work or its progress, or be encountered in excavations made for the work; for all signs, fencing, lighting, watching, guarding, temporary surfacing, bridging, snow removal, etc., necessary to maintain and protect travel on streets, walks and private ways; for making all provisions necessary to maintain and protect

buildings, fences, poles, trees, structures, pipes, ducts and other public or private property affected or endangered by the work; for the repair or replacement of such things if injured by neglect of such provisions for removing all surplus or rejected materials as may be directed; for replacing, repairing and maintaining the surfaces of streets, highways, public and private lands if and where disturbed by work performed under the Contract or by negligence in the performance of work under the Contract; for furnishing the requisite filling materials in case of any deficiency or lack of suitable materials; for obtaining all permits and licenses and complying with the requirements thereof, including the cost of furnishing any security needed in connection therewith; for protection against inclement or cold weather; for all expenses incurred by or on account of the suspension; interruption or discontinuance of work; for the cost of the surety bond and adequate insurance; for all taxes, fees, union dues, etc., for which the Contractor may be or become liable, arising out of his operations incidental to the Contract; for providing equipment on the site and off site; for providing a field office and its appurtenances and for all general and incidental expenses; for tools, implements and equipment required to build and put into good working order all work contemplated by the Contract; for maintaining and guaranteeing the same as provided; and for fulfilling all obligations assumed by the Contractor under the Contract and its related documents.

- B. The Owner shall pay and the Contractor shall receive the prices stipulated in the BID FORM made as part hereof as full compensation for everything performed and for all risks and obligations undertaken by the Contractor under and as required by the Contract.
- C. The prices for those Items which involve excavation shall include compensation for disposal of surplus excavated material and handling of water.
- D. In all Items involving excavation, the price shall be based on doing the entire excavation in earth. Where rock is excavated, the price, therefore, shall be in addition to the cost of excavating earth and no deduction will be made in the amount for earth excavation.

#### 1.07 PAYMENT

- A. In general, payment will be made for all Contract work satisfactorily completed through the end of the previous month. The payment will include any additional work which has been completed and approved and change order work agreed upon by the Owner and Contractor which has been completed and approved (See SECTION 11 BID FORM).
- B. Each application for payment will indicate the total of a minimum percent retainage as defined in under SECTION 01026 SCHEDULE OF VALUES as held by the Owner on the total of all work completed under the contract and approved for payment to-date.

- C. Monthly applications for payment may also indicate reduction or increase of the total Contract price when an approved change order results in a net reduction or net increase in the cost and quantity of work to be performed under the Contract.
- D. Special billings and charges against the Contract as credit or payment to the Owner, that are not for change order work, may be subtracted from monies due on any monthly application for payment but shall not serve to reduce the total Contract price.
- E. Final payment for Work governed by unit prices will be made on the basis of the actual measurements and quantities accepted by the Engineer multiplied by the unit price for work which is incorporated in or made necessary by the Work.

#### 1.08 METHOD OF MEASUREMENT AND BASIS OF PAYMENT

- A. All bid items listed below are applicable for all site improvements as depicted in the Contract Documents.

### **BID ITEM NO. 1.0 PROJECT MOBILIZATION & DEMOBILIZATION**

#### A. METHOD OF MEASUREMENT

- 1. This item shall be paid for at the contract price bid per Lump Sum.
- 2. The Lump Sum price for this item shall not exceed ten percent (10%) of the total amount of the bid.
- 3. A maximum of fifty percent (50%) of the Mobilization & Demobilization lump sum shall be payable in the initial payment requisition. The balance of this lump sum shall be payable upon completion of the project, after all project record keeping and close out requirements have been met, and all temporary items and measures have been removed and suitably disposed of and final restoration and cleaning has been completed.

#### B. BASIS OF PAYMENT

- 1. The Lump Sum price paid for item shall include full compensation for all labor, equipment, materials and incidentals needed to complete the following:
  - a. Initiating and administering the contract, including but not limited to furnishing performance and payment bonds and all other securities and insurances required, project meetings, securing of all necessary permits, etc., for providing all other materials, supplies, tools, equipment, labor, financing, supervision, temporary structures, and any and all other administrative expenses incurred in carrying out the work and furnishing the materials, keeping records and preparing

- required reports, and assuming risks, which have not been included in the prices in other items of the Bid Proposal;
- b. Costs, exclusive of the cost of materials, for mobilizing all machinery, plants, tools, and other equipment necessary to carry on and complete the work;
  - c. Coordinating and scheduling the use of uniformed traffic persons including tracking or verifying hours worked by traffic persons;
  - d. Requirements for and payment provisions for material testing and quality control testing are addressed in Allowance No. 5.
  - e. Costs for demobilizing all machinery, plant, tools, and other equipment used to perform the work upon completion of the project;
  - f. Costs for preparing, maintaining and updating the project schedule for submission to and approval by the Owner
  - g. Performance of final cleanup and any necessary restorations of the project area, exclusive of specific restoration to be paid for under other items.
  - h.

**BID ITEM 2.0 SITE PREPARATION ACTIVITIES – PROJECT WIDE**

**A. METHOD OF MEASUREMENT**

- 1. This quantity of this item shall not be measured separately but by evaluation of the progression of work activities that comprise this item, determined as a percent installed, complete and accepted in place.

**B. BASIS OF PAYMENT**

- 1. The Lump Sum price paid for this item shall include full compensation for all labor, equipment, materials and incidentals needed to conduct various site preparation activities, with all work, complete in place but not limited to all field survey and layout, clearing, grubbing, pruning of trees, roadway and sidewalk saw-cutting, removal and disposal of asphalt and concrete pavements, removal, salvage and stockpiling of items indicated to be used, removal, cleaning and stockpiling of existing brick pavers, terminating wiring and the removal and stockpiling of all types of light fixtures, foundations, fencing, guardrails and all types of signage including any and all incidentals related to preparing the site and any and all items considered incidental and not specifically included for payment under other specification sections.

**BID ITEM 3.0 AREA 2 REMOVAL AND DISPOSAL OF BUS SHELTER**

**A. METHOD OF MEASUREMENT**

- 1. This quantity of this item shall not be measured separately but by evaluation of the progression of work activities that comprise this item, determined as a percent complete, as demolished and removed from the site, as accepted.

**B. BASIS OF PAYMENT**

1. The Lump Sum price for this item shall constitute full compensation for furnishing all materials, tools and equipment in addition to all labor as necessary for disassembling, demolishing and removing the existing RIPTA bus shelter from the site completely inclusive of the removal and disposal of the roof, framing and related super structure, saw cutting and removal of pavement, demolition of concrete piers, walls and footings to a depth of 3'-0" below proposed finish grade, and removal and legal disposal of all materials generated in the demolition. Disconnect electrical, cut and safely cap electrical conduit to bus shelter. Remove and stockpile existing benches. Gravel to bring area to existing grade, construction fence required to completely secure and protect the area and sawcut cleanly the existing concrete wall are included as part of the Lump Sum payment.

**BID ITEM NO. 4.0 SITE PROTECTION AND MAINTENANCE OF THE SITE –  
PROJECT WIDE**

**A. METHOD OF MEASUREMENT**

1. The Lump Sum price paid for this item shall include full compensation for all labor, equipment, materials and incidentals needed to conduct various site preparation activities, with all work, complete in place but not limited installation of temporary chain-link gates and fencing, protection of asphalt surfaces to remain.
2. Furnishing, installing, moving and placing any and all plastic pipe barriers and drum barrels including removing temporary traffic control devices from their initial locations, handling, maintaining, transporting, and relocating traffic control devices to storage or to subsequent intermediate locations at which they are to be used for traffic control, with markings protections.
3. Work required for the proper maintenance of the site in an orderly manner inclusive of signage, containment enclosures, stockpiles, dumpsters, and roadway sweeping to maintain the site and immediate surrounding conditions free of debris and dust. Work shall include any and all incidentals related to protecting and maintaining the site in a clean, safe and secure manner inclusive of any and all items considered incidental and not specifically included for payment under other specification sections.
4. The work shall be measured on a monthly basis, for the duration of the project, as established in the approved Project Schedule, complete and as accepted in place.

**B. BASIS OF PAYMENT**

1. Payment shall be per month based on the approved Schedule of Values. Payment for this item shall include full compensation for all labor, equipment, materials and incidentals needed to complete the following:
  - a. All erosion controls and site protection provisions.
  - b. Fabricating, furnishing, erecting, maintaining, removing and relocating the traffic management devices for the overall project, complete-in-place, as directed by the Engineer and in coordination with the City;
  - c. Providing additional traffic management devices to provide a clear and visible traffic control through the project area, if so required;
  - d. The Contractor shall be required to reposition the traffic control devices as many times as necessary to ensure the safe passage of vehicular traffic and pedestrians. Supplemental signs and traffic control devices directing traffic around and/or through the work zones shall be supplied as operations require or as directed by the Engineer. Payment for these traffic control measures shall be included as part of this item and no additional payment will be made.
  - e. Other work, whether direct or incidental, associated with the maintenance and protection of the site and related traffic and sidewalk closures/protections not specifically identified herein.

**BID ITEM NO. 5.0 UTILITY TEST PITS – PROJECT WIDE**

**A. METHOD OF MEASUREMENT**

1. The quantity of Utility Test Pits to paid for under this item shall be measured per Cubic Yard, based on the excavated volume of material and surface restoration for the Test Pits required as directed by the Engineer.

**B. BASIS OF PAYMENT**

1. The unit price for this item shall include full compensation for all labor, equipment, materials required to install and maintain necessary traffic protection, sawcut, excavate, hand-dig to expose utilities, measure, and document subsurface conditions vertically and horizontally, backfill and compact and temporarily patch the area disturbed to match the adjacent existing surfaces impacted, inclusive of any and all incidentals.



**BID ITEM NO. 6.0 EARTH EXCAVATION**

**A. METHOD OF MEASUREMENT**

1. The quantity of Earth Excavation to be paid for under this item shall be measured per Cubic Yard, based on the total number of cubic yards of materials excavated, loaded, hauled and legally disposed of off-site.

**B. BASIS OF PAYMENT**

1. The unit price for this item shall include full compensation for all labor, equipment, materials and incidentals for excavation as follows:
  - a. Excavation of all earth materials (with the exception of boulders over 3 feet in diameter), including but not limited to common borrow, silt, sand, urban fill, rubble, gravel or other soils, tree roots, organic matter, loam and any other materials encountered when excavating as necessary to perform the work.
  - b. No separate payment will be made for any saw-cutting required to facilitate the work.
  - c. Other work, whether direct or incidental, associated with excavation of earth materials and not specifically included for payment under other bid items shall be included herein.

**BID ITEM 7.0 GRAVEL BORROW**

**A. METHOD OF MEASUREMENT**

1. The quantity of Gravel Borrow to be paid for under this Item shall be measured per Cubic Yard based on the number of cubic yards of gravel borrow installed, complete and accepted in place. Work shall include any and all incidentals and items not specifically included for payment under other sections.

**B. BASIS OF PAYMENT**

1. The unit price for this item shall include full compensation for all labor, equipment, and materials related to furnishing, hauling, placement, grading and compaction of all gravel borrow material and any and all incidentals required to install in place, complete and accepted.

**BID ITEM 8.0 DROP INLET DRAINAGE STRUCTURE & CATCH BASIN MODIFICATIONS**

**A. METHOD OF MEASUREMENT**

1. The quantity of Drop Inlet to be paid for under this Item shall be measured per Each based on the number of Drop Inlets installed, complete, and accepted in

place and the number of Catch Basins modified, complete and accepted in place. Work shall include any and all incidentals and all items not specifically included for payment under other sections.

**B. BASIS OF PAYMENT**

1. The Unit Price for this item shall include full compensation for all labor, equipment, materials and incidentals needed and as follows: The price for this item shall include full compensation for furnishing drainage structure, with frame and grate, all necessary piping and fittings, excavation required to expose existing pipe and structures, saw-cutting, core drilling, installing drainage pipe and gutter inlet structure, backfilling, compacting, setting frame to the proper interim grade if so required and to finish grade, and installing grates, inclusive of any and all incidentals required to install complete and accepted, in place.

**BID ITEM 9.0 TRIMMING AND FINE GRADING**

**A. METHOD OF MEASUREMENT**

1. This item shall be measured by the Square Yard of grading completed, and accepted in place.

**B. BASIS OF PAYMENT**

1. The Unit Price for this item shall include full compensation for all labor, equipment, materials and incidentals necessary to distribute materials across surfaces the line and grade indicated, to finish grade complete and accepted in place, including and inclusive of any work considered incidental and not specifically identified.

**BID ITEM 10.0 HMA PAVEMENT - ROADWAY**

**A. METHOD OF MEASUREMENT**

1. This quantity of this item shall be measured by the Ton, complete and accepted in place.

**B. BASIS OF PAYMENT**

1. The Unit Price for this item shall include full compensation for all labor, equipment, materials, and incidentals necessary to install the work complete and accepted in place, including all lifts or layers of pavement required, complete and accepted in place, as well as all items not specifically included for payment under other specification sections, as necessary to complete the work.

**BID ITEM 11.0 HMA PAVEMENT - BIKE PATH**

**A. METHOD OF MEASUREMENT**

1. This quantity of this item shall be measured by the Ton, complete and accepted in place.

**B. BASIS OF PAYMENT**

1. The Unit price for this item includes full compensation for all labor, equipment, materials and incidentals necessary to install the work complete and accepted in place, including all lifts or layers, of pavement required, complete and accepted in place as well as all items not specifically included for payment under other specification sections, as necessary to complete the work.

**BID ITEM 12.0 GRANITE CURB - Type 1**

**A. METHOD OF MEASUREMENT**

1. This quantity of this item shall be measured by the linear foot installed, complete and accepted in place.

**B. BASIS OF PAYMENT**

1. The linear foot price paid for this item shall include full compensation for all labor, equipment, materials and incidentals necessary to install the work complete and accepted in place, including furnishing and installing new 6" vertical granite curb, to include excavation, setting to the specified line and grade, saw cutting, as well as, backfilling, compacting installing concrete curb-lock and all related work considered incidental and not specifically identified herein, complete and accepted, in place.

**BID ITEM 13.0 GRANITE CURB - Type 2**

**A. METHOD OF MEASUREMENT**

1. This quantity of this item shall be measured by the linear foot installed, complete and accepted in place.

**B. BASIS OF PAYMENT**

1. The Linear Foot price for this item shall include full compensation for all labor, equipment, materials and incidentals necessary to install the work complete and accepted in place, including furnishing and installing new granite curb, as well as, excavation, setting curb to the specified line and grade, saw cutting, as well as,

backfilling, compacting, installing concrete curb-lock and all related work considered incidental and not specifically identified herein, complete and accepted, in place.

**BID ITEM 14.0 BRICK PAVERS**

**A. METHOD OF MEASUREMENT**

- 1 This quantity of this item shall be measured by the Square Foot, complete and accepted in place.

**B. BASIS OF PAYMENT**

1. The Unit Price for this item shall include full compensation for all labor, equipment, materials and incidentals necessary to install the work complete and accepted in place, including loading and hauling from the stockpiles, incidental cleaning, sorting, sizing and making ready bricks to be re-laid. Work shall include lay-out, forming, placing reinforcing, forming, pouring and finishing concrete rigid base, curing concrete, placing and screeding paver setting bed and selecting, cleaning, and installing pavers inclusive of cutting and setting brick pavers as well as jointing the installed bricks, as indicated on the plans as well as any necessary work considered incidental and not specifically identified herein, complete and accepted in place.

**BID ITEM 15.0 CEMENT CONCRETE - TYPES A & B**

**A. METHOD OF MEASUREMENT**

1. The quantity of this item will be measured by the Cubic Yard, complete and accepted in place.

**B. BASIS OF PAYMENT**

1. The Cubic Yard price paid for this item shall include full compensation for all labor, equipment, materials and incidentals necessary to lay out, form, install reinforcing, pour, place and finish concrete as shown on the plans, including all work considered incidental and not specifically identified herein, complete and accepted in place.

**BID ITEM 16.0 PERVIOUS CONCRETE PAVEMENT**

**A. METHOD OF MEASUREMENT**

1. The quantity of this item shall be measured by the Cubic Yard complete and accepted in place.

**B. BASIS OF PAYMENT**

1. The Cubic Yard price paid for this item shall include full compensation for all labor, equipment, materials and incidentals necessary to furnish and install the components of the Pervious Concrete Pavement including furnishing and installing geotextile, furnishing and installing all types and sizes of drain pipe to the point of discharge, core drilling existing concrete wall to accommodate drain pipe, furnishing, hauling and placing specified crushed stone in various filter and reservoir courses and pipe bedding stone, impermeable liner, as well as furnishing, forming and placing the pervious concrete, complete, and accepted in place. Work shall include any and all incidentals and all items not specifically included for payment under other sections.

**BID ITEM 17.0 CONCRETE WHEELCHAIR RAMPS A - D**

**A. METHOD OF MEASUREMENT**

1. The quantity of this item shall be measured by the Square Yard, complete and accepted in place.
2. Detectable Warning Panels shall be installed under this item, but the quantity shall be measured elsewhere.

**B. BASIS OF PAYMENT**

1. The Square Yard price paid for this item shall include full compensation for all labor, equipment, materials and incidentals necessary to lay out, form, place joints, furnish, place and finish concrete, including all work considered incidental and not specifically identified herein, complete and accepted in place.
2. Detectable Warning Panels shall be paid for under Bid Item 18.0

**BID ITEM 18.0 DETECTABLE WARNING PANEL TYPE 1 & 1A (WITHIN WCR)**

**A. METHOD OF MEASUREMENT**

1. The quantity of this item shall be measured by the Square Foot, accepted, delivered at the jobsite.

**B. BASIS OF PAYMENT**

1. The Square Foot price paid for this item shall be payment for the item, inclusive do delivery to the site, including all equipment, materials and incidentals necessary to fully install.

**BID ITEM 19.0 DETECTABLE WARNING PANEL TYPE 2 (ISOLATED)**

**A. METHOD OF MEASUREMENT**

1. The quantity of this item shall be measured by the Square Foot, complete and accepted in place.

**B. BASIS OF PAYMENT**

1. The Square Foot price for this item shall include full compensation for all labor, equipment, materials and incidentals necessary to furnish and lay out, form, pour, place and finish concrete setting bed and to set detectable warning panels including any and all work considered incidental and not specifically identified herein, complete and accepted in place.

**BID ITEM 20.0 CONCRETE SEAT WALL W-1**

**A. METHOD OF MEASUREMENT**

1. The quantity of this item shall not be measured separately but by evaluation of the progression of work activities that comprise this item, determined as a percent installed, complete and accepted, in place.

**B. BASIS OF PAYMENT**

1. The Lump Sum price for this item shall include full compensation for all labor, equipment, materials and incidentals necessary to install the work including furnishing, constructing and installing (and removing) formwork, bracing, form ties, threaded dowels, anchors, steel reinforcing, architectural treatments, surface finishes as well as geotextile fabric, crushed stone and weep holes as shown on the plans. Furnishing, installing, placing and finishing all cast-in-place concrete elements, inclusive of any and all work considered incidental and not specifically identified, complete and accepted, in place.

**BID ITEM 21.0 RECONSTRUCTION OF EXISTING CONCRETE RAMP**

**A. METHOD OF MEASUREMENT**

1. The quantity of this item shall not be measured separately but by evaluation of the progression of work activities that comprise this item, determined as a percent installed, complete and accepted, in place.

**B. BASIS OF PAYMENT**

1. The Lump Sum price for this item shall include full compensation for all labor, equipment, materials and incidentals necessary to install the work including furnishing, constructing and installing (and removing) formwork, bracing, form ties, threaded dowels, anchors, steel reinforcing, architectural treatments, surface finishes as well as furnishing, installing, placing and finishing all cast-in-place concrete elements inclusive of any and all work considered incidental and not specifically identified, complete and accepted, in place. Modifications to existing wall, regrading gravel borrow, and excavation shall be included as part of the lump sum payment.

**BID ITEM 22.0 SIGNAGE**

**A. METHOD OF MEASUREMENT**

1. The quantity of this item shall be measured per Square Foot, complete and accepted in place.

**B. BASIS OF PAYMENT**

1. The price per Each shall include compensation for all labor, equipment, materials and incidentals necessary to lay out, furnish, set, install signage as indicated to signposts, with specified hardware, including all work considered incidental and not specifically identified herein, complete and accepted in place.

**BID ITEM 23.0 SIGN POSTS 2-1/2" STEEL**

**A. METHOD OF MEASUREMENT**

1. The quantity of this item shall be measured per Each, complete and accepted in place.

**B. BASIS OF PAYMENT**

1. The unit price paid shall include compensation for all labor, equipment, materials and incidentals necessary to lay out final locations, furnish, set, install signposts including all work considered incidental and not specifically identified herein, complete and accepted in place.

**BID ITEM 24.0 YELLOW AND WHITE EPOXY RESIN PAVEMENT MARKINGS**

**A. METHOD OF MEASUREMENT**

1. The quantity of this item shall be measured per linear foot of pavement marking, complete and accepted in place.

**B. BASIS OF PAYMENT**

1. The price per Each shall include compensation for all labor, equipment, materials, and incidentals necessary to layout, furnish, set, install and finish including all work considered incidental and not specifically identified herein, complete and accepted in place.
2. The basis for payment shall be for 4" wide painted pavement markings.
3. The payment will be adjusted by a factor of 1.50 for locations with 6" wide pavement markings specified.
4. The payment will be adjusted by a factor of 3.0 for locations with 12" wide pavement marking specified.

**BID ITEM 25.0 CROSSWALK TYPE 1 EPOXY RESIN PAVEMENT MARKINGS**

**A. METHOD OF MEASUREMENT**

1. The quantity of this item shall be measured per Square Foot complete and accepted in place.

**B. BASIS OF PAYMENT**

1. The price per Each shall include compensation for all labor, equipment, materials, and incidentals necessary to lay out, furnish, install and finish including all work considered incidental and not specifically identified herein, complete and accepted in place.



**BID ITEM 26.0 CROSSWALK TYPE 2 EPOXY RESIN PAVEMENT MARKINGS**

**A. METHOD OF MEASUREMENT**

1. The quantity of this item shall be measured per Square Foot, furnished and installed complete and accepted in place.

**B. BASIS OF PAYMENT**

1. The price per Square Foot shall include compensation for all labor, equipment, materials, and incidentals necessary to lay out, furnish, install and finish including all work considered incidental and not specifically identified herein, complete and accepted in place.

**BID ITEM 27.0 MODIFICATIONS TO EXISTING MEMORIAL**

**A. METHOD OF MEASUREMENT**

1. The quantity of this item shall not be measured separately but by evaluation of the progression of work activities that comprise this item, determined as a percent installed, complete and accepted, in place.

**B. BASIS OF PAYMENT**

1. The Lump Sum price paid for this item shall include full compensation for all labor, equipment, materials and incidentals necessary to install the work including the following:
  - a. Disassembly with care for re-use: Removal of existing memorial stones, sorting, stacking, and re-working existing stone including cutting, drilling, and re-finishing the stones identified to be reset.
  - b. Excavation, hand digging, cutting, demolishing, removal and disposal of excess soils and concrete foundations indicated for removal.
  - c. Excavation, placement of gravel base, compacting, forming, placing reinforcing pouring and finishing concrete foundations and slabs, in sequence as shown.
  - d. Coordination for placement of Granite Edging.
  - e. Drilling, setting of pins and epoxy adhesives or similar to secure stones, installing stones, shimming, adjusting as required to meet the finish grades as shown, to the line and grade indicated.
  - f. Cleaning and preparing joints, installing backer rods, mortar and finishing of all joints within new and existing stones as indicted.
  - g. Protection of existing Memorial elements to remain in place.
  - h. Washing and cleaning of the area of work.

- i. Work to complete the modifications to the memorial, inclusive of any and elements of the work considered incidental and not specifically identified, complete and accepted, in place.

**BID ITEM 28.0 CS-1 GRANITE STAIR TREAD AT EXISTING MEMORIAL**

**A. METHOD OF MEASUREMENT**

- A. The quantity of this item shall be measured per Each, fabricated, and delivered, and accepted at the job site.

**B. BASIS OF PAYMENT**

1. The price paid for this item shall be per each CS stone, fabricated, delivered, and accepted to the site.
2. The installation of the CS-1 shall be paid for under Bid Item 27 Modifications to Existing Memorial.

**BID ITEM 29.0 CS-2 GRANITE EDGING**

**A. METHOD OF MEASUREMENT**

1. The quantity of this item shall be measured per Linear Foot, fabricated, furnished, installed as shown on the plans, complete and accepted in place.

**B. BASIS OF PAYMENT**

1. The Unit Price for this item shall include compensation for all labor, equipment, materials, and incidentals necessary to lay out, furnish, excavate, install, set to line and grade indicated, backfill, compact, complete, and accepted in place including all work considered incidental and not specifically identified herein, complete and accepted in place. Resetting of any existing river stone pavers where encountered shall be considered incidental to the performance of this work and shall be included in this bid item.

**BID ITEM 30.0 CS-3 GRANITE CURB TRANSITION**

**A. METHOD OF MEASUREMENT**

1. The quantity of this item shall be measured per Each, fabricated, furnished and installed as shown on the plans, complete and accepted in place.

**B. BASIS OF PAYMENT**

1. The Unit Price paid for this item shall be per each curb transition for all labor, equipment, materials and incidentals necessary to install the work complete and accepted in place, including furnishing and installing new curb, including excavation, setting to the specified line and grade, saw cutting, backfilling, compacting and all related work considered incidental and work not specifically identified herein, complete and accepted, in place.

**BID ITEM 31.0 CS-4 GRANITE BIKE RACK BASE**

**A. METHOD OF MEASUREMENT**

- B. The quantity of this item shall be measured per Each, fabricated, delivered, and accepted at the job site.

**B. BASIS OF PAYMENT**

- 1 The price paid for this item shall be per each Bike Rack Base, furnished complete, delivered to the job site and accepted.
- 2 The installation of CS-4 shall be paid for under Bid Item 35.0 Bike Rack

**BID ITEM 32.0 CS-5 GRANITE BENCH BASE**

**A. METHOD OF MEASUREMENT**

1. The quantity of this item shall be measured per Each, fabricated, and delivered, and accepted at the job site.

**A. BASIS OF PAYMENT**

- 1 The price paid for this item shall be per each Bike Rack Base, furnished complete, delivered, and accepted at the job site .
- 2 The installation of CS-5 shall be paid for under Bid Item 36.0 Bench

**BID ITEM 33.0 RAILING SYSTEM MODIFICATIONS & RAILING TYPE 1**

**A. METHOD OF MEASUREMENT**

1. The quantity of this item shall not be measured separately but by evaluation of the progression of work activities that comprise this item, determined as a percent of the Lump Sum, installed, complete and accepted, in place.

**B. BASIS OF PAYMENT**

1. The Lump Sum price for this item shall include full compensation for all labor, equipment, materials and incidentals necessary to produce shop drawings, layout, template, cut, grind, weld, fabricate, finish, drill, set and install Rail Panels as well as all modifications to the existing railings on the existing concrete wall including all cutting, removal, grinding, welding and field finishing required including all work considered incidental and not specifically identified herein, complete and accepted in place.

**BID ITEM 34.0 ORNAMENTAL BOLLARD & CHAIN SYSTEM**

**A. METHOD OF MEASUREMENT**

1. The quantity of this item shall not be measured separately but by evaluation of the progression of work activities that comprise this item, determined as a percent installed, complete and accepted, in place.

**B. BASIS OF PAYMENT**

1. The Lump Sum price for this item shall include full compensation for all labor, equipment, materials and incidentals necessary to furnish and layout, fabricate, drill, set and install all steel bollards, chains, splices lap connectors and related hardware, complete in place and accepted, including any and all work considered incidental and not specifically identified herein, complete and accepted in place.

**BID ITEM 35.0 BIKE RACK**

**A. METHOD OF MEASUREMENT**

1. The quantity of this item shall be measured per Each, fabricated, installed complete in place and accepted.

**B. BASIS OF PAYMENT**

- 1 The Unit Price for this item shall include full compensation for all labor, equipment, materials and incidentals necessary to lay out, furnish excavate, install set to line and

grade, backfill and compact, work to be complete and accepted in place as well as all items not specifically included for payment under other specification sections, as necessary to complete the work.

**BID ITEM 36.0 BENCH**

**A. METHOD OF MEASUREMENT**

1. The quantity of this item shall be measured per Each, fabricated, installed complete in place and accepted.

**B. BASIS OF PAYMENT**

- 1 The Unit Price for this item shall include full compensation for all labor, equipment, materials and incidentals necessary to lay out, furnish excavate, install set to line and grade, backfill and compact, work to be complete and accepted in place as well as all items not specifically included for payment under other specification sections, as necessary to complete the work.

**BID ITEM 37.0 LOAM 4" DEEP & SEED FOR TURFGRASS**

**A. METHOD OF MEASUREMENT**

1. The quantity of this item shall be measured by the Square Yard installed, complete and accepted in place.

**A. BASIS OF PAYMENT**

1. The Unit Price paid for this item shall include full compensation for all labor, equipment, materials, and incidentals necessary to furnish and place loam in areas identified on the plans fertilizing, grass seeding operations and any and all work considered incidental and not specifically identified herein, complete and accepted in place.
2. Trimming and fine grading of areas to receive loam 4 inches deep and seed shall be measured and paid for else-where.

**BID ITEM 38.0 TREE & SHRUB CONSERVATION MEASURES**

**A. METHOD OF MEASUREMENT**

1. The quantity of this item shall not be measured separately but by evaluation of the progression of work activities that comprise this item, determined as a percent installed, of the Lump Sum item, complete and accepted in place.

**B. BASIS OF PAYMENT**

1. The Lump Sum price for this item shall include full compensation for all labor, equipment, materials and incidentals necessary to furnish and install complete, in place and accepted, including:
  - a. Tree canopy pruning and limbing of existing trees.
  - b. Root pruning of existing trees.
  - c. Removal/replanting of existing shrubs to accommodate utility and irrigation work, as directed in the field.
  - d. Care of existing trees and shrubs upon completion of pruning & transplanting.

**BID ITEM 39.0      AREA 1 PB-A (PLANT BED) LANDSCAPE PLANTINGS**

**A. METHOD OF MEASUREMENT**

1. The quantity of this item shall not be measured separately but by evaluation of the progression of work activities that comprise this item, determined as a percent installed, of the Lump Sum item, complete and accepted in place.

**B. BASIS OF PAYMENT**

1. The Lump Sum price for this item shall include full compensation for all labor, equipment, materials and incidentals necessary to furnish and install complete, in place and accepted, per the specific plant bed, including:
  - a. Layout of plant bed area.
  - b. Excavation of plant bed areas.
  - c. Removal and legal disposal of material generated from excavation.
  - d. Furnishing all plant material and lay out of all plant material for approval, making necessary adjustments to layout, as directed.
  - e. Installing plant material and loam soil backfilling, watering, and mulching.
  - f. Care and establishment of plants in plant bed identified.
  - g. Planting of plant bed shall be conducted efficiently and completely.

**BID ITEM 40.0      AREA 1 PB-B (PLANT BED) LANDSCAPE PLANTINGS**

**A. METHOD OF MEASUREMENT**

1. The quantity of this item shall not be measured separately but by evaluation of the progression of work activities that comprise this item, determined as a percent installed, of the Lump Sum item, complete and accepted in place.

**B. BASIS OF PAYMENT**

1. The Lump Sum price for this item shall include full compensation for all labor, equipment, materials and incidentals necessary to furnish and install complete, in place and accepted, per the specific plant bed, including:
  - a. Layout of plant bed area.
  - b. Excavation of plant bed areas.
  - c. Removal and legal disposal of material generated from excavation.
  - d. Furnishing all plant material and lay out of all plant material for approval, making necessary adjustments to layout, as directed.
  - e. Installing plant material and loam soil backfilling, watering, and mulching.
  - f. Care and establishment of plants in plant bed identified.
  - g. Planting of plant bed shall be conducted efficiently and completely.

**BID ITEM 41.0          AREA 1 PB-C (PLANT BED) LANDSCAPE PLANTINGS**

**A. METHOD OF MEASUREMENT**

1. The quantity of this item shall not be measured separately but by evaluation of the progression of work activities that comprise this item, determined as a percent installed, of the Lump Sum item, complete and accepted in place.

**B. BASIS OF PAYMENT**

1. The Lump Sum price for this item shall include full compensation for all labor, equipment, materials and incidentals necessary to furnish and install complete, in place and accepted, per the specific plant bed, including:
  - a. Layout of plant bed area.
  - b. Excavation of plant bed areas.
  - c. Removal and legal disposal of material generated from excavation.
  - d. Furnishing all plant material and lay out of all plant material for approval, making necessary adjustments to layout, as directed.
  - e. Installing plant material and loam soil backfilling, watering, and mulching.
  - f. Care and establishment of plants in plant bed identified.
  - g. Planting of plant bed shall be conducted efficiently and completely.

**BID ITEM 42.0          AREA 1 PB-D (PLANT BED) LANDSCAPE PLANTINGS**

**A. METHOD OF MEASUREMENT**

1. The quantity of this item shall not be measured separately but by evaluation of the progression of work activities that comprise this item, determined as a percent installed, of the Lump Sum item, complete and accepted in place.

**B. BASIS OF PAYMENT**

1. The Lump Sum price for this item shall include full compensation for all labor, equipment, materials and incidentals necessary to furnish and install complete, in place and accepted, per the specific plant bed, including:
  - a. Layout of plant bed area.
  - b. Excavation of plant bed areas.
  - c. Removal and legal disposal of material generated from excavation.
  - d. Furnishing all plant material and lay out of all plant material for approval, making necessary adjustments to layout, as directed.
  - e. Installing plant material and loam soil backfilling, watering, and mulching.
  - f. Care and establishment of plants in plant bed identified.
  - g. Planting of plant bed shall be conducted efficiently and completely.

**BID ITEM 43.0      AREA 2 PB-A (PLANT BED) LANDSCAPE PLANTINGS**

**A. METHOD OF MEASUREMENT**

1. The quantity of this item shall not be measured separately but by evaluation of the progression of work activities that comprise this item, determined as a percent installed, of the Lump Sum item, complete and accepted in place.

**B. BASIS OF PAYMENT**

1. The Lump Sum price for this item shall include full compensation for all labor, equipment, materials and incidentals necessary to furnish and install complete, in place and accepted, per the specific plant bed, including:
  - a. Layout of plant bed area.
  - b. Excavation of plant bed areas.
  - c. Removal and legal disposal of material generated from excavation.
  - d. Furnishing all plant material and lay out of all plant material for approval, making necessary adjustments to layout, as directed.
  - e. Installing plant material and loam soil backfilling, watering, and mulching.
  - f. Care and establishment of plants in plant bed identified.
  - g. Planting of plant bed shall be conducted efficiently and completely.



**BID ITEM 44.0      AREA 2 PB-B (PLANT BED) LANDSCAPE PLANTINGS**

**A. METHOD OF MEASUREMENT**

1. The quantity of this item shall not be measured separately but by evaluation of the progression of work activities that comprise this item, determined as a percent installed, of the Lump Sum item, complete and accepted in place.

**B. BASIS OF PAYMENT**

1. The Lump Sum price for this item shall include full compensation for all labor, equipment, materials and incidentals necessary to furnish and install complete, in place and accepted, per the specific plant bed, including:
  - a. Layout of plant bed area
  - b. Excavation of plant bed areas
  - c. Removal and disposal of excavate generated.
  - d. Furnishing all plant material and lay out of all plant material for approval,
  - e. Making necessary adjustments to layout as directed
  - f. Installing plant material to the correct line and grade, and loam soil backfilling,
  - g. watering, and mulching as specified.
  - h. Care and establishment of plants in plant bed indicated.
  - i. Planting of identified plant bed shall be conducted efficiently and completely.
  - j.

**BID ITEM 45.0      AREA 1 IRRIGATION SYSTEM**

**A. METHOD OF MEASUREMENT**

1. The quantity of this item shall not be measured separately but by evaluation of the progression of work activities that comprise this item, determined as a percent installed, complete and accepted in place.

**B. BASIS OF PAYMENT**

1. The Lump Sum price for this item shall include full compensation for all labor, equipment, materials, and incidentals necessary to disconnect and abandon the current irrigation system on site in the areas indicated, while maintaining the current system in other areas, and to furnish, install new irrigation components necessary to support a new fully functional irrigation system, complete and accepted, including all work considered incidental and not specifically identified herein. The evaluation of the progression of work activities and operations that are necessary to furnish, install and make necessary connections to furnish and install a fully functional site irrigation system includes but is not limited to the following listed items.
  - a. Work inside the basement of the existing Fire Station as required to remove existing pipe, backflow preventer and irrigation zone wiring, and to then extend the water supply line to supply the irrigation system outside the building.

- b. Work outside of the existing Fire Station on the site as required to extend the water supply line from the foundation to the location of the proposed irrigation controller.
- c. Work to extend irrigation main lines from the proposed irrigation controller to existing valve assemblies indicated to remain as well as to the areas designated to for irrigation.
- d. Work to install a new backflow preventer, and irrigation controller, with all appurtenant valves, fittings, and filters, including but not limited to irrigation main lines, secondary lines, fittings, zone valves, hand holes, irrigation heads drip irrigation lines, quick coupler valves, etc. as required to create a complete and fully functional zoned spray and drip irrigation system.
- e. Work to include re-connections of the existing irrigation system shown as in place to remain as well as testing of the system.
- f. All permit fees are addressed under Allowance No. 4 Permit Fees

**BID ITEM 46.0 RELOCATE PEDESTRIAN CROSSWALK SIGNAL**

**A. METHOD OF MEASUREMENT**

- 1. The quantity of this item shall not be measured separately but by evaluation of the progression of work activities that comprise this item, determined as a percent installed, complete and accepted in place.

**B. BASIS OF PAYMENT**

- 1. The price paid shall include compensation for all labor, equipment, materials, and all incidentals necessary to remove existing signal from the existing foundation, and stockpile aside to be re-set, to excavate by hand, expose, cut and modify existing conduit and wiring, reconstruct handhole to the correct line and grade, furnish and install concrete block and construct new hand hole with new frame and cover, excavate for new signal pole base, trench for conduit, furnish and install concrete signal pole base, new conduit and wiring, The price so-stated constitutes full and complete compensation for all labor, materials, tools and equipment, including all incidentals required to finish the work, complete in place and accepted by the Engineer.

**BID ITEM 47.0 PEDESTRIAN CROSSWALK PUSH BUTTON ACTUATOR**

**A. METHOD OF MEASUREMENT**

- 1. The quantity of this item shall be measured per Each, furnished and installed, complete and accepted in place.

**B. BASIS OF PAYMENT**

1. The unit price paid shall include compensation for all labor, equipment, materials, and all incidentals necessary to furnish, locate, modify existing signal poles to accommodate the new Pedestrian push button actuators as shown in the plans. The price so-stated constitutes full and complete compensation for all labor, materials, tools and equipment, including removal and legal disposal of the existing pedestrian pushbuttons, wiring disconnection, closure of the hole in the mast arm pole including the epoxy patch, furnishing and installing pedestrian pushbutton with sign, modular station, and extension bracket with tamper-proof banding, rewiring new button, mounting and installation hardware, PVC conduit and wiring to connect to existing signal post and testing required prior to and after installation in the field, and all incidentals required to finish the work, complete in place and accepted by the Engineer.

**BID ITEM 48.0          REMOVE & RESET EXISTING LIGHT POLES (LP)**

**A. METHOD OF MEASUREMENT**

1. The quantity of this item shall be measured per Each, furnished, and installed, complete and accepted in place.

**B. BASIS OF PAYMENT**

1. The unit price paid shall include compensation for all labor, equipment, materials, and all incidentals necessary to excavate for footings, form and pour new concrete footing with conduit, haul light poles from stockpile, clean, repaint, reset and assemble light poles with new lamps, as shown in the plans. The price so stated constitutes full and complete compensation for all labor, materials, tools, and equipment necessary for the installation, including excavation, footings, backfilling, hauling from stockpile, cleaning, repainting, resetting, wiring, wiring connections, lamps, assembly and installation, and testing and all incidentals required to finish the work, complete in place and accepted by the Engineer.

**BID ITEM 49.0          BOLLARD LIGHT (BL)**

**A. METHOD OF MEASUREMENT**

1. The quantity of this item shall be measured per Each, furnished, and installed, complete and accepted in place.

**B. BASIS OF PAYMENT**

1. The unit price paid shall include compensation for all labor, equipment, materials, and all incidentals necessary to furnish the Bollard Lights as shown in the plans and

Specifications. The price so stated constitutes full and complete compensation for all labor, materials, tools and equipment necessary for the installation, including excavation, footings, backfilling, wiring, wiring connections, lamps, assembly and installation, and testing and all incidentals required to finish the work, complete in place and accepted by the Engineer.

**BID ITEM 50.0            UPLIGHT (UL)**

**A. METHOD OF MEASUREMENT**

1. The quantity of this item shall be measured per Each, furnished and installed, complete and accepted in place.

**B. BASIS OF PAYMENT**

1. The unit price paid shall include compensation for all labor, equipment, materials, and all incidentals necessary to furnish the Uplights, as shown in the plans and Specifications. The price so stated constitutes full and complete compensation for all labor, materials, tools and equipment necessary for the installation, including excavation, concrete encasement, backfilling, wiring, wiring connections, lamps, assembly and installation, and testing and all incidentals required to finish the work, complete in place and accepted by the Engineer.

**BID ITEM 51.0            AREA 1 INTERIOR & EXTERIOR ELECTRICAL  
EQUIPMENT, CONDUIT & WIRING**

**A. METHOD OF MEASUREMENT**

1. The quantity of this item shall not be measured separately but by evaluation of the progression of work activities that comprise this item, determined as a percent installed, complete and accepted in place.

**B. BASIS OF PAYMENT**

1. The Lump Sum price for this item shall include full compensation for all labor, equipment, materials and incidentals necessary to disconnect and abandon the current lighting on site as indicated, and to layout, furnish, install new electrical components necessary to support the proposed site improvements, complete and accepted, including all work considered incidental and not specifically identified herein. The evaluation for the basis of payment is the progression of work activities and operations that are necessary to furnish, install and make necessary connections to establish a fully functional site electrical system includes but is not limited to the following listed items.

- a. Work inside the basement of the existing Fire Station as required to extend power to the site, including but not limited to new conduit, conduit fittings, and wiring per current Electrical Code.
- b. Work outside of the existing Fire Station on the site as required to distribute power to the irrigation system controller as well as the various site elements indicated, including but not limited to new conduit, fittings, handholes, covers, and spare conduit as indicated on the plans.
- c. Wiring, connectors, lugs, fasteners, fuses
- d. All permit fees shall be addressed under Allowance No. 4 Permit Fees.

**BID ITEM 52.0 FLAG PERSONS**

**A. METHOD OF MEASUREMENT**

1. The quantity of this item shall be measured per Person Hours, complete and accepted in place.

**B. BASIS OF PAYMENT**

1. The unit price paid shall include compensation for all labor, equipment, materials, and all incidentals necessary to all incidentals required to staff the project and provide traffic protection complete in place and accepted by the Engineer.

**PART 2 - PRODUCTS    NOT USED**

**PART 3 - EXECUTION    NOT USED**

END OF SECTION

**SECTION 01026**  
**SCHEDULE OF VALUES**

**PART 1 - GENERAL**

1.1 SUMMARY

A. Section Includes

1. Requirements for breakdown of Lump-Sum Bid items.

B. Related Sections

1. Section 01300 - Submittals

1.2 BREAKDOWN OF LUMP SUM BID

- A. Within seven (7) business days of the date of the Executed Contract, a list detailing the breakdown of the Lump Sums Bid by the appropriate Divisions of these Specifications or as otherwise directed by the Engineer, shall be submitted for review and concurrence by the Engineer. This list will be used by the Engineer as a guide in preparing estimates for payment. The list shall be an accurate representation of costs required to complete the Work in accordance with the Contract Documents.
- B. A schedule of the value of work done based on the Progress Schedule submitted under Section 01300 - Submittals shall be submitted within seven (7) business days of the date of the executed Contract. The schedule shall show the total sum of work done for each month of the projected construction period and shall be updated monthly to reflect the actual amount requisitioned for payment.

**PART 2 - PRODUCTS**

NOT USED

**PART 3 - EXECUTION**

NOT USED

END OF SECTION

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**SECTION 01035**

**MODIFICATION PROCEDURES**

**PART 1 - GENERAL**

**1.1 SUMMARY**

- A. Section Includes
  - 1. Procedures for making modifications to the Contract by change orders or other means.
- B. Related Sections
  - 1. Appendix D Standard Form of Agreement

**1.2 CHANGE ORDERS**

- A. In general Change Orders will be issued for modification of Contract documents which will incorporate changes in the Contract requirements, including additions or deletions in the Work; for unforeseen field conditions which will necessitate changes in the Work; changes in code provisions or other requirements of federal, state or local authority requiring changes in the Work; changes in the availability of products or for incorporating new products into the work and for changes directed by the Engineer for the benefit of the Owner.
- B. Authority to execute Change Orders shall be that of the Engineer and not of the Contractor. Changes Orders will, in general, originate by a "Change Order Proposal Request" or by issuance of a "Construction Change Authorization".
- C. Unless authorized by the Engineer, no work shall be performed that is involved in the change until a formal Change Order is issued.
- D. To initiate a Change Order, the Engineer will forward a Change Order proposal request describing the proposed changes and if required, include additional or revised drawings and specifications soliciting a formal quotation of cost and time to complete the proposed Change Order work. Upon reaching mutual agreement on the cost and time, the Engineer will sign his approval of the Change Order and submit it to the Contractor for his full signature of acceptance.

**1.3 FIELD ORDERS**

- A. The Engineer may, to avoid costly removal of, or alterations to, present on-going work, issue a Construction Change Directive authorizing the Contractor to proceed, subject to later negotiation of the price of the change.



**1.4 PRICE AGREEMENTS**

- A. Prices agreed upon to cover the Change Orders may be either by mutual acceptance of a lump sum or by unit prices as stated in the Contract bid proposal or actual direct cost plus a percentage for overhead, profit and other expenses consistent with Contract Agreement.
- B. Work done by a subcontractor entitles the General Contractor a percentage of the sum of the actual direct cost, not including the subcontractor's overhead and profit, consistent with the Contract Agreement.
- C. Method for computing the cost of the change shall be based on the net additional increase. No overhead and profit shall be deducted from prices for changes deleting work.
- D. The Change Order form document shall indicate the net adjustment (+/-) to the total Contract price as a result thereof including extension or reduction of time when applicable.

**PART 2 - PRODUCTS**

NOT USED

**PART 3 - EXECUTION**

NOT USED

**END OF SECTION**

**SECTION 01040**

**COORDINATION**

**PART 1 - GENERAL**

**1.1 SECTION INCLUDES**

- A. Requirements for coordinating the various parts of Work under this Contract.

**1.2 REQUIREMENTS**

- A. Coordinate scheduling, submittals, and Work of the various Sections of specifications to assure efficient and orderly sequence of installation of interdependent construction elements.
- B. Coordinate work operations to minimize disruption of vehicular traffic on the adjacent streets as well as pedestrian foot traffic on the sidewalks and crosswalks.
- C. Coordinate site access and related access between the two areas with the Owner in a manner that does not disrupt the business of the City or Fire Department operations on the adjacent site. Utilize caution with all operations and secure the site perimeter daily from public access.
- D. Coordinate completion and cleanup of Work of separate Sections in preparation for Substantial Completion.
- E. After Owner occupancy of premises, coordinate access to site for correction of defective Work and Work not in accordance with Contract Documents, to minimize disruption of Owner's activities.
- F. Coordinate work with all utility companies as well as the City as necessary for completion of work under this contract..

**PART 2 - PRODUCTS**

NOT USED

**PART 3 - EXECUTION**

NOT USED

**END OF SECTION**

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**SECTION 01050**

**FIELD ENGINEERING**

**PART 1 - GENERAL**

**1.1 SECTION INCLUDES**

- A. Survey work and other field engineering responsibilities of the Contractor.

**1.2 REQUIREMENTS**

- A. The Contractor shall be responsible for layout of the Work and the establishing of lines and grades.
- B. Establish elevations, lines, levels, reference marks, batter boards, etc., required during the progress of the Work. Verify such marks by instrument to confirm accuracy.
- C. Locate and protect survey control and reference points.
- D. Make, check, and be responsible for all measurements and dimensions necessary for the proper construction of the Work.
- E. The Engineer will be permitted to check the lines, elevations, reference marks, batter boards, etc., set by the Contractor. The Contractor shall correct any errors found in lines, elevations, reference marks, batter boards, etc. Such a check shall not be construed as approval of the Contractor's work and shall not relieve or diminish the responsibility of the Contractor for the accurate construction and completion of the Work.
- F. Control datum for survey is NAVD 88 with local benchmarks as shown on Drawings.

**1.3 QUALITY ASSURANCE**

- A. Qualifications
  - 1. Employ a Civil Engineer or Land Surveyor registered within the State of Rhode Island, acceptable to the Engineer.
- B. Certifications
  - 1. Submit certificate signed by the Contractor's Engineer or Land Surveyor stating elevations and locations of the Work are in conformance with the Contract Documents.

**PART 2 - PRODUCTS**

NOT USED

**PART 3 - EXECUTION**

NOT USED

**END OF SECTION**

**SECTION 01060**

**REGULATORY REQUIREMENTS**

**PART 1 - GENERAL**

**1.1 SECTION INCLUDES**

- A. Building codes, Mechanical codes, and Electrical codes, Regulations, Permits and Fees applicable to the project.

**1.2 PERMITS BY CONTRACTOR**

- A. The Contractor shall secure all necessary permits from the state, city or town authorities having jurisdiction, for digging of trenches in the streets or highways and all other building and construction operations requiring permits.
- B. As a minimum the following permits are required:
  - 1. Street Opening Permit – City of Pawtucket.
  - 2. Stormwater Pollution Prevention Control Plan

**1.3 PERMITS BY OWNER**

- A. The Owner has obtained or will obtain and pay all fees for the permits listed here. The Contractor shall conform to the requirements as set forth in the following permits:
  - 1. Insignificant Alteration – Rhode Island Department of Environmental Management Office of Water Resources (Appendix F)

**1.4 CODES**

- A. The Contractor shall conform to the requirements of and pay all fees imposed by local and State Building Authorities having jurisdiction over the Work. The Contractor is responsible to conform to all building, mechanical, electrical and plumbing code requirements.
- B. The Contractor shall conform to the latest requirements of the following codes:
  - 1. Federal, State and Municipal Laws
  - 2. Rhode Island State Building Codes, National Building Code Regulation SBC-1
  - 3. Rhode Island State Building Codes, Plumbing Code Regulation SBC-3
  - 4. Rhode Island State Building Codes, Mechanical Code Regulation SBC-4
  - 5. Rhode Island State Building Codes, Electrical Code Regulation SBC-5

6. Any prevailing rules and regulations pertaining to adequate protection and/or guarding of any moving parts or otherwise hazardous locations.

1.04 FEES

- A. The cost of all permits secured by the Contractor shall be borne by him and shall be considered as having been included in the price or prices stated in the Bid. Copies of all required permits shall be submitted and shall be filed with the Engineer prior to starting work for which a permit is required.

**PART 2 - PRODUCTS**

NOT USED

**PART 3 - EXECUTION**

NOT USED

END OF SECTION

**SECTION 01067**

**STATE OF RHODE ISLAND AND FEDERAL REQUIREMENTS**

**PART 1 - GENERAL**

**1.1 SECTION INCLUDES**

- A. RHODE ISLAND SALES AND USE TAX
- B. HISTORICAL ARTICLES
- C. PREVAILING MINIMUM WAGE RATES
- D. EXCERPTS FROM RHODE ISLAND LAWS
- E. REQUIREMENTS FOR MINORITY BUSINESS ENTERPRISE, EQUAL OPPORTUNITY AND NONDISCRIMINATION
- F. ATTACHMENTS

**1.2 RHODE ISLAND SALES AND USE TAX**

- A. Materials and equipment purchased for installation under this Contract are exempt from the Rhode Island Sales Tax. The Contractor shall file for exemption on behalf of the Owner, with the State of Rhode Island Department of Taxation as required by law. The exemption from the Sales Tax shall be taken into account by the Contractor during bidding.

**1.3 HISTORICAL ARTICLES**

- A. During the life of this Contract, the Contractor is herewith required to immediately notify the following organizations listed below in the event that any articles such as "charcoal," "bone," "shell," "cultural objects - fire cracked stones or stone flaking material" or any other such related items of historical significance are discovered.
  - 1. Owner
  - 2. Local Historical Society
  - 3. Rhode Island Historical Commissioner
  - 4. Engineer

**1.4 PREVAILING MINIMUM WAGE RATES**

- A. Local prevailing minimum wage rates apply to this project. It is the responsibility of the Contractor before bid openings to request, if necessary, any additional information on local prevailing Wage Rates for those tradespeople who are not covered by the



applicable local Wage Decision, but who may be employed for the proposed work under this Contract.

- B. The attention of the Contractor is also directed to Specification Subsection 00700, 1.19 in regards to the requirements for certified payrolls. The Contractor shall routinely prepare and submit as a part of the required certified payrolls the "PRIME CONTRACTOR'S OVERALL PAYROLL CERTIFICATION" form.

#### 1.5 EXCERPTS FROM RHODE ISLAND LAWS

- A. The Contractor and each of his subcontractors shall especially note his obligations to comply with the following statutes or excerpts therefrom and any current revisions thereof contained in the General Laws of Rhode Island.
- B. These laws reflect changes made through the end of the 1992 legislative session. While every attempt at accuracy has been made, these are not certified true copies of these laws. The responsibility for compliance with all applicable provisions of Rhode Island laws relating to bidding, award, and performance of public works contracts is the Contractor's. Certified true and complete copies of any Rhode Island laws and regulations may be obtained from the Office of the Rhode Island Secretary of State.

R.I.G.L.

<u>Title, Chapter, Section</u>	<u>EXCERPT</u>
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#### 5-6-2 WORK FOR WHICH LICENSE REQUIRED

"No person, firm, or corporation shall enter into, engage in, or work at the business of installing wire, conduits, apparatus, fixtures and other appliances for carrying or using electricity for light, heat or other purpose, unless such person, firm or corporation shall have received a license and a certificate therefore, issued by the State Board of Examiners of Electricians."

#### 28-26-6 LICENSE REQUIRED FOR OPERATION OF HOISTING MACHINERY - PUBLIC CONTRACTS

"No persons shall operate or be in direct charge of a hoisting or excavation gasoline, steam, diesel, electric or compressed air hoist, shovel, crane, excavator, of five horsepower or more without obtaining a license to do so as provided in this chapter. No user or agent of use of any such described steam, gasoline, diesel, electric or compressed air hoisting machinery shall permit it to be operated unless it is operated by a duly licensed person as hereinafter provided by this chapter.

Every contract in the construction of public works by the State, or by any City or Town, or by persons contracting therewith for such construction, shall contain a clause embodying the provisions of this section."

## Chapter 116

From Chapter 116 of the General Laws of Rhode Island, 1938, relative to the conditions precedent, etc., to carrying on business within this State by foreign corporations:

"The certificate and power of attorney mentioned in the General Corporation Law, properly filled out, subscribed and sworn to, and accompanied by a certified copy of the Charter, articles of association or other similar organization papers, together with all amendments thereto, must be filed in the office of the Secretary of State by all foreign corporations intending to carry on business within this State, or for a foreign corporation to enforce in the courts of this State any contract made within the State."

Detailed information regarding Chapter 116 of the General Laws of Rhode Island, 1938, relative to the conditions precedent, etc., to carrying on business within this State for foreign corporations may be obtained from the Secretary of State, State House, Smith Street, Providence, Rhode Island.

Title 37 (chapters as provided at the end of this Specification Section.)

### 1.6 REQUIREMENTS FOR MINORITY BUSINESS ENTERPRISE, EQUAL OPPORTUNITY AND NONDISCRIMINATION

- A. Contracts for work under the bid (proposal) will obligate the contractors and subcontractors not to discriminate in employment practices.
- B. The Contractor will not discriminate against any employee or applicant for employment because of race, color, religion, sex, age, handicap, or national origin. The Contractor shall take affirmative action to ensure that applicants are employed and the employees are treated during employment without regard to their race, color, religion, sex, age, handicap, or national origin. Such actions shall include, but not be limited to, the following: employment, upgrading, demotions, or transfers; recruitment or recruitment advertising, selection for training including apprenticeship; and participation in recreational and educational activities. The Contractor agrees to post in conspicuous places available to employees and applicants for employment, notice to be provided, setting forth the provisions of this non-discrimination clause. The Contractor will cause the foregoing provisions to be inserted in all subcontracts for any work covered by this Contract so that such provisions will be binding upon each subcontractor and upon subcontractors for standard commercial supplies or raw materials.
- C. The Contractor shall keep such records and submit such reports concerning the racial and ethnic origin of applicants for employment and employees as the Owner may require as consistent with Federal and State law.
- D. The Contractor agrees to comply with such rules, regulations, or guidelines as the State of Rhode Island may issue to implement these requirements. The Contractor

further warrants that it will comply with, Title VI of the Civil rights Act of 1964, 42 U.S.C. 200d to d4.

- E. Contractors shall comply with the provisions of the General Laws of Rhode Island and attention is called to Title 37, Chapter 13, Section 1-16, relative to the payment of wages, obligations and charges by Contractors on public works projects. Non-resident Contractors are subject to Section 44-1-6 of the RI General Laws, as amended, regarding OUT-OF-STATE CONTRACTORS.
- F. The Contractor will be required to comply with Equal Opportunity Requirements and to abide by the prevailing wage rates for Public Works Projects for all employees on the job. It is the responsibility of contractors to inform themselves as to the local labor conditions, overtime compensation, health and welfare contributions, labor supply and prospective changes or adjustment of wage rates. Information is available at the Department of Labor.
- G. The City of Pawtucket supports goals regarding Minority Business Enterprises (MBE) and Woman's Business Enterprises (WBE) participation. This project does not have a minimum MBE/DBE requirement.

## **PART 2 - PRODUCTS**

NOT USED

## **PART 3 - EXECUTION**

NOT USED

END OF SECTION

**SECTION 01090**

**REFERENCE STANDARDS**

**PART 1 - GENERAL**

**1.1 SECTION INCLUDES**

- A. Reference material, abbreviations, and terms used in the Construction Documents and establishes edition dates and complete titles for standards referenced elsewhere in the Specifications.

**1.2 QUALITY ASSURANCE**

- A. For products or workmanship specified by association, trade, or Federal Standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.
- B. Obtain copies of standards when required by Contract Documents.
- C. Maintain copy at jobsite during submittals, planning, and progress of the specific work, until Substantial Completion.
- D. Should specified reference standards conflict with Contract Documents, request clarification from Architect/Engineer before proceeding.
- E. The contractual relationship of the parties to the Contract shall not be altered from the Contract Documents by mention or inference otherwise in any reference document.

**1.3 SCHEDULE OF REFERENCES**

AA	Aluminum Association 818 Connecticut Ave. N.W. Washington, DC 20006
AASHTO	American Association of State Highway and Transportation Officials 444 North Capitol Street, N.W. Washington, DC 20001
ACI	American Concrete Institute Box 19150 Reford Station Detroit, MI 48219
AFBMA	Anti-Friction Bearing Manufacturers Association
AGC	Associated General Contractors of America 1956 E Street, N.W.

**REFERENCE STANDARDS**

Washington, DC 20006

AGM	American Gear Manufacturers Association
AI	Asphalt Institute Asphalt Institute Building College Park, MD 20740
AISC	American Institute of Steel Construction 400 North Michigan Avenue Eighth Floor Chicago, IL 60611
AISI	American Iron and Steel Institute 1000 16 <sup>th</sup> Street, N.W. Washington, DC 20036
AMCA A	ir Movement and Control Association 30 West University Drive Arlington Heights, IL 60004
ANS	American National Standard
ANSI	American National Standards Institute 1430 Broadway New York, NY 10018
API	American Petroleum Institute
ARI	Air-Conditioning and Refrigeration Institute 1501 Wilson Boulevard Arlington, VA 22209
ASCE	American Society of Civil Engineers 345 East 47 <sup>th</sup> Street New York, NY 10017
ASHRAE	American Society of Heating, Refrigerating and Air Conditioning Engineers 1791 Tullie Circle, N.E. Atlanta, GA 30329
ASME	American Society of Mechanical Engineers 345 East 47th Street New York, NY 10017
ASPA	American Sod Producers Association

	4415 West Harrison Street Hillside, IL 60162
ASTM	American Society for Testing and Materials 1916 Race Street Philadelphia, PA 19103
AWG	American or Brown and Sharpe Wire Gage
AWPA	American Wood-Preservers' Association 7735 Old Georgetown Road Bethesda, MD 20014
AWS	American Welding Society
AWWA	American Water Works Association 6666 West Quincy Avenue Denver, CO 80235
BIA	Brick Institute of America 11490 Commerce Park Drive Reston, VA 22091
CS	Commercial Standard
EJCDC	Engineers' Joint Contract Document Committee American Consulting Engineers Council 1015 15 <sup>th</sup> Street, N.W. Washington, DC 20005
FM	Factory Mutual System 1151 Boston-Providence Turnpike PO Box 688 Norwood, Massachusetts 02062
Fed Spec.	Federal Specification General Services Administration Specification and Consumer Information Distribution Section (WFSIS) Washington Navy Yard, Bldg. 197 Washington, DC 20407
IBR	Institute of Boiler and Radiator Manufacturers
ICBO	International Conference of Building Officials 5360 S. Workman Mill Road Whittier, CA 90601

	IPS	Iron Pipe Size
	JIC	Joint Industry Conference Standards
	MIL	Military Specification Naval Publications and Forms Center 5801 Tabor Avenue Philadelphia, PA 19120
	NASSCO	National Association of Sewer Service Companies 101 Wymore Road, Suite 521 Altamonte, FL 32714
	NBS	National Bureau of Standards
	NCMA	National Concrete Masonry Association PO Box 781 Herndon, VA 22070
	NCPWB	National Certified Pipe Welding Bureau
	NEMA	National Electrical Manufacturers' Association 2101 'L' Street, N.W. Washington, DC 20037
	NFPA	National Fire Protection Association Battery March Park Quincy, MA 02269
	NPT	National Pipe Thread
	OS&Y	Outside screw and yoke
	PCA	Portland Cement Association 5420 Old Orchard Road Skokie, IL 60077
	SMACNA	Sheet Metal and Air Conditioning Contractors' National Assoc. 8224 Old Court House Road Vienna, VA 22180
Wire	Stl. WG	U.S. Steel Wire Washburn and Moen, American Steel and or Roebling Gage
	UL	Underwriters' Laboratories, Inc. 333 Pfingston Road Northbrook, IL 60062

USS Gage      United States Standard Gage

125-lb. ANS      American National Standard for Cast-Iron Pipe Flanges and  
Flange  
250-lb. ANS      Fittings, Designation B16.1-1975, for the appropriate class

1.4      EDITION DATES

- A.      Reference to publications and reference material shall be understood to mean the latest edition, unless stated otherwise.

**PART 2 - PRODUCTS**

NOT USED

**PART 3 - EXECUTION**

NOT USED

**END OF SECTION**



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**SECTION 01200**

**PROJECT MEETINGS**

**PART 1 - GENERAL**

**1.1 SECTION INCLUDES**

- A. Administrative and procedural requirements for project meetings.

**1.2 PRECONSTRUCTION CONFERENCE**

- A. The Engineer will schedule and administer a pre-construction conference.
- B. The pre-construction conference will be scheduled and administered within seven (7) calendar days after the dated "Notice to Proceed". The Contractor shall be prepared to address such topics as projected construction sequences and schedules, major personnel, critical work areas, construction facilities, critical path components and shop drawing submittals.

**1.3 PROGRESS MEETINGS**

- A. The Engineer will schedule and administer progress meetings and specially called meetings throughout the duration of the Work at minimum monthly intervals.
- B. The time and location of such meetings shall be designated by the Engineer and shall be convenient for all parties involved.
- C. The Engineer will, prepare agenda with copies for participants, preside at meetings, record minutes, and distribute copies to participants, and those affected by decisions made.

**PART 2 - PRODUCTS**

NOT USED

**PART 3 - EXECUTION**

NOT USED

END OF SECTION

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**SECTION 01300**

**SUBMITTALS**

**PART 1 - GENERAL**

**1.1 SECTION INCLUDES**

- A. Requirements for submission of schedules and shop drawings.

**1.2 PROGRESS SCHEDULE**

- A. Special attention is directed to the requirement that the Contractor shall start the work, within fourteen (14) calendar days after execution of the Contract Documents, and the Contractor shall submit to the Engineer for review a construction progress schedule conforming to requirements specified. This schedule should show the proposed dates of commencement and completion of each of the various subdivisions of work required under this Contract and the anticipated monthly percentage of completion based on the total contract price. The Contractor shall be responsible for updating and/or revising this schedule whenever directed by the Engineer throughout the duration of the Contract.
- B. Special attention is directed to the requirement that the Contractor shall start the Work, as specified under this Contract, no later than thirty (30) calendar days after the execution of the Contract Documents, unless otherwise directed by the Owner. The Contractor shall comply with all pre-construction requirements as specified. The Owner reserves the right to delay the commencement of the Work or any part thereof if the specified requirements as determined by the Engineer have not been satisfied. The Owner further reserves the right to limit or, delay construction, or certain activities thereof, in certain areas of the Contract should the Owner deem it to be in the public's best interest and/or safety to do so.
- C. The Contractor shall contact the appropriate town or city authorities concerning any public or semi-public events that may occur during the construction period that may affect construction. The Contractor alone shall be responsible for arranging his construction sequence to conform to any restrictions these events may impose. No claims for extras will be allowed because of any delay, extra materials handling, extra excavation, etc. caused by the imposed restrictions. However, additional time may be granted for completion of the work to compensate for delays caused by said restrictions.

**1.3 SHOP DRAWINGS**

- A. Submit four (4) copies of all shop and working drawings of concrete reinforcement, structural details, piping layout, wiring, materials fabricated especially for the Contract, and materials and equipment for which such drawings are specifically requested.

- B. A maximum of two (2) submittals of each shop drawing will be reviewed by the Engineer. If more submittals are required due to the Contractor's neglect or failure to fulfill the requirements of the Contract plans and specifications, or to make corrections or modifications required by the Engineer in the review of the first two submittals, the Engineer will review the submittal and the Contractor will be responsible for the cost of the review, as determined by the Owner based on the Engineer's documentation of time and rates for additional services established in the Engineering Agreement between the Owner and the Engineer.
- C. If resubmittals on shop and working drawings are required, the Engineer will retain two (2) copies and two (2) copies will be returned to the Contractor. When resubmittals are returned to the Engineer, six copies of the complete submittal shall again be required.
- D. Such drawings shall show the principal dimensions, weight, structural and operating features, space required, clearances, type and/or brand of finish or shop coat, grease fittings, etc., depending on the subject of the drawing. When the dimensions are of particular importance, or when specified, the drawings shall be certified by the manufacturer or fabricator as correct for the Contract.
- E. When so specified or if considered by the Engineer to be acceptable, manufacturer's specifications, catalog data, descriptive matter, illustrations, etc., may be submitted in place of shop and working drawings.
- F. The Contractor shall be responsible for the prompt and timely submittal of all shop and working drawings to eliminate delay to the Work due to the absence of such drawings. All shop and working drawings must be submitted to the Engineer within fourteen (14) calendar days prior to incorporation into the Work, unless otherwise permitted by the Engineer. **Prior to the submittal of any shop drawings, the Contractor shall submit a schedule of proposed shop drawing transmittals.** The schedule shall identify the subject matter of each transmittal, the corresponding specification section number and the proposed date of submission. Prior to and during the progress of the Work the schedule shall be revised and resubmitted as requested by the Engineer.
- G. No material or equipment shall be purchased or fabricated for the Contract until the required shop and working drawings have been submitted as hereinabove provided and reviewed for conformance to the Contract requirements. All such materials and equipment and the work involved in their installation or incorporation into the Work shall then be as shown in and represented by said drawings.
- H. Until the necessary review has been made, the Contractor shall not proceed with any portion of the Work (such as the construction of foundations) for which review is required.
- I. All shop and working drawings shall be submitted to the Engineer by and/or through the Contractor, who shall be responsible for obtaining shop and working drawings from his subcontractors and returning reviewed drawings to them. All shop and working drawings shall be prepared on standard size, 24 inch by 36 inch sheets, except those which are made by changing existing standard shop and working drawings. All drawings shall be clearly marked with the names of the Owner, Contractor, and building, equipment, or structure to which the drawing applies, and shall be suitable

numbered. Submitted shop drawings shall be accompanied by a letter of transmittal, completed by the Contractor as approved by the Engineer.

- J. Only drawings which have been checked and corrected by the fabricator should be submitted to the Contractor by his subcontractors and vendors. Prior to submitting drawings to the Engineer, the Contractor shall check thoroughly all such drawings to satisfy himself that the subject matter thereof conforms to the Drawings and Specifications in all respects. All drawings which are correct shall be marked with the date, checker's name, and indication of the Contractor's approval, and then shall be submitted to the Engineer; other drawings shall be returned for correction.
- K. If a shop drawing shows any deviation from the Contract requirements, the Contractor shall make specific mention of the deviations in his letter of transmittal.
- L. The review of shop and working drawings by the Engineer will be general only, and nothing contained in this Section shall relieve, diminish or alter in any respect the responsibilities of the Contractor under the Contract Documents and in particular, the specific responsibility of the Contractor for details of design and dimensions necessary for proper fitting and construction of the work as required by the Contract and for achieving the result and performance as specified. The Contractor shall be responsible for errors and omissions in shop drawings.
- M. Should the Contractor submit equipment that requires modifications to the structures, piping, electrical conduit, wires, appurtenances, or layouts etc., either existing or as detailed on the Drawings, he shall also submit details of the proposed modifications. If such equipment and modifications are accepted, the Contractor, at no additional cost to the Owner, shall do the work necessary to make such modifications.
- N. The Contractor shall furnish additional copies of shop drawings or catalog cuts when so requested.

## **PART 2 - PRODUCTS**

NOT USED

## **PART 3 - EXECUTION**

NOT USED

**END OF SECTION**

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**SECTION 01400**

**QUALITY CONTROL**

**PART 1 - GENERAL**

**1.1 SECTION INCLUDES**

- A. Requirements for Contractor's quality control of products, suppliers, manufacturers, services, site conditions, and workmanship, to produce Work of specified quality.

**1.2 QUALITY ASSURANCE/CONTROL OF INSTALLATION**

- A. Where indicated provide full shop drawings designed and engineered by a professional engineer licensed in the state of Rhode Island.
- B. Comply fully with manufacturers' instructions, including each step in the installation sequence.
- C. Should manufacturers' instructions conflict with Contract Documents, request clarification from Engineer before proceeding.
- D. Comply with specified standards as a minimum quality for the Work except when more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.
- E. Wall work shall be overseen and performed by qualified and experienced personnel.
- F. Persons utilized in the construction and fabrication of the work shall be able to produce workmanship of the shown and specified quality.
- G. Secure Products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion or disfigurement.

**1.3 FIELD SAMPLES**

- A. Install field samples at the site as required by individual specifications sections for review.
- B. Acceptable samples represent a quality level for the Work.
- C. Where field sample is specified to be removed, clear area only after field sample has been accepted by the Engineer.

**1.4 CERTIFIED WELDERS**

- A. Structural welds shall be made only by operators who have been qualified by tests, as prescribed in the "Standard Qualification Procedure" of the American Welders Society, to perform the type of work required.



- B. Pipe welds shall be made only by operators who have been qualified by the National Certified Pipe Welding Bureau and each operator's qualification record shall be submitted to the Engineer before any work is preformed.
- C. Shop welding shall be in accordance with the "Code for Welding in Building Construction".

**PART 2 - PRODUCTS**

NOT USED

**PART 3 - EXECUTION**

NOT USED

**END OF SECTION**

**SECTION 01410**

**TESTING LABORATORY SERVICES**

**PART 1 - GENERAL**

**1.1 SUMMARY**

- A. Section Includes
  - 1. Qualification, duties and responsibilities of testing laboratories.
  - 2. Coordination and scheduling responsibilities of the Contractor.
- B. Related Sections
  - 1. Section 01020 - Allowances
  - 2. Section 01600 - Materials and Equipment

**1.2 PAYMENT PROCEDURES**

- A. Initial Testing
  - 1. Testing will be performed as required by the Engineer.
- B. Retesting
  - 1. When initial tests indicate noncompliance with the Contract Documents, subsequent retesting occasioned by the noncompliance shall be performed by the same testing agency.
- C. Contractors Convenience Testing
  - 1. Inspecting and testing performed exclusively for the Contractor's quality control purpose and for conformance with the specifications shall be the sole responsibility of the Contractor.

**1.3 REFERENCES**

- A. American Society for Testing and Materials (ASTM)
  - 1. E329, Agencies Engaged in Construction Inspection and/or Testing

**1.4 REQUIREMENTS**

- A. Work included:
  - 1. Cooperate with the Owner's selected testing agency and all others responsible or testing and inspecting the Work.
  - 2. Provide other testing and inspecting as specified to be furnished by the Contractor in this Section and/or elsewhere in the Contract Documents.

3. Where no testing requirements are described, but the Owner directs testing, the Contractor shall provide testing under the requirements of this Specification.

B. Work not included:

1. Selection of testing laboratory: The Owner will select a qualified independent testing laboratory.

1.5 QUALITY ASSURANCE

A. Qualifications

1. The testing laboratory will be qualified to the Owner's approval in accordance with ASTM E329.

B. Regulatory requirements

1. Testing, when required, will be in accordance with all pertinent codes and regulations and with selected standards of the American Society for Testing and Materials.
2. Regulatory Requirements Inspections and tests required by codes or ordinances, or by a plan approved authority, and which are made by a legally constituted authority, shall be the responsibility of and shall be paid for by the Contractor, unless otherwise provided in the Contract Documents.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Comply with pertinent provisions of Section 01600 - Materials and Equipment.
- B. Promptly process and distribute, to the Engineer, required copies of test reports and instructions to assure necessary retesting and replacement of materials with the least possible delay in progress of the Work.

1.7 SCHEDULING

A. Establishing schedule

1. By advance discussion with the testing laboratory selected by the Owner, determine the time required for the laboratory to perform its tests and to issue each of its findings.
2. Provide all required time within the construction schedule.
3. Coordinate testing activity with the appropriate testing laboratory.

B. Revising schedule

1. When changes of construction schedule are necessary during construction, coordinate all such changes with the testing laboratory as required.

C. Adherence to schedule

1. When the testing laboratory is ready to test according to the established schedule, but is prevented from testing or taking specimens due to

incompleteness of the Work, all extra charges for testing attributable to the delay may be back-charged to the Contractor and shall not be borne by the Owner.

## **PART 2 - PRODUCTS**

NOT USED

## **PART 3 - EXECUTION**

### **3.1 FIELD QUALITY CONTROL**

#### **A. Site Tests**

1. Coordinate Testing with scheduled work operations and the Engineer. Representatives of the testing laboratory shall have access to the Work at all times and at all locations where the Work is in progress. Provide facilities for such access to enable the laboratory to perform its functions properly.
2. All specimens and samples for testing, unless otherwise provided in the Contract Documents, shall be taken by the testing personnel. All sampling equipment and personnel will be provided by the testing laboratory. All deliveries of specimens and samples to the testing laboratory will be performed by the testing laboratory.
3. Sieve and Proctor analysis will be performed as requested by the Engineer for in-situ aggregate to be used in the Work. Sieve and Proctor analysis to be stamped and signed by a Professional Engineer registered in the State of Rhode Island.
4. Sieve analysis are required for all aggregate and soils delivered to the job site to be used in the Work. Sieve analysis to be stamped and signed by a Professional Engineer registered in the State of Rhode Island. Contractor responsible for sieve analysis for this purpose.
5. Sample all imported soils and aggregates at a minimum frequency of one (1) per one thousand cubic yards each to verify materials free of contamination. The material shall be tested for the following: volatile organic compounds (VOC's) (EPA method 8260), Poly-Nuclear Aromatic Hydrocarbons (PAH's) (EPA method 8270), total Petroleum Hydrocarbons ((TPH), and RCRA 8 Metals.
6. If identified by Engineer and based on results of field testing, soil compaction testing for paved areas shall be performed for every 3,000 square feet of roadway, but no less than two tests per street. Soil compaction testing to be performed for every 50 linear feet of excavated trench repair.
7. Asphalt compaction testing each day permanent bituminous concrete is placed. Testing shall be provided for every 150 linear feet of road, minimum two tests per road.

**END OF SECTION**

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**SECTION 01560**

**TEMPORARY CONTROLS**

**PART 1 - GENERAL**

**1.1 SECTION INCLUDES**

- A. Project Understanding: The Contractor shall note the work occurs both on private and public land and includes operations within City owned streets and sidewalks. Sidewalk areas and travel lanes are required to be temporarily closed during some construction operations. Protect the public by establishing and maintaining barricades, fencing and signage alerting the public to the work activities.
- B. Site Access: Site access requires sharing a driveway entrance and portions of an existing parking lot with existing businesses located at 249 Roosevelt Avenue. All businesses shall remain open and operational throughout the course of the project. A portion of the parking lot will be dedicated to Contractor use as indicated on the plans. Establish temporary fencing, utilize barrels and barricades to restrict access to the laydown and work areas. Refer to Section 02050 Site Preparation.
- C. Site Context: The site is adjacent to the Blackstone River. It is highly visible from all sides. Do not allow excess material, debris or trash to accumulate. Maintain a clean, organized site with a professional appearance at all times.

**1.2 CLEANING DURING CONSTRUCTION**

- A. Unless otherwise specified under the various trade Sections of the Specifications, the General Contractor shall perform clean-up operations during construction as herein specified.
  - 1. Control accumulation of waste materials and rubbish; periodically dispose of off-site. Bear all costs, including fees resulting from disposal.
  - 2. Clean areas prior to start finish work and maintain areas free of dust and other contaminants during finishing operations.
  - 3. Maintain project in accordance with all local, State and Federal Regulatory Requirements.
  - 4. Store volatile wastes in covered metal containers, and remove from premises.
  - 5. Prevent accumulation of wastes that create hazardous conditions.
  - 6. Provide adequate ventilation during use of volatile or noxious substances
- B. Conduct cleaning and disposal operations to comply with local ordinances and anti-pollution laws.
  - 1. Do not burn or bury rubbish and waste materials on site.
  - 2. Do not dispose or volatile wastes such as mineral spirits, oil, or paint thinner in storm or sanitary drains.

**TEMPORARY CONTROLS**

3. Do not dispose of wastes into streams or waterways.
4. Use only those materials which will not create hazards to health or property and which will not damage surfaces.
5. Use only those cleaning materials and methods recommended by manufacturer of surface material to be cleaned.
6. Execute cleaning to ensure that the buildings, the sites, and adjacent properties are maintained free from accumulations of waste materials and rubbish and wind blown debris, resulting from construction operations.
7. Provide on-site containers for collection of waste materials, debris, and rubbish.
8. Remove waste materials, debris, and rubbish from the site periodically and dispose of at legal disposal areas off the construction site.
9. Handle material in a controlled manner with as little handling as possible. Do not drop or throw materials from heights.
10. Schedule cleaning operations so that dust and other contaminants resulting from cleaning process will not damage surrounding surfaces.
11. During its progress, the work and the adjacent areas affected thereby shall be kept cleaned up and all rubbish, surplus materials, and unneeded construction equipment shall be removed and all damage repaired so that the public and property owners will be inconvenienced as little as possible.
12. Where material or debris has washed or flowed into or been placed in existing watercourses, ditches, gutters, drains, pipes, structures, work done under this contract, or elsewhere during the course of the Contractor's operations, such material or debris shall be entirely removed and satisfactorily disposed of during the progress of the work, and the ditches, channels, drains, pipes, structures, and work, etc. shall, upon completion of the work, be left in a clean and neat condition.

### 1.3 DUST CONTROL

- A. Provide adequate means for the purpose of preventing dust caused by construction operations throughout the period of the construction contract.
- B. This provision does not supersede any specific requirements for methods of construction or applicable aspects of Section 12 General Conditions for performance obligations of the General Contractor.

### 1.4 EROSION AND SEDIMENT CONTROL

- A. Plan and execute construction by methods to control surface drainage from cuts and fills, from borrow and waste disposal areas. Prevent erosion and sedimentation.
- B. Minimize amount of bare soil exposed at one time.
- C. Provide temporary measures such as berms, dikes, and drains, to prevent water flow.

## TEMPORARY CONTROLS

- D. Construct fill and waste areas by selective placement to avoid erosive surface silts for clays.
- E. Periodically inspect earthwork to detect evidence of erosion and sedimentation; promptly apply corrective measures.
- F. Construct sediment control devices for discharge from dewatering trenches.
- G. Construct all sedimentation control devices shown on the plans and as directed by the Engineer.

#### 1.5 NOISE CONTROL

- A. Develop and maintain a noise-abatement program and enforce strict discipline over all personnel to keep noise to a minimum.
- B. Execute construction work by methods and by use of equipment which will reduce excess noise.
  - 1. Equip air compressors with Silencers, and power equipment with mufflers.
  - 2. Avoid prolonged noise as well as loud noise. Manage movement of equipment, delivery vehicles, and site operations to minimize noise. Coordinate with vehicular traffic flow and work activities to reduce noise.

#### 1.6 POLLUTION CONTROL

- A. Special care shall be taken to prevent contamination or muddying or interfering with the Blackstone River. No waste matter of any kind will be allowed to discharge into the river flow.

#### 1.7 SURFACE WATER CONTROL

- A. Take all precautions to prevent damage to the work or equipment by high wind, high water and/or by storm events. The Engineer with the approval of the Owner may prohibit the carrying out of any work at any time when in his judgement, high water or storm conditions are unfavorable or not suitable, or at any time, regardless of the weather, when proper precautions are not being taken to safeguard previously constructed work or work in progress. No special compensation shall be made if the work is temporarily halted due to weather conditions.
- B. In case of damage caused by the failure of the Contractor to take adequate precautions, the Contractor shall repair or replace equipment damaged and shall make such repairs or rebuild such parts of the damaged work, as the Engineer may require, at no additional expense to the Owner.

#### 1.8 BARRIERS AND ENCLOSURES

- A. Fences and Barricades



1. Stockpiling of materials on site shall be limited to crushed aggregate products without fines and non-erodible, inert construction materials. Materials on the site shall be fenced in the Location A as shown on the Plans. The fence shall become the responsibility of the Contractor and shall be removed at the completion of the project. Fencing may be adjusted to allow for site-work operations to flow smoothly.
2. Provide and maintain temporary fences, barriers, lights, guardrails, and barricades as indicated in the Contract Documents, or as necessary to secure the Work and adjacent property, and protect persons and property.
3. The Contractor may obtain necessary approvals and permits and provide temporary expedients as necessary to accommodate tasks requiring items mentioned herein.

#### 1.9 TEMPORARY PEDESTRIAN AND VEHICULAR TRAFFIC CONTROL

- A. Maintain pedestrian and vehicular traffic flow in areas adjacent to the work site. Refer to Appendix G Transportation Management Plan. Furnish a written phased construction pedestrian plan that details the sequences and duration of the proposed detour. The Contractor shall have sole responsibility for the protection, maintenance, and movement of both temporary pedestrian and vehicular traffic control devices.
- B. All temporary detours and crosswalks shall comply with the Americans with Disabilities Act in all ways. Limit detours and disruption to sidewalks to the least amount of time necessary to complete the Work. Avoid long closures to large areas of sidewalks.
- C. Note the following References:
  1. Manual on Uniform Traffic Control Devices (MUTCD), latest edition, including all revisions.
  2. Rhode Island Department of Transportation (RIDOT) Standard Specifications for Road and Bridge Construction, latest edition, including all revisions and RIDOT Standard Details, latest edition, including all revisions.

#### 1.10 PROTECTION OF TREES

1. The Contractor shall take care not to harm trees along the sides of roads or within the existing facility in which the construction work is to be done or trees on adjacent lands except as indicated on the drawings or with the written permission of the Owner and any other owner of the trees involved. Care shall be taken not to cut tree roots so as to harm the growth of trees to remain.
2. If, in the opinion of the Engineer, any trees damaged during construction can be repaired, the Contractor shall satisfactorily repair same at no further cost to the Owner.

3. If, in the opinion of the Engineer, any tree damaged during construction cannot be repaired and should be removed, the Contractor shall satisfactorily remove and replace, in kind, same at no further cost to the Owner.

**PART 2 - PRODUCTS**

NOT USED

**PART 3 - EXECUTION**

NOT USED

**END OF SECTION**

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**SECTION 01570**

**TRAFFIC CONTROL**

**PART 1 - GENERAL**

**1.1 SCOPE**

- A. This Section specifies the general requirements for traffic regulation, minimum performance criteria for maintenance and protection of traffic, road closures, and coordination with other parties for the duration of the Work.
- B. The Contractor shall be responsible for the maintenance and protection of traffic on public roadways impacted by its operations for the duration of the Work. The Contractor shall bear all costs for designing, furnishing, and maintaining traffic control facilities for the duration of the work.
- C. The Contractor shall obtain permission from the City of Pawtucket to temporarily close lanes and for other temporary traffic control measures required in performing the Work. Variations to the Traffic Plans must be approved by the City of Pawtucket.
- D. The Contractor shall coordinate its traffic control facilities with the schedule restrictions and construction operations of other parties as specified herein or as directed by the Engineer.
- E. Related work described elsewhere:
  - 1. Section 3.0 Project Overview

**1.2 REFERENCE STANDARDS.**

- A. Federal Highway Administration, Manual on Uniform Traffic Control Devices (MUTCD), 2009 Edition.
- B. Rhode Island Department of Transportation Standard Specifications for Road and Bridge Construction and all approved compilations.

**PART 2 - PRODUCTS**

**2.1 TRAFFIC CONTROL DEVICES AND TEMPORARY MARKINGS.**

- A. Traffic devices and markings shall conform to Rhode Island Department of Transportation Standard Specifications for Road and Bridge Construction Divisions I & III.
- B. FHWA Manual on Uniform Traffic Control Devices (MUTCD), 2009 Edition.

**2.2 TRAFFIC CONTROL FACILITIES.**

- A. Temporary traffic control equipment shall be furnished by the Contractor at the start of construction, adjusted as needed throughout the course of the Work and removed or restored at the completion of the Work and shall include, but shall not be limited to

traffic barriers, channelizing devices, signage, re-striping, work zone warnings and flashing arrow boards.

- B. The Contractor shall restore all public highways and traffic control devices to a condition equal to, or better than that that existed prior to the Work.
- C. Restore traffic control loops damaged by the Contractors operations in accordance with RIDOT and/or City of Pawtucket requirements as applicable. Loops shall be restored within the time frame required by the governing body.

### **PART 3 - EXECUTION**

#### **2.1 MAINTENANCE OF TRAFFIC AND TRAFFIC CONTROL DEVICES.**

- A. The Contractor shall not close any State or City streets or rights-of-way without prior permission from the Rhode Island Department of Transportation and/or the City of Pawtucket. The Contractor shall maintain existing traffic flows to all areas adjacent to the work areas. The Contractor shall not close or obstruct any portion of a street, road, or private way that shall be rendered unsafe by the Contractor's operations. Instead, the Contractor shall make such repairs or provide such temporary ways or guards as shall be acceptable to the proper authorities.
- B. Streets, roads, private ways, and walks not closed, shall be maintained passable and safe by the Contractor, who shall assume and have full responsibility for adequacy and safety of provisions made therefore.
- C. The Contractor shall, as least seven (7) days in advance, notify the Engineer in writing if the closure of a street or road is necessary and at least two (2) days in advance, notify the Police and Fire Department in writing, with a copy to the Engineer. The Contractor shall cooperate with the Police Department in the establishment of alternate routes and shall provide adequate detour signs, plainly marked and well lighted, in order to minimize confusion.
- D. Throughout the duration of the Work, the Contractor shall maintain all temporary and permanent traffic control facilities, signs, barricades and other protective devices in a sturdy, clean, legible condition and at the locations designated by the MPOT Plan. The Contractor shall cover or remove signs not in use. Maintenance of devices will include repairing; adjusting; washing; repainting, and the re-application of reflective sheeting.
- E. The Contractor shall maintain all sidewalks, crosswalks and accessways in accordance with the Americans with Disabilities Act (ADA) requirements. Provide clear and visible signage when conducting temporary closures.
- F. Care shall be exercised such that weeds, shrubbery, and construction materials, equipment, and spoils do not obscure the message of any sign, light, or barricade.
- G. No defective and/or damaged devices shall be installed. Devices showing defects or damage shall be either repaired or removed and replaced at no additional cost to the Owner.
- H. Any and all costs, including Owner and Engineers costs, of fines levied for violation of any permit requirements which are a direct result of Contractor's performance or non-

compliance with issues permits or applicable regulations shall be paid by Contractor at no cost to the Owner.

## 2.2 MAINTENANCE AND PROTECTION OF TRAFFIC (MPOT) PLAN.

- A. The contractor shall prepare an MPOT coordinated with the schedule and desired sequencing of operations.
- B. The MPOT plan shall be implemented so that the duration and physical extent of any temporary lane closure is minimized. The MPOT shall be designed to minimize the need for Police details.

## 2.3 POLICING

- A. When, in the opinion of the Owner or the Engineer, public safety or convenience requires the services of police, the Engineer may direct the Contractor to provide manpower to direct traffic within the location of work under this Contract.
- B. When so directed, the Contractor shall make all arrangements for obtaining the necessary manpower. All costs for policing will be paid by the Owner. The Contractor shall pay all incidental costs related to the coordination for these services.
- C. The intent is to ensure public safety by police direction of traffic. Police are not to serve as watchmen to protect the Contractor's equipment and materials, or to warn pedestrians of such hazards as open trenches.
- D. Nothing contained herein shall be construed as relieving the Contractor of any of his responsibilities for protection of persons and property under the terms of the Contract.

## 2.4 PARKING

- A. The Contractor shall be responsible for managing employee parking throughout the duration of the Contract. The Contractor shall secure and establish parking at work site in a legal and safe manner that does not adversely affect traffic flows on public roads.
- B. The Contractor shall be responsible for coordinating the posting and all costs associated with the posting of No Parking signs.

## 2.5 ROAD MAINTENANCE AND SITE ACCESS.

- A. Contractor shall establish entrances and exits to the site that conform to the Maintenance of Traffic Plans and are approved by the Engineer.
- B. Contractor shall install and maintain wheel wash facilities at all site exits.
- C. The Contractor shall retain the services of a street sweeper to remove all muck and dust tracked onto Public roadways due to its operations. Sweeping shall be conducted to the satisfaction of the Engineer in accordance with the following:
  - 1. Contractor to provide a motorized, driver operated, self-contained, debris and dirt collecting street sweeper once per week unless authorized otherwise by the Engineer.

2. Every street disturbed by the Contractors operations shall be swept on a weekly basis.
3. Additional street sweeping or application of calcium chloride shall be required to prevent nuisance dust conditions.
4. Should the Contractor fail to control dust, more frequent street sweeping shall be implemented.
5. The Contractor shall have full responsibility for dust control.

**END OF SECTION**

**SECTION 01600**

**MATERIALS AND EQUIPMENT**

**PART 1 - GENERAL**

**1.1 SUMMARY**

**A. Section Includes**

1. Requirements for delivery, storage, handling and installation of systems, materials, manufactured units, equipment, components, and accessories used in the work.

**B. Related Sections**

1. Section 01300 - Submittals

**1.2 DELIVERY**

- A. Refer to Specifications' Sections for requirements pertaining to delivery and handling of materials and equipment.
- B. Transport products by methods to avoid product damage; deliver in undamaged condition in manufacturers' unopened containers or packaging, dry.
- C. Provide equipment and personnel to handle products by methods to prevent soiling or damage.
- D. Promptly inspect shipments to assure that products comply with requirements, that quantities are correct, and products are undamaged.

**1.3 STORAGE AND PROTECTION**

- A. Refer to Specifications' Sections for requirements pertaining to storage and protection of materials and equipment.
- B. Store products in accordance with manufacturers' instruction, with seals and labels intact and legible. Store sensitive products in weather tight enclosures; maintain within temperature and humidity ranges required by manufacturers' instructions.
- C. For exterior storage of fabricated products, place on sloped supports above ground. Cover products subject to deterioration with impervious sheet covering; provide ventilation to avoid condensation.
- D. Store loose granular materials on solid surfaces in a well-drained area; prevent mixing with foreign matter.
- E. Arrange storage to provide access for inspection. Periodically inspect to assure that products are undamaged, and are maintained under required conditions.



1.4 INSTALLATION STANDARDS

- A. Comply with Specifications and referenced standards as minimum requirements.
- B. Components required to be supplied in quantity within a Specification Section shall be the same, and shall be interchangeable.
- C. Do not use materials and equipment removed from existing structures, except as specifically required, or allowed, by the Contract Documents.
- D. Perform work by persons qualified to produce workmanship of specified quality.
- E. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, and racking.
- F. When work is specified to comply with manufacturers' instructions, submit copies as specified in Section 01300 - Submittals, distribute copies to persons involved, and maintain one set in field office.
- G. Perform work in accordance with details of instructions and specified requirements.

**PART 2 - PRODUCTS**

NOT USED

**PART 3 - EXECUTION**

NOT USED

**END OF SECTION**

**SECTION 01700**

**CONTRACT CLOSE-OUT**

**PART 1 - GENERAL**

**1.1 SECTION INCLUDES**

- A. Requirements for specific administrative procedures, record keeping, close-out submittals, and forms used at substantial and final completion of the Work.
- B. Contractor shall satisfy all administrative requirements within the Contract Documents and the Requirements listed in this section prior to Contract Close-out.

**1.2 FINAL CLEANING**

- A. On or before the completion of the work, the Contractor shall, unless otherwise especially directed or permitted in writing, tear down and remove all temporary buildings and structures built by him; shall remove all temporary works, tools, and machinery or other construction equipment furnished by him; shall remove all rubbish from any grounds which he has occupied; and shall leave the roads and all parts of the premises and adjacent property affected by his operations in a neat and satisfactory condition.
- B. The Contractor shall restore or replace, when and as directed, any public or private property damage by his work, equipment, or employees, to a condition at least equal to that existing immediately prior to the beginning of operations. To this end, the Contractor shall do as required, all necessary highway or driveway, walk and landscaping work. Suitable materials, equipment, and methods shall be used for such restoration. The restoration of existing property or structures shall be done as promptly as practicable as work progresses and shall not be left until the end of the contract period.
- C. Unless otherwise specified under the various Sections of the Specifications, the Contractor shall perform final cleaning operations as herein specified prior to final inspection.
- D. At completion of work, remove waste materials, rubbish tools, equipment, machinery and surplus materials, and clean all sight-exposed surfaces; leave project clean and ready for occupancy.
- E. Cleaning shall include all surfaces, interior and exterior in which the Contractor and all Subcontractors have had access whether existing or new.
- F. Refer to Sections of the Specifications for cleaning of specific products or work.
- G. Use only those materials which will not create hazards to health or property and which will not damage surfaces.
- H. Use only those cleaning materials and methods that are recommended by the manufacturer of surfaces material to be cleaned.

- I. Employ experienced workmen, or professional cleaners, for final cleaning operations.

### 1.3 PROJECT RECORD DOCUMENTS

- A. Project Record Documents also referred here as As-Built Drawings shall consist of all the contract drawings.
- B. The Contractor and all Subcontractors shall be required to maintain one set of As-Built Drawings, as the work relates to their Sections of the Specifications, at the site.
- C. As-Built Drawings shall be stored and maintained in the General Contractor's field office apart from other documents used for construction. The As-Built Drawings shall be maintained in a clean, dry, and legible condition and shall not be used for construction purposes.
- D. As-Built Drawings shall be available at all time for inspection by the Engineer. All deficiencies noted shall be promptly corrected.
- E. The following information shall be indicated on the As-Built Drawings for building construction:
  1. Record all changes, including change orders, in the location, size, number, and type both horizontally and vertically of all elements of the projects which deviate from those indicated on all the contract drawings.
  2. The tolerance for the actual location of utilities and appurtenances within the building to be marked on the As-Built Drawings shall be plus or minus two (2) inches.
  3. The location of all underground utilities and appurtenances referenced to permanent surface improvements, both horizontally and vertically at ten (10) ft. intervals and at all changes of direction.
  4. Each of the utilities and appurtenances shall be referenced by showing a tag number, area served and function on the As-Built Drawings.
  5. Prior to the installation of all finish materials, a review of the As-Built Drawings shall be made to confirm that all changes have been recorded. All costs to investigate such conditions shall be borne by the applicable party as demonstrated by the Engineer.
- F. At the end of each month and before payment for materials installed, the Contractor, and his Subcontractors, shall review As-Built Drawings for purpose of payment. If the changes in location of all installed elements are not shown on the as-built drawings and verified in the field, then the material shall not be considered as installed and payment will be withheld.
- G. At the completion of the contract, each Subcontractor shall submit to the Contractor a complete set of his respective As-Built Drawings indicating all changes. The Contractor shall certify in writing on the title sheet of the drawings that they are complete and correct.
- H. The Contractor shall submit a full Record Drawing Set prior to final inspection.

1.4 WARRANTIES

- A. Comply with requirements of Section 01740 Warranties.

1.5 FINAL INSPECTION

- A. The Contractor shall submit written certification that:
  - 1. Project has been inspected for compliance with Contract Documents.
  - 2. Equipment, utilities, signal and electrical systems have been tested in the presence of the manufacturer's representative and are operational and satisfactory.
  - 3. Project is completed, and ready for final inspection.

**PART 2 - PRODUCTS**

NOT USED

**PART 3 - EXECUTION**

NOT USED

**END OF SECTION**

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**SECTION 01740**

**WARRANTIES**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. General administrative and procedural requirements for warranties required by the Contract Documents, including manufacturers standard warranties on products and special warranties.

**1.02 SUBMITTAL**

- A. Submit written warranties to the Owner prior to the date fixed by the Engineer for Substantial Completion. If the Certificate of Substantial Completion designates a commencement date for warranties other than a date of Substantial Completion for the Work, or a designed portion of the Work, submit written warranties upon request of the Owner.
- B. When a designated portion of the Work is completed and occupied or used by the Owner, by separate agreement with the Contractor during the construction period, submit properly executed warranties to the Owner prior to acceptance of this portion of the Work.
- C. Refer to individual Sections of Division 2 through 16 for specific content requirements, and particular requirements for submittal of special warranties.

**1.03 WARRANTY REQUIREMENT**

- A. Related Damages and Losses: 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 correction of warranted Work.
- B. Reinstatement of Warranty: 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.
- C. Replacement Cost: 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 has benefited from use of the Work through a portion of its anticipated useful service life.

- D. Owner's Recourse: 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, or remedies.
- E. Rejection of Warranties: The Owner reserves the right to reject warranties and to limit selections to products with warranties not in conflict with requirements of the contract Documents.
- F. Disclaimers and Limitations: 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.

#### 1.04 DEFINITIONS

- A. Standard Product Warranties are preprinted written warranties published by individual manufacturers for particular products and are specifically endorsed by the manufacturer to the Owner.
- B. Special Warranties are written warranties 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.

#### PART 2 PRODUCTS

NOT USED

#### PART 3 EXECUTION

NOT USED

**END OF SECTION**

**SECTION 01800**

**MAINTENANCE**

**PART 1 - GENERAL**

**1.1 SECTION INCLUDES**

- A. Procedures for maintaining work completed under this Contract.

**1.2 MAINTENANCE PERIOD**

- A. The general maintenance period for all construction or materials under this Contract shall be one (1) year subsequent to the date of the acceptance of the work by the Owner, or as provided by other sections of this Specification.
- B. If the Owner puts any structure or equipment to use prior to acceptance of all work under the Contract, the maintenance period for such structures or equipment shall be calculated from the time use begins.
- C. Contractor agrees to replace the material which does not conform to the Contract requirements, and to repair any damage of material or work without cost to the Owner, to satisfaction of Engineer, in conformance with Contract Documents provided orders for replacement and/or repairs are received in writing by the Contractor within the one year period.
- D. This Section shall in no way limit the duration of the Contractor's responsibility for the correction of any defect due to workmanship or materials provided by the Contractor which are not in compliance with the Contract Documents.

**1.3 ABUSE OF WORK**

- A. Contractor is not obligated to perform work of replacement or repair that he may prove is required because of abuse by parties other than the Contractor, after the date the Owner puts to continuous use the work requiring replacements or repair, or after date the Owner has approved the Certificate of Completion.

**1.4 EMERGENCY REPAIRS**

- A. If the Owner deems necessary, the Owner shall order replacement or repairs be undertaken within 24 hours.
- B. If the Contractor delays or fails to make the ordered replacement or repairs within the time specified, the Owner shall have the right to make such replacements or repairs and the expense shall be deducted from moneys due the Contractor, or moneys of the Contractor retained by the Owner.



**PART 2 - PRODUCTS**

NOT USED

**PART 3 - EXECUTION**

NOT USED

**END OF SECTION**

**SECTION 02050**

**SITE PREPARATION**

**PART 1 - GENERAL**

**1.01 DESCRIPTION OF WORK:**

- A. Site Preparation:
  - 1. The Contactor shall furnish all labor, materials, equipment and services necessary for and incidental to the execution of all demolition and site preparation as shown on the Drawings and as required to complete the project.
  - 2. The work under this Section shall include but are not limited to the demolition and legal disposal of the identified items. All work shall be done in a neat, workman-like manner. The interfaces between areas of demolition and areas designated to remain may require precise cutting of materials and operations shall be conducted evenly and straight, resulting in a neat interface.
  - 3. Work shall be conducted to allow for the excavation of areas adjacent to the sidewalks, roadway and walls, and the installation of new surfaces in limited areas of the existing site. Care and attention shall be given to protecting waterways, site features and paved areas noted to remain.
  - 4. Work includes:
    - A. Protection and control of the work area and job-site
    - B. Maintenance and protection for vehicles entering the site.
    - C. Saw-cutting, removal and disposal of asphalt & concrete pavement
    - D. Limited tree removal, canopy pruning, root pruning.
    - E. Tree protection and removal of top soil, limited grubbing operations.
    - F. Removal & disposal of existing elements (walkway pavement, railings).
    - G. Removal & salvage of various existing site elements (signs, curbing).
    - H. Removal & disposal of the existing bus shelter
    - I. Removal, cleaning and stacking for re-use existing brick in sidewalks.

**1.02 RELATED SECTIONS:**

- A. Section 01560 Temporary Controls
- B. Section 02080 Management of Contaminated Soils
- C. Section 02200 Earth Excavation, Backfill, Fill and Grading
- D. Section 02530 Restoration of Curb and Sidewalk
- E. Section 02850 Modular Pavers
- F. Section 02855 Brick Pavers
- G. Section 03300 Cast-in-Place Concrete

**1.03 SUBMITTALS:**

- A. Schedule of Work: The Contractor shall submit a site preparation plan outlining proposed methods and sequences for conducting the work. The plan shall detail

specific measures to secure the work area and sequence activities to minimize soil disturbance.

- B. Site Access, Pedestrian and Vehicular Traffic Protection: The Contractor shall submit a written plan outlining proposed schedule, methods and sequences for providing safe construction vehicle access and operations and delivery access to the site while project is active. The plan shall address pedestrian and vehicular safety and identify any proposed temporary sidewalks, crosswalks and other related temporary measures to protect the public, along with necessary signage. Refer to Appendix G Transportation Management Plan for additional information and requirements.
- C. The Contractor shall furnish Proof / Verification that the disposal of materials such as the bus shelter and soils off site has been conducted legally, with documentation /certification for each truck load hauled off the site.
- D. Submit Manufacturer's Product Data sheets for all products listed. Comply with Section 01300.

#### 1.04 JOB CONDITIONS:

- A. Protect the condition of existing structures. It is the Contractor's responsibility to notify the Engineer if defective or failing roadway, sidewalk surfaces, cracks, fissures or breaks are identified in the course of site preparation activities. Conditions existing at time of inspection for bidding purposes will be maintained by the Owner insofar as practicable up to start of construction. Work or features that are damaged by the Contractor shall be restored at the Contractor's expense to the complete satisfaction of the Owner.
- B. Traffic: Conduct excavation and trucking operations to minimize interference with vehicular and pedestrian activity on both Roosevelt and Exchange Street, as well as the adjacent parking lot and building entrance walkways. Work activities and oversize deliveries and off-loading shall be scheduled to not disrupt private businesses or city parking lot traffic circulation.
- C. Traffic Protection: Refer to Appendix G Transportation Management Plan for additional information and requirements. Coordinate with the Owner per Section 12, Subsection 413.0 Provisions for Traffic. Provide signage, barrels, barricades and related protections as indicated on the plans. Indicate cautions and routing instructions with high visibility clear and legible signage in accordance with the MUTCD. When equipment is entering/existing the site driveway provide flagger as determined appropriate to assist with these activities. Traffic movement on Roosevelt and Exchange Street shall be restored to the pre-existing conditions at the end of each work day. Any signs not needed shall be removed or covered. If so directed by the Engineer, the Contractor shall provide additional traffic protection during special operations (oversize deliveries) that may impact traffic flow on Exchange St. or Roosevelt Avenue.

1.05 TESTING

- A. Not Used.

1.06 PROTECTIONS:

- A. Existing site features: The Contractor shall utilize barriers and fencing and take all necessary precautions to ensure the local facilities, structures and equipment noted to remain are not damaged and remain in good shape and functional. Protect existing pavement/pathways/roadway surfaces from heavy equipment. Protect trees, light poles, Signal arms, manholes, signs and electrical cabinets, as well as any other items noted to remain in place. Any items to remain that are damaged by the Contractors operations during construction of the Work shall be repaired to their original condition or replaced with new.
- B. Work or features shown to remain that are damaged by the Contractor shall be restored at the Contractor's expense to the complete satisfaction of the Owner. Remove and salvage all noted elements.
- C. The Contractor shall follow the procedures outlined by the local, state and federal agencies regulating the project and in accordance to the permitting documents.

**PART 2 – PRODUCTS**

2.1 High Visibility, Reflective Construction Signs

- A. Per RIDOT Standard Specifications, Section M.16 Signs and Sign Supports.
- B. Signs as follows in the quantity shown on plans:
- C. Construction Signs shall be 36"x36" in size, orange background with black lettering.
- D. Regulatory sign (Type V) shall be 30"x30" in size red background with white symbol and black lettering.

2.2 Compost Filter Tube

- A. Compost Filter Tube size shall be 12" diameter and conform to the plans and details.
- B. Filter Tube 'sock' shall be bio-degradable, tubular, knitted mesh containing the media.
- C. The compost media shall be approximately 70% partially decomposed wood chips.
- D. The compost media shall be approximately 30% weed-free compost.
- D. 100% of the media shall pass 2" sieve, with 30% passing 3/8" sieve.

## 2.3 Catch Basin Erosion Control

- A. The erosion control shall be manufactured of ultra-violet light stable, durable woven polypropylene fabric.
- B. The erosion control shall be designed to collect sediment and debris while allowing water to pass through and enter the storm drainage system. The fabric shall be rated for a minimum flow rate of 150 gpm.

## 2.4 Temporary Chain Link Fence with Gates

- A. Temporary fence consisting of 2" galvanized wire selvage, 6 feet high. Protect the site from access from the public streets and sidewalks as well as from the private parking lot.
- B. Gates shall be configured to provide a minimum opening 12 feet in width or as required for equipment access. Gates shall be secured with a padlock at the close of each workday.
- C. Fence shall be installed with braces and weights or otherwise in a manner that allows the fence and gates to be stable even in high wind conditions.

# **PART 3 – EXECUTION**

## 3.1 OPERATIONAL ACTIVITIES

- A. The Contractor shall schedule and conduct a site preparation walk-through meeting on site to review constraints, items to be removed, and coordinate the Work.
- B. The Contractor shall restrict public access to the site during construction. Protect the Work and areas of operation from public access. Establish the necessary limits of temporary chain link fencing at the contractor's need and discretion. Any products furnished to the site intended for use shall be secured and protected.
- C. Establish erosion controls on site. Utilize compost tubes when working in areas that require frequent re-positioning due to construction operations. Position to protect areas down-gradient from areas of excavation and disturbance. All preparation shall be conducted with care not to damage roadways, sidewalks and existing features shown to remain in place. Maintain the erosion controls in good condition throughout the duration of the project.
- D. The Contractor shall establish traffic and site access protection in coordination with the Owner and as shown on the plans.
- E. The Contractor shall remove all existing items designated for removal in their entirety, or to the line and grade shown on the drawings or specified herein.
- F. During operations, the Contractor shall limit dust to the lowest practical level by wetting surfaces. Do not allow dust to leave the site.

- G. Debris shall not be allowed to 'track' off the site onto the roadways. The portions of Exchange St. and Roosevelt Ave roadways adjacent to the site shall be swept at the end of each workday during which trucks are entering and exiting the site.

### 3.2 DISPOSAL OF MATERIALS:

- A. General: All material resulting from Demolition shall become the property of the Contractor except as specified otherwise. It shall be properly and legally disposed of at the Contractor's own expense as demolition and site preparation continues. The disposal method shall be in accordance with all federal, state, and local requirements, as well as subject to the acceptance of the Owner's Representative and Owner. Conform to the requirements of the Executed Agreement.
- B. Remove all pavement, rubble, stones, debris and refuse encountered in the site preparation process. Restore the site to the pre-existing conditions or as proposed on the plans.
- C. The Contractor shall dispose of all materials generated thru the work operations legally, in an off-site location. The Contractor shall provide certification of material disposal compliance to the Engineer.
- D. At the completion of the Work, remove all traffic protections. Clean and sweep the adjacent roadway to the curb line at the entrance to the site.

### 3.3 REMOVE & STACK FOR RE-USE BRICK PAVING:

- A. General: The contractor shall convene a pre-construction meeting on site with all parties involved in the installation, prior to the removal of the existing brick pavers. The meeting shall include the Contractor, paving sub-contractor(s), and the Engineer. The Contractor's foreman and brick paver installer shall be present at this meeting. This meeting shall occur at a minimum of 24 hours before the removal and stockpiling of the brick pavers is set to begin.
- B. The Contractor shall coordinate with the Engineer to determine a Stockpile Location where brick pavers can be stacked for future re-use.
- C. Pavers shall be carefully removed in a manner that does not damage the existing pavers to the limits shown on the Drawings. Brick pavers shall be stacked in a manner that does not harm the pavers and / or disturb any area outside of the Limit of Disturbance.
- D. As brick pavers are removed, they shall be evaluated by the Contractor for re-use. Bricks that have chips, cracks, voids, discolorations and/or other defects that might be visible in finished work shall be considered unsuitable for reuse. Clean and stack brick on pallets or similar to be stacked within the project area for re-use. It is anticipated that approximately 20% of the brick pavers will be deemed unsuitable for reuse.

- E. The Contractor shall dispose of all excess brick pavers determined to be unsuitable for re-use legally, in an off-site location. Such disposal shall be carried on as promptly as possible after removal of material in the operations and shall not be left until the final period of cleaning up.

### 3.4 TREE AND SHRUB CONSERVATION MEASURES

- A. Site preparation requires work to existing trees and shrubs within the park.
- B. Refer to Section 02935 for specifications related to canopy pruning, root pruning and temporary transplanting measures.

**END OF SECTION**

**SECTION 02100**

**SITE CLEARING**

**PART 1 - GENERAL**

**1.1 SECTION INCLUDES**

- A. Requirements for removal of vegetation and topsoil at the site.

**1.2 DEFINITIONS**

- A. Clearing: Removal of trash, vegetation, or organic matter alive or dead.
- B. Grubbing: Removal of vegetation including stumps, buried logs and roots.
- C. Scalping: Removal of grass turf to a depth of 3 inches.
- D. Stripping: Removal of top soil after scalping operation is complete.

**1.3 QUALITY ASSURANCE**

- A. Obtain Engineer's approval of staked work limits prior to starting the clearing, grubbing, and stripping.

**1.4 PROJECT/SITE CONDITIONS**

- A. Environmental Requirements
  - 1. Install erosion and sediment controls prior to starting the Work.
- B. Existing Conditions
  - 1. Temporarily remove property improvements, to the minimum extent necessary, to complete the work and restore improvements to condition which existed prior to construction.

**PART 2 - PRODUCTS**

**2.1 EXISTING PRODUCTS**

- A. Chips from cleared trees and brush.

**PART 3 - EXECUTION**

**3.1 PROTECTION**

- A. Do not cut or injure any trees or other vegetation outside the limits of disturbance, as indicated on the drawings.
- B. Trees, shrubbery, or planting, along the traveled highways or roads, shall not be removed except with the written approval of the Engineer.



- C. Preserve certain vegetation such as trees, shrubs, hedges and plants within the construction area, as indicated on the drawings to be protected.
- D. Easement Clearing
  - 1. The Engineer shall designate trees to be removed within easement lines.
- E. Work in Improved Property
  - 1. Protect trees, cultivated hedges, lawns, shrubs, and plants that might be damaged by the Contractor's operations.
  - 2. Temporarily replant and care for trees less than 4 inches in diameter that would be damaged by the construction operation. After the construction operations have been substantially completed, replant in their original positions and care for until growth is reestablished. If trees, cultivated hedges, lawns, shrubs, and plants are injured to such a degree as to affect their growth or diminish their beauty or usefulness, they shall be replaced at the Contractor's expense by items of kind and quality existing at the start of the work.
  - 3. Do such handwork as may be required to prevent damage to buildings and improvements.
  - 4. Protect fences and stone walls and if needed to be removed to facilitate construction or if damaged, upon completion of the work, properly restore or repair to at least as good condition as existed prior to start of the work.

### 3.2 CLEARING

- A. Cut or remove all trees, saplings, brush, and vines, windfalls, logs, and trees lying on the ground, dead trees and stubs more than 1 foot high above the ground surface.

Except where clearing is done by uprooting with machinery or where stumps are left longer to facilitate subsequent grubbing operations, trees, stumps, and the stubs to be cleared shall be cut as close to the ground surface as practicable, but no more than 6-inches above the ground surface in the case of small trees, and 12-inches in the case of large trees. Saplings, brush, and vines shall be cut off close to the ground.
- B. Selective Trimming
  - 1. Cut back limbs and branches of trees to be preserved only to the extent necessary for construction.
  - 2. Trim neatly, and cleanly so that the remaining tree will not be damaged, and healing will be facilitated. Where limbs and branches over 1 inch in diameter have been cut, the newly cut area of the tree shall be given a thorough application of approved tree-healing paint.

### 3.3 GRUBBING

- A. Remove completely all stumps.
- B. Remove to a depth of 12-inches all roots larger than 3-inches in diameter.
- C. Remove to a depth of 6-inches all roots larger than 1/2-inches in diameter.

- D. Measure depths from the existing ground surface or the proposed finished grade, whichever is the lower.

### 3.4 STRIPPING

- A. Strip topsoil, loam and unsuitable earth from the ground surface in areas cleared and grubbed.
- B. Utilize topsoil and loam, where possible, for finished surfacing.
- C. All loam to remain on site.
- D. Dispose of unsuitable materials off site at authorized disposal location.

### 3.5 DISPOSAL OF CLEARED AND GRUBBED MATERIALS

- A. Dispose of cleared and grubbed materials off site at authorized disposal location.
- B. Such disposal shall be carried on as promptly as possible after removal of material in the clearing and grubbing operations and shall not be left until the final period of cleaning up.
- C. Elm bark whether stripped from the wood or intact with the wood shall be either buried at least 1 ft. below grade in approved dumping areas or burned in a suitable incinerator off-site with satisfactory anti-pollution and fire prevention controls to prevent the spread of Dutch Elm Disease.

END OF SECTION

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**SECTION 02200**

**EARTH EXCAVATION, BACKFILL, FILL, AND GRADING**

**PART 1 - GENERAL**

**1.1 RELATED DOCUMENTS**

- A. Section Includes
  - 1. Requirements for excavating in earth for roadway and parking facilities, wall construction, utility trenches, swales, drainage facilities and structures; backfilling excavations; furnishing necessary material; compaction; constructing embankments and fills; miscellaneous earth excavations and miscellaneous grading.
- B. Related Sections
  - 1. Section 12.0 - General Conditions
  - 2. Section 02050 – Site Preparation
  - 3. Section 02210 - Rock Excavation
  - 4. Section 03300 - Cast-In-Place Concrete

**1.2 REFERENCES**

- A. American Society for Testing and Materials (ASTM).
- B. D1557, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft<sup>3</sup> (2700 kN-m/m<sup>3</sup>)).
- C. Materials and construction methods shall conform, insofar as applicable, to the requirements of the Standard Specifications for Road and Bridge Construction of the Rhode Island Department of Transportation, latest edition, together with all errata, addenda, additional revisions, and supplemental specifications, all of which are hereinafter referred to as the Rhode Island Standard Specifications.

**1.3 DEFINITIONS**

- A. Relative Compaction: The ratio, in percent, of the as-compacted field dry density to the laboratory maximum dry density as determined by ASTM D1557. Corrections for oversize material may be applied to either the as-compacted field dry density or the maximum dry density, as determined by the Engineer.
- B. Optimum Moisture Content: Determined by the ASTM standard specified to determine the maximum dry density for relative compaction.
- C. Relative Density: As defined by ASTM D4253 or D4254.
- D. Prepared Ground Surface: The ground surface after clearing, grubbing, stripping, excavation, and scarification and/or compaction.
- E. Completed Course: A course or layer that is ready for the next layer or next phase of the work.
- F. Well-Graded: A mixture of particle sizes that has no specific concentration or lack thereof of one or more sizes. Well-graded does not define any numerical value that

must be placed on the coefficient of uniformity, coefficient of curvature, or other specific grain size distribution parameters. Well-graded is used to define a material type that, when compacted, produces a strong and relatively incompressible soil mass free from detrimental voids.

- G. Influence Area: The area within planes sloped downward and outward at an angle of 60 degrees from the horizontal from (a) 1 foot outside the outermost edge at the base of foundations or slabs; or (b) 1 foot outside the outermost edge at the surface of roadways or shoulder; or (c) 0.5 foot outside the exterior edge at the spring line of pipes and culverts.
- H. Unclassified Excavation: The nature of materials to be encountered has not been identified or described herein.
- I. Imported Material: Material obtained by the Contractor from sources off the site.
- J. Excess Material: Material generated during this project that is not suitable for reuse as determined by the Owner/Engineer.
- K. Boulder: Rock material greater than 1 cubic yards in volume that cannot be removed with a standard backhoe or excavator without significant effort.
- L. Rock: Rock material in beds, ledges, un-stratified masses, and conglomerate deposits and boulders of rock material exceeding 1 cubic yards that cannot be removed by rock excavating equipment and systematic drilling, ram hammering, ripping or hydraulic splitting.
- M. Suitable Material: excavated material that meets the specifications for Common Borrow shall be deemed suitable for reuse on the project.

#### 1.4 PROCEDURES

- A. Test Pits
  - 1. Call Dig Safe 1-888-DIG-SAFE (1-888-344-7233) 72 hours before commencing with any excavation, in order that all pertinent utility companies become informed of such work. Coordinate with the Owner for locating their onsite utilities.
  - 2. Where determination of the exact location of pipe or other underground structure or utility is necessary for doing the work properly, the Contractor may be required to excavate test pits to determine such locations. When such test pits may be properly considered as incidental to other excavation, the Contractor shall receive no additional compensation, the work being understood to be included as part of the excavation. When the Engineer orders test pits beyond the limits of excavation he considers a part of the work, such test pits shall be paid for under excavation.

#### 1.5 QUALITY CONTROL

- A. Provide the following Submittals:
  - 1. Certification, test results, source, and samples for all imported earth materials.
  - 2. Catalog and manufacturer's data sheets for compaction equipment.
  - 3. Manufacturer's certificate of compliance attesting that geotextile/geogrid meets the requirements of these specifications. Provide mill certificates stating the length and width of fabric/geogrid contained on each roll.

1.6 PROJECT/SITE CONDITIONS

A. Existing Conditions

1. There are pipes, drains, and other utilities in locations not indicated on drawings, no attempt has been made to show all services and completeness or accuracy of information given is not guaranteed.

1.7 MAINTENANCE

- A. Maintain all work in accordance with Section 01560- Temporary Controls

1.8 EXCAVATION SAFETY

- A. The Contractor shall be solely responsible for making all excavations in a safe manner, in accordance with any Federal, State, local, and/or Owner safety standards. Provide appropriate measures to retain excavation side slopes and prevent earth slides to ensure that persons working in or near the excavation are protected.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Select Backfill Material excavated onsite shall be granular material, free from stones, roots, and organic material and of suitable gradation for satisfactory compaction. If excavated material at a particular location is not satisfactory, as determined by the Owner/Engineer, use imported Granular Material conforming to Item M01.10, Gravel 1a, of the Standard Specifications.
- B. Filter Stone shall be imported material conforming to Item M01.07, Column V of the Standard Specifications.
- C. Gravel Borrow shall be imported material conforming to Item M01.02 of the Standard Specifications.
- D. Common Borrow shall be onsite or imported material conforming to Item M01.01 of the Standard Specifications.
- E. Pipe Bedding shall be onsite or imported material conforming to Item M01.04, Column I, Material 1(a), except 100 percent should pass the 1.5 inch sieve.
- F. Pipe Zone material shall be onsite or imported material conforming to Item M01.02, Column 1, Material 1(a), except 100 percent should pass the 1.5 inch sieve.
- G. Trench Backfill shall be onsite or imported material conforming to Item M01.02, Column 1, Material 1(a).
- H. Flowable Fill for constructing mud mats shall conform to Section 603.07 of the Standard Specifications, Class 3 Flowable and non-excavatable.
- I. Water for compaction shall be furnished by the Contractor. Water for compaction from sources other than potable sources shall be as approved by the Engineer.
- J. Geotextile Fabric per Section 02272.

PART 3 - EXECUTION

3.1. EXAMINATION

- A. Verify all existing utilities and facilities prior to excavation.

3.2. PROTECTION

A. Utilities

1. Support and protect from damage existing pipes, poles, wires, fences, curbing, property line markers, and other structures, which the Engineer decides must be preserved in place without being temporarily or permanently relocated.
2. Restore items damaged during construction without compensation, to a condition at least equal prior to construction.

B. Trees

1. Enclose the trunks of trees adjacent to work designated to remain with substantial dripline protection, trunk protections of a height necessary to protect trees from injury from piled material, equipment, operations or otherwise.
2. Employ excavating machinery and cranes of suitable type and size and operate with care to prevent injury to trees not to be cut and particularly to overhanging branches and limbs.
3. When trimming is required, make all cuts smooth with a loppers or hand saw. Cuts shall be neat without splitting or crushing the roots.
4. Cover cut areas with an application of grafting wax or tree healing paint.
5. Branches, limbs, and roots shall not be cut except by permission of the Engineer.

C. Plantings

1. Protect or temporarily replant and maintain cultivated hedges, shrubs, and plants which may be injured by the Contractor's operations.
2. Replant in their original positions and care for until growth is re-established, once the construction operations have been substantially completed.
3. If cultivated hedges, shrubs, and plants are injured to such a degree as to affect their growth or diminish their beauty or usefulness, they shall be replaced by items of kind and quality at least equal to which existed prior to the start of the work.

D. Paved surfaces

1. Do not use or operate tractors, bulldozers, or other power-operated equipment with treads or wheels shaped as to cut or damage paved surfaces.
2. All surfaces which have been damaged by the Contractor's operations shall be restored to a condition at least equal to which existed prior to start of the work.
3. Suitable materials and methods shall be used for such restoration.

3.3. PREPARATION

- A. Top Soil Removal
  - 1. From areas which excavations are to be made, loam and topsoil shall be carefully removed and separately stored to be used again as directed.
- B. Sub-grade
  - 1. Remove loam and topsoil, loose vegetable matter, stumps, large roots, etc., from areas where embankments will be built or material will be placed for grading.
  - 2. Shape as indicated on the drawings and prepare by forking, furrowing, or plowing to bond first layer of the new material placed.
- C. Pavement Removal
  - 1. Remove only existing pavement as necessary for the completion of the work.
  - 2. Pavement shall be cut with pneumatic tools or saws without additional compensation to the Contractor.
  - 3. Dispose large pieces of broken pavement before proceeding with excavation.

3.4. RELOCATION AND REPLACEMENT OF EXISTING STRUCTURES

- A. The structures to which the provisions of this article apply include pipes, wires, and other structures that meet all of the following:
  - 1. Are not indicated on the Drawings or otherwise provided for.
  - 2. Encroach upon or are encountered near and substantially parallel to the edge of the excavation.
  - 3. In the opinion of the Engineer, it will impede progress to such an extent that satisfactory construction cannot proceed until they have been changed in location, removed (to be later restored), or replaced.
- B. In removing existing pipes or other structures, the Contractor should use care to avoid damage to materials, and the Engineer shall include for payment only those new materials which, in his judgment, are necessary to replace those unavoidably damaged.
- C. Whenever the Contractor encounters certain existing structures as described above and is so ordered in writing, he shall do the whole or such portions of the work as he may be directed to change the location of, remove and later restore, or replace such structures, or to assist the Owner thereof in so doing. For all such work, the Contractor shall be paid under such items of work as may be applicable, otherwise as extra work.
- D. When fences interfere with the Contractor's operations, he shall remove and (unless otherwise specified) later restore them to a condition that existed prior to the start of the work, all without additional compensation. The restoration of fences shall be done as promptly as possible and not left until the end of the construction period.



E.

3.5. DEWATERING

- A. This item is not anticipated to be utilized. Stop operations and immediately coordinate with the Engineer to determine conditions and level of need if water is encountered.
- B. Ensure proper conditions at all times during construction, provide and maintain ample means and devices to intercept and/or remove promptly and dispose properly all water entering trenches and other excavations. Keep excavations dry until the structures, pipes, and appurtenances to be built therein have been completed to such extent that they will not be floated or otherwise damaged.
- C. Dispose of all water pumped or drained from the work in a suitable manner without undue interference with other work, damage to pavements, other surfaces, or property. Provide suitable temporary pipes, flumes, or channels for water that may flow along or across the site of the work.
- D. Provide adequate sedimentation and/or erosion control methods at all times to ensure soil stabilization and protection of surrounding areas including any designated wetlands and/or waterways encountered.
- E. Underdrains
  - 1. Trenches shall be of suitable dimensions to provide room for the chosen size of underdrain and its surrounding gravel.
  - 2. Underdrains, if used, shall be laid at a suitable distance below the bottom of the normal excavation and backfilled in Filter Stone completely wrapped in Geotextile Fabric to prevent the admission of sand or other soil into the underdrains. The distance between the bottom of the pipe or structure and the top of the bell of the underdrain pipe shall be at least 3 inches unless otherwise permitted. The space between the underdrain and the pipe or structure shall be backfilled with Gravel Borrow which should have a surface suitable for laying the pipe or building the structure.
- F. Drainage Wellpoint System
  - 1. This item is not anticipated to be utilized. Stop operations and immediately coordinate with the Engineer to determine conditions and level of need if water is encountered. If necessary, dewater the excavations by means of an efficient drainage wellpoint system which will drain the soil and prevent saturated soil from flowing into the excavation.
  - 2. The installation of the wellpoints and pump shall be done under the supervision of a competent representative of the manufacturer. The Contractor shall do all special work such as surrounding the wellpoints with sand or gravel or other work which is necessary for the wellpoint system to operate for the successful dewatering of the excavations.

3.6. EXCAVATION

- A. Execute operation by 'live-loading' excavate directly onto trucks and removing the excavate directly from the site.
- B. Excavate to widths that provide suitable room for:
  - 1. Building structures or laying and jointing piping.
  - 2. Coffer damming, pumping, and draining.
- C. Render bottom of excavations firm, dry and acceptable in all respects. If necessary, coordinate with the Owner for any dewatering and excavation support.
- D. Do not undermine the existing wall foundation.
- E. Do not plow, scrape or dig by machinery, earth at finished subgrade which results in disturbance of material below subgrade, unless indicated or specified, and remove with pick and shovel, last of material to be excavated, just before placing pipe, masonry or other structure.
- F. Make all excavations in open, except as otherwise specified or permitted.
- G. Excavation Near Existing Utilities
  - 1. USE CAUTION removing sidewalks and excavating near duct banks and other utilities. As the excavation approaches pipes, conduits, or other underground structures, digging by machinery shall be discontinued and the excavation shall be done by means of hand tools. Such manual excavation when incidental to normal excavation shall be included in the work to be done under items involving normal excavation.
- H. Unauthorized Excavation
  - 1. If the bottom of any excavation is taken out beyond the limits indicated or prescribed, the resulting void shall be backfilled at the Contractor's expense with thoroughly compacted Gravel Borrow.
- I. Unsuitable Material
  - 1. If material unsuitable for foundation (in the opinion of the Engineer) is found at or below the grade to which excavation would normally be carried in accordance with the Drawings and/or Specifications, the Contractor shall remove such material to the required width and depth and replace it with thoroughly compacted Gravel Borrow.

### 3.7. TRENCHING

- A. Trench Excavation
  - 1. Where pipe is to be laid in gravel bedding or concrete cradle, the trench may be excavated by machinery to, or to just below, the designated subgrade, provided that the material remaining at the bottom of the trench is no more than slightly disturbed.
  - 2. Where pipe is to be laid directly on the trench bottom, the lower part of trenches in earth shall not be excavated to subgrade by machinery, but, just before the

pipe is to be placed, the last of the material to be excavated shall be removed by means of hand tools to form a flat or shaped bottom, true to grade, so that the pipe will have a uniform and continuous bearing and support on firm and undisturbed material between joints except for limited areas where the use of pipe slings may have disturbed the bottom.

B. Depth of Trench

1. Excavate trench to depths permitting the pipe to be laid at the elevations, slopes, or depths of cover indicated on the Drawings, and at uniform slopes between indicated elevations.

C. Width of Trench

1. Excavate trench as narrow as practicable and do not widen by scraping or loosening materials from the sides. Every effort shall be made to keep the sides of the trenches firm and undisturbed until backfilling has been completed and consolidated.

D. Trench Excavation in Fill

1. If pipe is to be laid in embankments or other recently filled material, the material shall first be placed to the top of the fill or to a height of at least 1 foot above the top of the pipe, whichever is the lesser. Particular care shall be taken to ensure maximum consolidation of material under the pipe location. The pipe trench shall then be excavated as though in undisturbed material.

E. Length of trench open at any one time will be controlled by conditions, subject to any limits that may be prescribed by Engineer.

F. Trench Excavation for Gas Main Installation

1. Refer to National Grid specifications for gas line requirements.

3.8. BACKFILLING

A. General

1. Frozen material shall not be placed in the backfill nor shall backfill be placed upon frozen material. Previously frozen material shall be removed or shall be otherwise treated as required, before new backfill is placed.

B. Fill and Backfill Under Structures

1. The fill and backfill materials shall be placed in loose lifts not exceeding 6 inches in thickness. Unless otherwise indicated or specified, each layer shall be compacted to 95 percent relative compaction.

C. Backfilling Around Structures

1. Do not place backfill against or on structures until they have attained sufficient strength to support the loads (including construction loads) to which they will be subjected, without distortion, cracking, or other damage. As soon as practicable after the structures are structurally adequate and other necessary work has been done, special leakage tests, if required, shall be made. Promptly after the

completion of such tests, the backfilling shall be started and then shall proceed until its completion. The best of the excavated materials shall be used in backfilling within 2 feet of the structure. Unequal soil pressures shall be avoided by depositing the material evenly around the structure.

2. The material shall be placed and compacted to 95 percent relative compaction unless otherwise indicated or specified.

D. Backfilling Pipe Trenches

1. As soon as practicable after the pipes have been laid and the joints have acquired a suitable degree of hardness, if applicable, or the structures have been built and are structurally adequate to support the loads, including construction loads to which they will be subjected, the backfilling shall be started and thereafter it shall proceed until its completion.
2. With the exception mentioned below in this paragraph, trenches shall not be backfilled at pipe joints until after that section of the pipeline has successfully passed any specified tests required. Should the Contractor wish to minimize the maintenance of lights and barricades and the obstruction of traffic, he may, at his own risk backfill the entire trench, omitting or including backfill at joints as soon as practicable after the joints have acquired a suitable degree of hardness, if applicable, and the related structures have acquired a suitable degree of strength. He shall, however, be responsible for removing and later replacing such backfill, at his own expense, should he be ordered to do so in order to locate and repair or replace leaking or defective joints or pipe.
3. No stone or rock fragment larger than that specified under MATERIALS shall be placed in the backfill nor shall large masses of backfill material be dropped into the trench in such a manner as to endanger the pipeline. If necessary, a timber grillage shall be used to break the fall of material dropped from a height of more than 5 feet. Pieces of bituminous pavement shall be excluded from the backfill unless their use is expressly permitted, in which case they shall be broken up as directed.
4. Zone Around Pipe
  - a. Backfilled with the materials and to the limits indicated on the drawings.
  - b. Material shall be compacted to 95 percent relative compaction by tamping.
5. Remainder of Trench
  - a. Compact by tamping, in accordance with the nature of the material and the previously specified compaction requirements.
6. Excavated material which is acceptable to the Engineer for surfacing or pavement sub-base shall be placed at the top of the backfill to such depths as may be specified elsewhere or as directed. The surface shall be brought to the required grade and stones raked out and removed.

E. Backfilling Gas Main Trenches

1. The Contractor shall refer to the specifications provided by National Grid.
2. The Contractor is responsible for furnishing and installing the sand envelope around the gas main as indicated on the drawings.
3. The Contractor is responsible for lowering the new gas main into the trench. This will only be allowed utilizing a non-metallic sling to prevent damage to the new gas main.

4. Following installation of the gas main the Contractor will be responsible for installing and grading the remainder of the sand envelope, installing the caution tape as required, and backfilling and compacting the remainder of the trench.

F. Placing and Compacting Embankment Material

1. After the subgrade has been prepared as hereinbefore specified, the material shall be placed thereon and built up in successive layers until it has reached the required elevation.
2. Loose lifts shall not exceed 12 inches in thickness before compaction. In embankments at structures, the layers shall have a slight downward slope away from the structure; in other embankments the layers shall have a slight downward slope away from the center. In general, the finer and less pervious materials shall be placed against the structures or in the center, and the coarser and more pervious materials, upon the outer parts of embankments.
3. Each layer of material shall be compacted by the use of approved rollers or other approved means so as to secure a dense, stable, and thoroughly compacted mass. At such points as cannot be reached by mobile mechanical equipment, the materials shall be thoroughly compacted by the use of suitable power-driven tampers.
4. Previously placed or new materials shall be moistened by sprinkling, if required, to ensure proper bond and compaction. No compacting shall be done when the material is too wet, from either rain or too great an application of water, to compact it properly; at such times the work shall be suspended until the previously placed and new materials have dried out sufficiently to permit proper compaction, or such other precautions shall be taken as may be necessary to obtain proper compaction.
5. The portion of embankments constructed below proposed structures shall be compacted to 95 percent relative compaction. The top 2 feet of an embankment below a pavement base shall be compacted to 95 percent relative compaction. All other embankments shall be compacted to 90 percent relative compaction.

3.9. DISPOSAL OF SURPLUS EXCAVATED MATERIALS

- A. No excavated materials shall be removed from the site of the work or disposed of by the Contractor except as directed or permitted by the Engineer. All onsite materials are the property of the Owner unless deemed unsuitable by the Engineer, in which case the Contractor shall remove the materials from the site and dispose of the material in an appropriate manner, at no additional cost to the Owner.
- B. Surplus excavated materials suitable for backfill shall be used to backfill normal excavations in rock, to construct embankments, for any other fill as required for construction of the project, or to replace other materials unacceptable for use as backfill. Said materials shall be neatly deposited and graded so as to make or widen fills, construct embankments, flatten side slopes, or fill depressions; or shall be neatly deposited for other purposes at a stockpile location as directed by the Engineer; all as directed or permitted and without additional compensation.
- C. Surplus excavated materials not needed as specified above shall be stockpiled by the Contractor, at appropriate locations determined by the Owner, and in accordance with arrangements made by him.

- D. All excess materials deemed "suitable" by the Engineer are the property of the Owner. The Contractor shall place these materials at a location specified by the Owner. The materials shall be placed in a manner that utilizes the available space efficiently and to the satisfaction of the Owner. Reworking the dumped materials to efficiently use stockpile area is considered incidental to the contract and no separate payment will be made.

3.10. DUST CONTROL

- A. During the progress of the work, maintain the area of activities, by sweeping and sprinkling of streets to minimize the creation and dispersion of dust. If the Engineer decides that it is necessary to use calcium chloride for more effective dust control, the Contractor shall furnish and spread the material, as directed at no additional cost to the Owner.
- B. If the Engineer decides that it is necessary to use water for dust control, the Contractor shall furnish and apply the water as directed at no additional cost to the Owner.

3.11. BRIDGING TRENCHES

- A. Provide suitable and safe bridges and other crossings where required for the accommodation of travel, and to provide access to private property during construction. Remove once bridges and crossings are no longer needed.

3.12. COMPACTION TESTING

- A. The Contractor shall make all necessary excavations and preparations for testing in coordination with the Owner and Engineer. Coordinate schedule of operations to allow timely access for testing. Excavations for density tests shall be backfilled with material similar to that excavated, and compacted to the specified density by the Contractor. Failure of the backfill material to achieve the specified density will be just cause for rejection of any or all portions of the excavation section tested. The Contractor will not be granted an extension of time or additional compensation for testing or repair of backfill ordered by the Owner/Engineer.

3.13. CARE AND RESTORATION OF PROPERTY

- A. Restoration of existing property or structures done as promptly as practicable and not left until the end of the construction period.

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**SECTION 02210**  
**ROCK EXCAVATION**

**PART 1 - GENERAL**

**1.1 SUMMARY**

- A. Section Includes
  - 1. Requirements for removal and disposal of rock.
- B. Related Sections
  - 1. Section 02200-Earth Excavation, Backfill, Fill and Grading

**1.2 DEFINITIONS**

- A. Rock-as defined in Section 11 Bid Form.

**1.3 REQUIREMENTS**

- A. Excavate rock if encountered, to the lines and grades indicated on the drawings or as directed, dispose of the excavated material, and furnish acceptable material for backfill in place of the excavated rock.
- B. Excavate rock in foundation and pipe trenches to a limit which provides six (6) inches clearance minimum from the structure or pipe after it has been laid. Before the structure is installed or pipe is laid, the trench shall be backfilled to the correct subgrade with thoroughly compacted, suitable material or, when so specified or indicated on the drawings, with the same material as that required for bedding the pipe, furnished and placed at the expense of the Contractor.
- C. Excavate rock for footings and foundations to a limit which provides six (6) inches clearance minimum from the bottom and side of the footing or foundation. Before the concrete is poured, the trench shall be backfilled to the correct subgrade with thoroughly compacted structural fill.
- D. The use of explosives will not be allowed.

**PART 2 - PRODUCTS**

NOT USED



### PART 3 - EXECUTION

#### 3.1 EXCESS ROCK EXCAVATION

- A. If rock is excavated beyond the limits of payment indicated on the drawings, specified, or authorized in writing by the Engineer, the excess excavation, whether resulting from overbreakage or other causes, shall be backfilled, by and at the expense of the Contractor, as specified below in this section.
- B. In pipe trenches, excess excavation below the elevation of the top of the bedding, cradle, or envelope shall be filled with material of the same type, placed and compacted in the same manner, as specified for the bedding, cradle, or envelope. Excess excavation above said elevation shall be filled with earth as specified in the article titled "Backfilling Pipe Trenches" in Section 02200 Earth Excavation, Backfill, Fill and Grading.
- C. In excavations for structures, excess excavation in the rock beneath foundations shall be filled with 3000 psi concrete. Other excess excavation shall be filled with earth as specified in the article titled "Backfilling Around Structures" in Section 02200.

#### 3.2 SHATTERED ROCK

- A. If the rock below normal depth is shattered due to drilling operations of the Contractor, and the Engineer considers such shattered rock to be unfit for foundations, the shattered rock shall be removed and the excavation shall be backfilled with concrete as required, except that in pipe trenches screened gravel shall be used for backfill. All such removal and backfilling shall be done by and at the expense of the Contractor.

#### 3.3 PREPARATION OF ROCK SURFACES

- A. Whenever so directed during the progress of the work, remove all dirt and loose rock from designated areas and shall clean the surface of the rock thoroughly, using steam to melt snow and ice, if necessary. Water in depressions shall then be removed as required so that the whole surface of the designated area can be inspected to determine whether seams or other defects exist.
- B. The surfaces of rock foundations shall be left sufficiently rough to bond well with the masonry and embankments to be built thereon, and if required, shall be cut to rough benches or steps.
- C. Before any masonry or embankment is built on or against the rock, the rock shall be scrupulously freed from all vegetation, dirt, sand, clay, boulders, scale, excessively cracked rock, loose fragments, ice, snow, and other objectionable substances. Picking, barring, wedging, streams of water under sufficient pressure, stiff brushes, hammers, steam jets, and other effective means shall be used to accomplish this cleaning. Remove free water left on the surface of the rock.

3.4 REMOVAL OF BOULDERS

- A. Remove piles of boulders and loose rock encountered within the limits of earth embankments and dispose in a suitable place.

3.5 DISPOSAL OF EXCAVATED ROCK

- A. All excavated rock shall be handled, transported and disposed of by the Contractor, at his expense, at appropriate locations, and in accordance with arrangements made by him without additional cost to the Owner.
- B. Excavated rock may be used in backfilling trenches subject to the following limitations:
  - 1. Pieces of rock larger than permitted under the article titled "Backfilling Pipe Trenches" in Section 02200 shall not be used for this purpose.
  - 2. The quantity of rock used as backfill in any location shall not be so great as to result in the formation of voids.
  - 3. Rock backfill shall not be placed within 36 inches of the surface of the finish grade.
- C. Surplus excavated rock shall be disposed of as specified for surplus excavated material as specified in Section 02200.

3.6 BACKFILLING ROCK EXCAVATIONS

- A. Where rock has been excavated and the excavation is to be backfilled, the backfilling above normal depth shall be done as specified in Section 02200. If material suitable for backfilling is not available in sufficient quantity from other excavations, the Contractor shall, at his own expense, furnish suitable material from outside sources.

**END OF SECTION**

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**SECTION 02211**

**EXCAVATION, HANDLING, AND STORAGE OF SPECIAL WASTES**

**PART 1 GENERAL**

**1.01 DESCRIPTION**

- A. The work specified in this Section includes work associated with unanticipated contaminated materials. The Contractor shall be responsible for demolition, excavation, handling, stockpiling, securing, sampling, characterizing, transporting, and legally disposing of unanticipated contaminated materials or special wastes encountered in accordance with applicable federal state and local regulations governing disposal of urban fill and jurisdictional waste.
- B. Unanticipated types and/or levels of contamination may be encountered during prosecution of the work, which The Rhode Island Department of Environmental Management (RIDEM) considers special waste or RIDEM jurisdictional material. These materials must be handled and disposed of in accordance with applicable regulations. Special Wastes that may be encountered on this project are as defined herein.
- C. In the event of Contractor generates contamination, the Contractor shall be solely responsible for response, notification procedures, clean-up, removal, and disposal at no expense to the Owner. The Contractor shall not be allowed any compensation for "down time" while a determination is made.
- D. In the event that the Contractor excavates material for its convenience or temporary facilities outside the limits of excavation and such materials are found to be contaminated and/or hazardous, the Contractor shall be wholly responsible for disposal of the material.
- E. Related work and activities associated with the management of contaminated materials are described in the following Sections:
  - 1. Section 01060 - Regulatory Requirements.
  - 2. Section 01067 - Health and Safety Requirements
  - 3. Section 01300 - Submittals.
  - 4. Section 01560 - Temporary Controls.
  - 5. Section 02050 - Site Preparation.
  - 7. Section 02200 - Earth Excavation, Backfill and Grading
  - 8. Section 02370 - Stormwater Pollution Prevention

## 1.02 DEFINITIONS

- A. Special Waste No.1: Materials such as sludge, sand, grit, debris, etc. which may be encountered when cleaning storm drains, sewers, tanks, or earth that has been contaminated by such materials.
- B. Special Waste No 2. Building materials encountered during the execution of the work, such as roofing, membranes, sheathing, pipes, tiles, conduits, couplings, insulation, water-tight fittings, wiring, electrical equipment etc.

## 1.03 SUBMITTALS

- A. Quality Control Submittals:
  - 1. The Contractor shall prepare and submit to the Engineer, a plan that identifies best management procedures for the handling and stockpiling of special wastes that ensures protection of the public health and safety and the environment. This submittal shall also identify temporary storage areas to be used for the stockpiling of contaminated materials. If work requires excavation and hauling the design of the equipment and vehicle decontamination pad shall be included.
  - 2. The Contractor shall submit the qualifications of the individual responsible for the development of this plan and the supervision of the work. The qualifications of this individual shall meet or exceed the requirements for the Contractor Site Health and Safety Officer specified by Section 01069, Health and Safety Requirements.
  - 3. The Contractor shall submit to the Engineer copies of all bills of lading or manifests accompanying any wastes or soils designated for disposal, analytical data, permits and any documents submitted to RIDEM.

## 1.04 NOTIFICATION FOR ENCOUNTERING UNANTICIPATED CONTAMINATED MATERIALS

- A. It shall be the responsibility of the Contractor to immediately notify the Engineer upon encountering any unanticipated or suspect material, which could be determined to be special wastes; and to advise as to whether such materials could represent a Reportable Concentration for Soil as defined by RIDEM. It shall also be the responsibility of Contractor to notify RIDEM office of Compliance and Inspection in the event of an emergency release or spill.

## 1.05 APPLICABLE LAWS AND REGULATIONS

- A. Work under this Section shall be performed in strict compliance with all applicable Federal, State and local laws, rules, and regulations, including Rhode Island's Remediation Regulations, related to the handling and off-site management of contaminated wastes and regulated soil.

## EXCAVATION, HANDLING, AND STORAGE OF SPECIAL WASTES

- B. Pertinent Federal and State Authorities with jurisdiction over this project include:
  - 1. Occupational Safety and Health Administration (OSHA)
  - 2. Rhode Island Department of Environmental Management (RIDEM)
- C. The following OSHA regulations will apply:
  - 1. Occupational Safety and Health Standards, Hazardous Waste Operations and Emergency Response - 29 CFR 1910.120.
  - 2. Safety and Health Regulations for Construction - 29 CFR 1926.
- D. All other applicable Federal, State, and Local Regulations.

## PART 2 PRODUCTS

### 2.01 GENERAL

- A. The Contractor shall provide all employees and Subcontractors with personal protective equipment and protective clothing, and training and hazard awareness consistent with the levels of protection for this Work. The Work shall be coordinated and specifically addressed in Contractor's Health and Safety Program in accordance with Section 01069.

### 2.02 MATERIALS

- A. Polyethylene Sheeting: The material shall be UV resistant and cold crack resistant to -40 degrees F. The material shall be manufactured in a minimum 12-ft seamless width. Label on rolls shall identify thickness, length, width, and manufacturer's mark number. Listed material specifications are as follows:
  - 1. Bottom Layer – minimum twenty (20) mils thick.
  - 2. Top Layer – minimum ten (10) mils thick
- B. When applicable, utilize suitable rope, secured with weights, sandbags, or other similar form of hold-downs ties.

## PART 3 EXECUTION

### 3.01 GENERAL

- A. The Contractor shall perform demolition, removal, excavation, handling and hauling of special wastes in accordance with Contractor's Health and Safety Program and Section 02200. Soil excavation work may include special waste or suspect soils excavation, test pits, removal of obstructions, and any incidental work.

- B. The CONTRACTOR will provide adequate barriers and demarcation of excavations and exclusion zones to warn site visitors and the public of potential hazards.
- C. The CONTRACTOR will take appropriate means to prevent a release or the spread of hazardous wastes or contaminated materials as a result of the CONTRACTOR's operations.
- D. The Contractor shall maintain all required field controls as specified herein throughout the performance of the work.
- E. All site health and safety controls shall be fully established and in operation prior to beginning any soil excavation.

### 3.02 PREPARATION

- A. Temporary Storage Areas: Prior to storing any special wastes in stockpiles at temporary storage areas approved by the Engineer, the Contractor shall install berm or other perimeter controls around the base of the stockpile area as specified in approved plan.

### 3.03 EXCAVATION

- A. Work and decontamination procedures in areas containing contaminated materials shall be performed in accordance with standard engineering practices.
- B. The Contractor shall employ appropriate methods to isolate contaminated soils from non-contaminated areas.
- C. The Engineer may direct the Contractor to excavate additional soils outside the defined area.

### 3.04 STORAGE AND HANDLING OF EXCAVATED MATERIAL

- A. The Contractor shall provide a suitable on-site location, located on the work site for the temporary storage/stockpiling of special wastes for appropriate laboratory analytical testing prior to disposal. The Contractor shall temporarily stockpile excavated contaminated soil on the construction site in stockpiles pending soil characterization and analytical results. Soil shall be stockpiled in accordance with this Section. The Contractor shall prevent stormwater pollution from stockpiled material by employing perimeter controls, check dams, temporary dewatering and stilling basins as detailed by Section 02370.
- B. At a minimum, the storage location must be of sufficient size to stockpile special wastes encountered, storing soils and material which are anticipated to be contaminated, separately from those which are not anticipated to be contaminated. The Contractor shall maintain appropriate space between separated piles for the soil volumes expected by the Contractor to be in storage at any one time based on the Contractor's projected work rate, the environmental

site conditions described in the reference materials, and the laboratory testing requirements in this section.

- C. Off-site storage of special wastes is not permitted without prior written approval of the Engineer.
- D. Special wastes shall in no case be stockpiled for more than ninety (90) days.
- E. The Stockpiles shall be securely barricaded and clearly labeled.
- F. Soils shall be suitably dewatered prior to their leaving the site, to prevent free water from developing during transport to the disposal facility.
- G. Hay bales or similar shall be placed around the stockpile as per Section 02370.
- H. The Contractor shall also maintain appropriate dust control, per Section 01500.
- I. If stockpiles contain oily soils or debris, the Contractor shall place a minimum 8-inch diameter continuous oil absorbent boom around the entire perimeter of the stockpile.
- J. The Contractor shall inspect perimeter controls at least twice per week and provide immediate maintenance as necessary.

### 3.05 SOIL TRACKING, STOCKPILE SAMPLING, AND ANALYSIS

- A. The Contractor shall provide to the Engineer on a daily basis when excavating special wastes, copies of field records documenting the location of stockpiled material and stockpile identification data.
- B. The Contractor shall identify each item to be disposed of off-site. The Contractor shall document and track all contaminated soils from excavation to final off-site disposal.

### 3.06 EQUIPMENT AND VEHICLE DECONTAMINATION

- A. If earth excavation is required, the Contractor shall design and construct a decontamination pad to be used to decontaminate equipment and vehicles exiting from contaminated areas. The Contractor shall be responsible for the maintenance and operation of the decontamination station (decontamination pad and wash down equipment, if necessary) throughout the duration of the work activities. The Contractor shall collect, treat and dispose of decontamination pad wash water, if necessary. At the completion of the project, the Contractor shall dismantle and properly dispose of the decontamination pad and resulting contaminated waste products.

### 3.07 DISPOSAL



- A. The Contractor shall be responsible for preparing and submitting to the Engineer for review all waste profile applications and questionnaires, and coordination, with disposal facilities and all Federal and State environmental agencies.
- B. The Contractor shall submit to the Engineer, prior to receiving payment, documentation certifying that all materials were transported to, accepted, and disposed of, at the selected disposal facility.
- C. Dispose of materials described herein shall be in accordance with all Federal, State, and Local regulations.
- D. The Contractor shall perform analyses on stockpiles or *in situ* as necessary to fulfill any disposal testing requirements of the approved facilities. At a minimum, the Contractor shall sample at a frequency of one per 1,000 CY of excavated material. The Contractor shall submit a copy of all sampling analyses to the Engineer within 2 days of receipt of the laboratory report. The Contractor shall provide disposal facility letters of final waste acceptance, based on the stockpile or *in situ* sample analysis.
- E. The Contractor shall provide to the Engineer copies of all manifests and truck load forms, with original certified scale weight slips, both tare and gross, for every load weighted and disposed of at the accepted landfills. Individual truck load weight slips shall be tracked by the original manifest document number that was assigned by the Engineer at the site.
- F. Failure to provide manifests and other required forms, truck load tracking sheets, and the weight slips required as payment request backup, may be cause for the Engineer to withhold payment in an amount which the Engineer determines is equivalent to the work until such documentation is provided the Contractor.

### 3.08 UNANTICIPATED CONTAMINATED MATERIALS

- A. In the event that the Contractor suspects it has encountered unanticipated special wastes or contamination, the Contractor shall immediately discontinue work and make the work area safe. The Contractor shall immediately notify the Engineer, notify RIDEM in accordance with Section 5.0 of the RIDEM's Rules and Regulations of Hazardous Material Releases and implement the Contractor's Environmental Response Plan for Contaminated Media as required by Section 01069, HEALTH AND SAFETY REQUIREMENTS. Prior to recommencing work at the site of the suspected contamination the Contractor shall be responsible for submitting and receiving approval for its proposed actions from both RIDEM and the Engineer.
- B. The Contractor shall submit to the Engineer the name, location, and classification of the disposal facility for unanticipated contaminated material, along with the name and registration of licensed hauler and the Engineer for review prior to removal off-site. The disposal facility must be approved by RIDEM, and/or applicable federal, state, and/or local agency.

### EXCAVATION, HANDLING, AND STORAGE OF SPECIAL WASTES

- C. In consideration of the fact that the regulations governing disposal of these materials vary from time to time and that the quantity of material that may have to be excavated, stored, and disposed of is indeterminate, allowances have been set up under the Bid to provide compensation for disposal of these materials.
- D. Temporary Storage Areas:
  - 1. Prior to storing un-containerized contaminated soils in stockpiles at temporary storage areas approved by the Engineer, the Contractor shall install berm or other perimeter controls around the base of the stockpile area as specified in approved plan.
  - 2. Polyethylene sheeting shall cover the stockpiles and appropriate perimeter controls shall be constructed to prevent generation and migration of leachate and diversion of stormwater runoff.
  - 3. Place appropriate bottom layer polyethylene sheeting beneath all stockpiles with a minimum overlap of 18-inches. The polyethylene sheeting shall extend past the limits of the berm a minimum of 12-inches.
  - 4. The Contractor shall inspect perimeter controls at least twice per week and provide immediate maintenance as necessary.
- E. The Contractor shall be responsible for preparing and submitting to the Engineer for review all waste profile applications and questionnaires, and coordination, with disposal facilities and all Federal and State environmental agencies.
- F. The Contractor shall be responsible for preparing all waste profiles, hazardous waste manifests and bills of lading with all applicable analytical backup, notification, and control forms. Contractor shall submit these to the Engineer for review and approval at least 5 days before transport.
- G. The Contractor shall also provide certified tare and gross weight slips for each load received at the designated disposal facility which shall be attached to each returned manifest and bill of lading.
- H. The Contractor shall furnish all copies of the waste manifests to the Engineer for submittal to appropriate Federal and/or State Environmental Agencies and to retain for the Owner's records.
- I. The Contractor shall submit to the Engineer, prior to receiving payment, documentation certifying that all materials were transported to, accepted, and disposed of, at the selected disposal facility.

- J. Disposal of materials described herein shall be in accordance with all Federal, State, and Local regulations. The Contractor shall select excavation techniques that will minimize the amounts of excavated material and shall select the most economical disposal option allowable in accordance with Federal, State, and local environmental agencies having jurisdiction.
- K. The Contractor shall perform analyses on stockpiles or *in situ* as necessary to fulfill any disposal testing requirements of the approved facilities.
  - 1. The Contractor shall perform sampling and analyses for those tests required by the facilities in excess of those previously performed by the Engineer.
  - 2. The Contractor shall submit a copy of all sampling analyses to the Engineer within 2 days of receipt of the laboratory report. Analytical data shall be kept confidential, distributed to facility, Engineer and RIDEM only.
  - 3. The Contractor shall provide disposal facility letters of final waste acceptance, addressed to RIDEM, based on the stockpile or *in situ* sample analysis.
- L. The Contractor shall provide to the Engineer copies of all manifests and truck load forms, with original certified scale weight slips, both tare and gross, for every load weighted and disposed of at the accepted landfills. Individual truck load weight slips shall be tracked by the original manifest document number that was assigned by the Engineer at the site. The Engineer shall only authorize payments upon receipt of the manifests and other required forms, truck load tracking sheets, and the weight slips required as payment request backup.
- M. All material described herein shall be removed from the site within 90 days from the start of generation or receipt of analytical results.

END OF SECTION

**SECTION 02215**

**AGGREGATE MATERIALS**

**PART 1 - GENERAL**

**1.01 SUMMARY**

**A. Section Includes**

1. Requirements for furnishing and placing materials, which include Crushed Stone, Gravel Borrow and Select Borrow.
2. Location of specified materials as detailed on the Drawings or as directed by the Engineer for excavation below normal depth, utility support, replacement of unsuitable material or elsewhere, as ordered.

**B. Related Sections**

1. Section 02200 – Earth Excavation, Backfill, Fill and Grading
2. Section 02500 – Hot Mix Asphalt
3. Section 02795 – Porous Pavement
4. Section 03300 – Cast-in-Place Concrete

**1.02 REFERENCES**

**A. American Association of State Highway and Transportation Officials (AASHTO).**

1. T11, Amount of Material Finer than 0.075 mm Sieve in Aggregate
2. T27, Sieve Analysis of Fine and Coarse Aggregates.

**B. American Society for Testing and Materials (ASTM).**

1. 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>)).

**1.03 DEFINITIONS**

- A. The term Screened Gravel as used in the Contract Documents shall mean Crushed Stone.**

**1.04 SUBMITTALS**

**A. Shop Drawings**

1. Provide sieve analysis when gradation requirements are given in the Specification.

B. Samples

1. Furnish representative sample including location of source with Shop Drawing transmittal sheet.

1.05 QUALITY ASSURANCE

A. Field Samples

1. The attention of the Contractor is directed to the fact that under Specification SECTION 01300 Submittals, all materials furnished by the Contractor to be incorporated into the Work shall be subject to the inspection of the Engineer. The Engineer shall be the sole judge as to the acceptability of proposed materials and said judgement shall be final, conclusive, and binding.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Storage and Protection

1. In accordance with Specification SECTION 01300, 1.16 Delivery, Storage, and Handling.

**PART 2 - PRODUCTS**

1.07 MATERIALS

A. Crushed Stone

1. For the construction of pervious concrete system indicated on the plans, crushed, sharp, clean stone:

- a. Choker Course (AASHTO No. 57) shall conform to the following:

<u>Sieve</u>	<u>Percent Passing</u>
1 ½ Inch	100
1 Inch	95-100
½ Inch	25-60
#4	0-10
#8	0-5

- b. Filter Course (AASHTO No. M-6) shall conform to the following:

<u>Sieve</u>	<u>Percent Passing</u>
3/8 Inch	100
#4	70-100
#200	0-6**

\*\*Less than 4% fines preferred

- c. Filter Blanket (Pea Stone) shall conform to the following:  
3/8 Inch size pea stone

- d. Reservoir Course (AASHTO No. 3) shall conform to the following:

<u>Sieve</u>	<u>Percent Passing</u>
2 ½ Inch	100
2 Inch	90-100
1 ½ Inch	35-70
1 Inch	0-15
½ Inch	0-5

- For weep hole drainage and bedding and pipe zone material for pipe larger than 3 inches diameter. Well graded in size from 3/8 inches to 3/4 inches or such other sizes as may be approved.
- For bedding and pipe zone material for plastic pipe 3 inches diameter and less, maximum particle size shall be 3/8 inches.
- Clean, hard, and durable particles or fragments, free from dirt, vegetation, or other objectionable matter, and free from an excess of soft, thin elongated, laminated or disintegrated pieces.
- Screened Stone of similar size and grading to this specification may be used instead of Crushed Stone.

B. Gravel Borrow

- Granular material well graded from fine to coarse with a maximum size of 3 inches, obtained from approved natural deposits and unprocessed except for the removal of unacceptable material and stones larger than the maximum size permitted.
- Gravel shall not contain vegetation, masses of roots, or individual roots more than 18 inches long or more than 1/2 inches in diameter.
- Gravel shall be substantially free from loam and other organic matter, clay and other fine or harmful substances.
- Gradation requirements for gravel borrow shall be determined by AASHTO-T11 and T27 and conform to the following:

<u>Sieve</u>	<u>Percent Passing</u>
1/2 inch	60-95
No. 4	50-85
No. 50	8-28
No. 200	0-8

C. Select Borrow

1. Use inorganic natural soils and/or rock, having not more than 8 percent by weight passing the No. 200 sieve and having a maximum stone size no greater than 6-inches.
2. Use only material well-graded throughout entire size range, free of roots, leaves and other organic material, ice or frost and aggregations of frozen soil particles.
3. Moisture content to be within plus minus 3 percent optimum at the borrow source.
4. Material must meet compaction requirements indicated or as specified.

D. Gravel Base Course

1. In accordance with SECTION 02500 Hot Mix Asphalt Pavement.

1.08 SOURCE QUALITY CONTROL

A. Test, Inspection

1. Engineer may elect to sample material supplied at the source.
2. Assist the Engineer and/or personnel from the designated testing laboratory in obtaining samples.

**PART 3 - EXECUTION**

1.09 INSTALLATION

A. Crushed Stone

1. Spread in layers of uniform thickness not greater than 4 inches.
2. Compact thoroughly by means of a suitable vibrator or mechanical tamper.

B. Gravel Borrow

1. Spread in layers of uniform thickness not exceeding 12 inches before compaction and moistened or allowed to dry as directed.
2. Compact thoroughly by means of suitable power-driven tampers or other power-driven equipment.
3. Compaction shall conform to 95% of minimum dry density per ASTM D1557.
4. The percolation rate for the compacted bank-run gravel shall not exceed 5 minutes per inch.

C. Select Borrow

1. Spread in layers of uniform thickness not exceeding 12 in. (loose lift) before compaction and moistened or allowed to dry.

2. Compact thoroughly by means of suitable power-driven tampers or other power-driven equipment unless otherwise directed by the Engineer.

1.10 FIELD QUALITY CONTROL

- A. Material and compaction testing
  1. In accordance with SECTION 01400.

**END OF SECTION**



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**SECTION 02250**

**EROSION AND SEDIMENTATION CONTROLS**

**PART 1 - GENERAL**

**1.1 SCOPE**

- A. The work specified in this section includes the installation, maintenance, and removal of perimeter erosion controls, check dams, temporary dewatering basins, storm drain protection, stilling basins for water pollution control, and construction accesses. Soil erosion and sediment controls shown on the Plans shall be installed by the Contractor. Some soil erosion and sediment controls specified herein may or may not be shown or detailed on the Drawings, but may be utilized by the Contractor. Soil erosion and sediment controls not detailed on the Plans shall be in accordance with this specification and the Rhode Island Department of Environmental Management Soil Erosion and Sediment Control Handbook, 1989, and all addendums. The methods described in this section are approved means for soil erosion and sediment control, the actual means and methods shall be determined by the Contractor. The Contractor shall be responsible for preparing and establishing a stormwater pollution prevention plan at each work site for approval by the Engineer.
- B. Related Work Described Elsewhere:
  - 1. Earth Excavation, Backfill, Fill and Grading – Section 02200

**1.2 GENERAL REQUIREMENTS**

- A. Perimeter Erosion Controls: Work shall consist of the provision of perimeter erosion controls in reasonably close conformity with the dimensions and details indicated on the Drawings, all in accordance with these Specifications. Perimeter erosion controls consist of the following two types:
  - 1. Compost Filter Socks: Filter socks shall be constructed as indicated on the Drawings.
  - 2. Silt Fence: Silt fencing shall consist of oak fence posts to which are attached industrial support netting and sediment control filter fabric, and are constructed as indicated on the Drawings.
- B. Storm Drain Protection: Work shall consist of the provision of temporary storm drain protection facilities. Storm drain protection facilities shall consist of the following three types:
  - 1. Sandbag Gutter Inlet Sediment Barrier: This work consists of placing a sandbag barrier upstream of a gutter inlet prior to the placement of roadway pavement.
  - 2. Silt Fence Catch Basin Inlet Protection: This work consists placing a temporary filter fabric fence around inlet grates.

3. Baled Hay Catch Basin Inlet Protection: This work consists of placing baled hay around catch basin inlets. Baled hay inlet protection shall be constructed as indicated on the Drawings.
- C. Check Dams: If so required work shall consist of the provision of check dams and dikes in reasonably close conformity with the RIDEM Soil Erosion and Sediment Control Handbook. Check dams consist of the following three types:
  1. Baled Hay Ditch and Swale Erosion Checks: Baled hay ditch and swale erosion checks shall consist of baled hay or straw, each bale of which is embedded and attached to the ground with wood stakes.
  2. Sand Bag Erosion Dikes: This work shall consist of the placement of sand bags across either riprap or earth ditches, thereby forming a dike, to create temporary stilling basins for pollution control.
  3. Stone Check Dams: This work shall consist of the placement of stone in ditches or drainage swales to reduce flow velocities, to prevent soil erosion.
- D. Temporary Dewatering Basins: If so required work shall consist of the provision of temporary dewatering basins for the purpose of controlling water pollution caused by sediment-laden discharge from excavation sites. The basins shall be constructed in reasonably close conformity to means and methods of the RIDEM Soil Erosion and Sediment Control Handbook. Temporary dewatering basins consist of the following two types:
  1. Dewatering Basin: The basin consists of a rectangular concrete barrier enclosure, the bottom and sides of which are lined with filter fabric. The bottom fabric is stabilized with filter stone. The basin is divided into the required number of 12-foot sections by stone berms approximately 18-inches high.
  2. Filter Fabric Retention Basin: The basin consists of a rectangular enclosure formed by a 2-foot high chain link fence. Both the fence and the bottom of the enclosure are lined with filter fabric which is stabilized by a layer of rock riprap.
- E. Stilling Basins for Water Pollution Control: Work shall consist of the provision of temporary and/or permanent stilling basins in accordance with the RIDEM Soil Erosion and Sediment Control Handbook.

### 1.3 QUALITY CONTROL

- A. Provide Quality Assurance / Quality Control services in accordance with Section 01400.

### 1.4 SUBMITTALS

- A. None required.

### 1.5 REFERENCE STANDARDS

- A. Rhode Island Department of Environmental Management (RIDEM). 1988. Recommendations of the Stormwater Management and Erosion Control Committee Regarding the Development and Implementation of Technical Guidelines for

Stormwater Management. RIDEM, Office of Environmental Coordination, Providence, RI.

- B. Rhode Island Department of Environmental Management and USDA Soil Conservation Service (SCS). 1989. Rhode Island Soil Erosion and Sediment Control Handbook. RIDEM, Providence, RI.
- C. Rhode Island Discharge Elimination System. General Permit for Discharges Associated with Construction Activities.

## **PART 2 - PRODUCTS**

### **2.1 MATERIALS**

#### **A. Perimeter Erosion Controls:**

- 1. Compost Filter Socks: Filter sock materials and compost material shall be in accordance with AASHTO Designation MP 9-06. To avoid damage to existing pavement compost socks may be weighted down with concrete blocks at 5-foot on-center intervals with prior approval by the engineer. If utilized, wooden stakes shall be 1 inch by 1 inch, installed at 10-foot intervals on center, and of a length that shall project into the soil 1 foot leaving 3-4 inches protruding above the filter sock.
- 2. Baled Hay Erosion Checks: Baled hay or straw shall be baled within twelve months of use. Bindings shall be sufficiently strong to act as handles when placing bales in position by hand. The minimum dimension of any bale shall be 18-inches. Wood stakes shall be oak, 1-inch by 1-inch in section, and at least 3.0 feet in length.
- 3. Silt Fence: The filter fabric shall be a material suitable for erosion control applications. Wood posts shall be oak, 2-inch by 2-inch in section, and at least 4.5 feet in length. Support netting shall be heavy-duty plastic mesh. For prefabricated silt fence, 1-inch by 1-inch wood posts will be permitted.

#### **B. Check Dams:**

- 1. Baled Hay Ditch and Swale Erosion Checks: Baled hay or straw shall be baled within twelve months of use. Bindings shall be sufficiently strong to act as handles when placing bales in position by hand. The minimum dimension of any bale shall be 18-inches. Wood stakes shall be oak, 1-inch by 1-inch in section, and at least 3.0 feet in length.
- 2. Sand Bag Erosion Dikes: The sand bags and the sand material shall be of a quality acceptable to the Engineer. Dumped stone, when required, shall meet the requirements for Modified NSA Class R-4 riprap in Table II. The filled sand bags will weigh a minimum of 60 pounds.
- 3. Stone Check Dams: The stone shall meet the requirements for Filter Stone under RIDOT FS-2.

#### **C. Temporary Dewatering Basins:**

1. Dewatering Basins: Precast concrete barrier units shall conform to the RIDEM Soil Erosion and Sediment Control Handbook. Filter fabric shall conform to the applicable requirements of Article 2.1, Item A, Para. 2; Silt Fence, of these Specifications. Filter stone shall conform to the requirements of RIDOT FS-2. Sand bags shall be of a quality acceptable to the Engineer. Hay bales and wood stakes shall conform to the requirements of Article 2.1, Item A, Para. 1 of these Specifications.
- D. Storm Drain Protection:
1. Sandbag Gutter Inlet Sediment Barrier: The sandbags and the sand material shall be of a quality acceptable to the Engineer.
  2. Silt Fence Catch Basin Inlet Protection: The filter fabric shall be a material suitable for erosion control applications utilized. Wood posts shall be oak, 2-inch by 2-inch in section, and at least 4.5 feet in length. Support netting shall be heavy-duty plastic mesh. For prefabricated silt fence, 1-inch by 1-inch wood posts will be permitted.
  3. Baled Hay Catch Basin Inlet Protection: Baled hay or straw and wood stakes shall conform to the requirements of Article 2.1, Item A, Para. 1 of these Specifications.
- E. Stilling Basins for Water Pollution Control: The various materials required for the construction of stilling basins will be determined by the Contractor and provided in the Soil Erosion and Sediment Control Plan for approval by the Engineer.

### **PART 3 - EXECUTION**

#### **3.1 GENERAL**

- A. Construction Methods: Those erosion and pollution controls indicated on the Drawings shall be installed to the satisfaction of the Engineer before the commencement of any construction.

#### **3.2 INSTALLATION**

A. Perimeter Erosion Controls:

1. Compost Filter Socks: Filter socks shall be constructed at the locations, and in accordance with the details indicated on the Drawings to the satisfaction of the Engineer. The following stipulations also apply:
  - a. Trenching is not required. Compost filter socks shall be placed over the top of pavement or existing ground, weighted with concrete blocks or secured with wooden stakes shall be driven through the center of the filter socks to anchor them to the ground. To ensure optimum performance, heavy vegetation shall be cut down or removed, and extremely uneven surfaces shall be graded to ensure that the compost filter sock uniformly and snugly contacts and conforms to the ground surface.
  - b. Compost tubes may be vegetated by incorporating seed into the compost, prior to placing it in the tube.

- c. Compost Filter Socks do not require trenching but must be weighted or staked.
  - d. Installation: No trenching is required; therefore, soil is not disturbed upon installation. Once the filter sock is filled and put in place, it should be anchored. The preferred anchoring method is to drive stakes through the center of the sock at regular intervals; alternatively, stakes can be placed on the downstream side of the sock. The ends of the filter sock should be directed upslope, to prevent stormwater from running around the end of the sock. The filter sock may be vegetated by incorporating seed into the compost when filling the filter sock.
  - e. Since compost filter socks do not have to be trenched into the ground, they can be installed on frozen ground, pavement or cement. For placement on pavement or cement concrete blocks can be placed to hold the sock in place.
2. Baled Hay Erosion Checks: Baled hay erosion checks shall be constructed at the locations, and in accordance with the details indicated on the Drawings to the satisfaction of the Engineer. The following stipulations also apply:
- a. Bales shall be placed in a single row, lengthwise on the contour, with ends of adjacent bales tightly abutting one another.
  - b. The erosion check shall be entrenched and backfilled. The trench shall be excavated the width of the bale and the length of the check to a minimum depth of 3-inches. After the bales are staked and chinked, the excavated soil shall be backfilled against the check. Backfill shall conform to the ground level on the downhill side and shall be built up to 4-inches against the uphill side.
  - c. The bales are to be installed so that the bindings are oriented around the sides of the bales rather than along their tops and bottoms.
  - d. Each bale shall be securely anchored by at least two stakes driven through the bale. The first stake in each bale should be driven toward the previously laid bale to force the bales together.
  - e. The gaps between bales shall be chinked (filled by wedging) with straw to prevent water from escaping between bales. Loose straw shall be scattered over the area immediately uphill from the bale erosion check to increase efficiency.
  - f. At approximate intervals of 100 feet, one bale is to be placed against those bales positioned along the limit of clearing. This bale is to be placed at a right angle to the line of the toe of slope.
3. Silt Fence: Silt fence shall be constructed at the locations, and in accordance with the details indicated on the Drawings, to the satisfaction of the Engineer. The following stipulations also apply:
- a. A 6-inch x 6-inch minimum trench shall be dug where the fence is to be installed.
  - b. The fence shall be positioned in the trench with the fence posts set at 8-feet on center (maximum).

- c. The sedimentation control fabric and the industrial netting shall be stapled to each post. When joints are necessary, filter fabric shall be spliced together only at support posts. Splices shall consist of a 6-inch overlap, and shall be securely sealed.
- d. Each wood post with industrial support netting and filter fabric attached shall be driven into the undisturbed soil in the trench as indicated on the Drawings.
- e. The trench shall be backfilled, and the soil compacted over the filter fabric.
- f. The installed height of the fence shall be 2.5 feet (minimum). However, height shall not exceed 36-inches since higher barriers impound volumes of water sufficient to cause failure of the fence structure.

B. Check Dams:

- 1. Baled Hay Ditch and Swale Erosion Checks: Erosion checks shall consist of two or more bales placed and staked perpendicular to the flow line of a ditch formed by the intersection of its slopes. The following stipulations also apply:
  - a. A pair of erosion checks shall be placed a minimum of 12 feet apart at each location.
  - b. The ditch erosion checks shall be entrenched and backfilled. The trench shall be excavated the width of the bale(s) and the length of the check to a minimum depth of 3-inches. After the bales are staked and chinked, the excavated soil shall be backfilled against the check. Backfill shall conform to the ground level on the downhill side and shall be built up to 4-inches against the uphill side.
  - c. The bales are to be installed so that the bindings are oriented around the sides of the bales rather than their tops and bottoms.
  - d. The edges of overlapped bales shall overlap in such a manner that there will be no opening between the bales. Where bales butt together the gap between bales shall be chinked with loose straw to prevent water from escaping.
  - e. Each bale shall be securely anchored by a least two stakes driven through the bale. The first stake in each bale should be driven toward the previously laid bale to force the bales together.
  - f. All earth ditch areas are required to have the protection of baled hay ditch erosion checks prior to their outfall onto existing ground, or natural or man-made water courses.
  - g. The haybale barrier shall be extended such a length that the bottoms of the end bales are higher in elevation than the top of the lowest middle bale. This configuration will ensure that the sediment-laden runoff will flow either through or over the barrier, but not around it.
- 2. Sand Bag Erosion Dikes: Sand bags will be placed a minimum of four layers high. Over the center of the ditch the top layer of sand bags will have a weir opening equal to one half the bottom ditch width. The sand bags shall be extended such a length that the bottom of the end sand bags are higher in

elevation than the top of the lowest middle sand bag. When the sand bag dike is constructed across an earth ditch, the downstream side of the dike at the weir opening is to be protected with Modified NSA Class R-4 dumped riprap.

3. Stone Check Dams: Stone shall be placed across the ditch or swale to achieve complete coverage and shaped to the required configuration by the use of hand tools. The stone shall be sloped from the sides of the ditch/swale towards the center such that the center is 6-inches lower than the stone at the sides of the ditch/swale. The check dam shall have 2-horizontal to 1-vertical side slopes and shall not exceed 2-feet in height.

C. Temporary Dewatering Basins:

1. Dewatering Basin: The following stipulations shall apply:
  - a. The precast concrete barrier units shall be placed on level, or nearly level, ground.
  - b. Filter fabric shall be placed on the bottom of the entire area enclosed by the concrete barrier units. If more than one sheet of fabric is required, the adjacent section shall be overlapped a minimum of 12-inches to insure full coverage. Filter fabric shall be turned up along the inside face of the concrete barriers to the top of same, there to be folded across the top of the barriers. The fabric will be maintained in position by the placement of sand bags, end-to-end, along the top of the concrete barrier enclosure.
  - c. A minimum layer of 6-inches of filter stone shall be spread over the bottom of the basin. Stone berms shall be constructed at 12-foot intervals along the length of the basin.
2. Filter Fabric Retention Basin: The following stipulations shall apply:
  - a. The filter fabric retention basin will be placed on stabilized and level, or nearly level, ground to prevent erosion by water exiting the basin.
  - b. A 6-inch by 6-inch minimum trench shall be dug where the basin is to be constructed.
  - c. The filter fabric and wire backing shall be 3-feet wide (minimum) positioned in the trench and secured to metal posts positioned 4-feet on center (maximum).
  - d. The metal posts shall be driven into undisturbed soil next to the trench to a minimum depth of 12-inches.
  - e. Fill material shall be placed in the trench and compacted.
  - f. The installed height of the fence shall be 2-feet (minimum).
  - g. A minimum layer of 6-inches of filter stone (Modified NSA Class R-4 riprap) shall be spread evenly over the bottom of the basin.

D. Storm Drain Protection:

1. Sandbag Gutter Inlet Sediment Barrier: The following stipulations shall apply:



- a. The sandbags shall be placed in a curved row extending from the curb or berm. The row shall be at least 6-feet upstream of the inlet and should overlap the curb or berm.
    - b. Several layers of sandbags shall be placed over the first layer to a minimum height of 1-foot. The bags shall be overlayed and packed tightly together.
    - c. A gap of one sandbag should be left in the middle of the top row to serve as a spillway. The spillway shall be at least 8-inches high.
    - d. Additional sediment storage capacity can be obtained by constructing a series of these barriers along the gutter upstream of the inlet.
  2. Silt Fence Catch Basin Inlet Protection: The following stipulations shall apply:
    - a. Posts shall extend at least 1 foot below grade.
    - b. The filter fabric shall extend to a height at least 12-inches above the top of the inlet grate, but shall not exceed 3 feet in height.
    - c. The support netting shall extend to the full height of the filter fabric.
    - d. A trench shall be excavated approximately 6-inches wide and 6-inches deep around the outside perimeter of the stakes. The filter fabric and support netting shall extend at least 6-inches into the trench. After the fabric and support netting are fastened to the stakes the trench should be backfilled and compacted to original grade.
    - e. The filter fabric and support netting fence shall be securely fastened to the stakes using heavy duty wire staples at least 1-inch long. Ends of the filter fabric must meet at a stake, be overlapped, folded and stapled to the stake.
  3. Baled Hay Catch Basin Inlet Protection: The baled hay inlet protection shall be constructed as indicated on the Drawings. The following stipulations shall also apply:
    - a. The bales shall be entrenched and backfilled. The trench shall be excavated the width of the bale and the length of the check to a minimum depth of 3-inches. After the bales are staked and chinked, the excavated soil shall be backfilled against the check. Backfill shall conform to the ground level on the inside and shall be built up to 4-inches around the outside.
    - b. The bales are to be installed so that the bindings are oriented around the sides of the bales rather than along their tops and bottoms.
    - c. Each bale shall be securely anchored by at least two stakes driven through the bale. The first stake in each bale should be driven toward the previously laid bale to force the bales together.
    - d. The gaps between bales shall be chinked (filled by wedging) with straw to prevent water from escaping between bales.
- E. Stilling Basins for Water Pollution Control:
1. The stilling basins will be constructed in such a manner to allow any material which may cause a natural water course or the surrounding environment to be damaged to be retained in the basin. During the life of the Contract, the

Contractor will be required to periodically clean the pool and to maintain the basin to the satisfaction of the Engineer. If the basin is temporary, the Contractor will be required to fill the basin with suitable material and to restore the area in which the basin was located to either its original condition or to the requirements of the Contract.

2. In all cases the stilling basins are to be constructed immediately after the clearing and grubbing operation and before commencement of any excavation and/or embankment. The single exception to this requirement is the construction of a leveling course to create a work platform. Excavation for stilling basins is to take place from the downstream end of the basin and to proceed upstream. Prior to the start of excavation, temporary baled hay ditch erosion checks are to be constructed immediately beyond the downstream end of the basin. When the basin is complete the above temporary erosion control measures are to be removed.

### 3.3 MAINTENANCE AND CLEANING

#### A. Definitions:

1. Cleaning consists of removing debris and accumulated sediment-laden deposits from the upstream side of perimeter controls, check dams and temporary drainage protection and from the bottom of temporary dewatering basins and stilling basins. All material so-removed shall be legally disposed of in accordance with Federal, State, and local regulations.
2. Maintenance consists of the repair and restoration to original configuration of damage sustained by erosion and pollution controls caused by "normal" rainfall events. (Abnormal weather events are defined in Article 3.3, Item I)

#### B. Methods:

1. Erosion and pollution controls shall be maintained by the Contractor to the satisfaction of the Engineer. Erosion and pollution controls must be able to prevent, under normal weather conditions, both the movement of soil materials and the intrusion of sediment-laden discharges into environmentally sensitive areas.
2. Construction shall not commence or continue until all specified erosion and pollution controls are in place, properly installed and accepted by the Engineer.
3. Erosion and pollution controls shall be routinely inspected by the Engineer. The Engineer shall notify the Contractor immediately if problems develop. The Contractor shall commence cleaning and maintenance measures no later than the next consecutive calendar day after receiving a directive from the Engineer to perform such measures. The Contractor shall aggressively and expeditiously perform such cleaning and maintenance work until the original problem is remedied to the complete satisfaction of the Engineer. In the event of a weekend storm, the Contractor must have resources available to restore, and, if necessary, to replace any damaged controls.

#### C. Applicable Controls:

1. The specific erosion and pollution control facilities to be cleaned and maintained under this Section are outlined in Article 1.2 and consist of the following:
  - a. Perimeter Controls:
    - 1) Compost Filter Socks
    - 2) Baled Hay Erosion Checks
    - 3) Silt Fence
  - b. Check Dams:
    - 1) Baled Hay Ditch and Swale Erosion Checks
    - 2) Sand Bag Erosion Dikes
    - 3) Stone Check Dams
  - c. Temporary Dewatering Basins:
    - 1) Dewatering Basins
    - 2) Filter Fabric Retention Basins
  - d. Storm Drain Protection:
    - 1) Sandbag Gutter Inlet Sediment Barrier
    - 2) Silt Fence Catch Basin Inlet Protection
    - 3) Baled Hay Catch Basin Inlet Protection
  - e. Stilling Basins

D. Materials:

1. Materials required to repair and restore damaged erosion and pollution controls shall meet the applicable requirements of Article 2.1, Items A thru E; for Perimeter Erosion Controls, Check Dams, Temporary Dewatering Basins, Storm Drain Protection, and Stilling Basins, respectively, of these Specifications.

E. Threshold for Cleaning Erosion Controls:

1. Erosion and pollution controls will be cleaned when directed by the Engineer, after a rainstorm, and when sediment deposits reach the heights indicated in the following table:

	<u>Height</u>
a. Perimeter Controls	
1) Baled Hay Erosion Checks	1/2 Bale Height
2) Silt Fence	6-inches
b. Check Dams	
1) Baled Hay Erosion Checks	1/2 Bale Height
2) Sand Bag Erosion Dike	1/2 Dike Height

- |  |                                     |
|--|-------------------------------------|
| 3) Stone Check Dam                         | 1/2 Dam Height                      |
| c. Temporary Dewatering Basins             |                                     |
| 1) Dewatering Basins                       | 1/2 Original Basin Height           |
| 2) Filter Fabric Retention Basin           | 1/2 Original Basin Height           |
| d. Storm Drain Protection                  |                                     |
| 1) Sandbag Gutter Inlet Sediment Barrier   | 1/2 Dike Height                     |
| 2) Silt Fence Catch Basin Inlet Protection | 6-inches                            |
| 3) Baled Hay Catch Basin Inlet Protection  | 1/2 Bale Height                     |
| e. Stilling Basins                         | 1/2 Depth Below<br>Outlet Elevation |

F. Other Requirements:

1. Perimeter Controls, Check Dams and Storm Drain Protection: The following requirements apply:
  - a. Damaged controls will be repaired or replaced after each storm events.
  - b. Before controls are removed all accumulated sediment on the upstream side shall be removed and legally disposed of.
  - c. Erosion controls shall not be removed until the adjacent exposed areas are relatively free from future uncontrolled discharges.
  - d. The Engineer has the authority to verify, enforce, and to specify maintenance activities and to ensure that erosion and pollution controls have been properly maintained.
2. Temporary Dewatering Basins and Stilling Basins: The following requirements apply:
  - a. The basins will be periodically inspected for signs of erosion around the basin and downslope area.
  - b. Repairs will be promptly carried.
  - c. The Engineer has the authority to verify, enforce, and to specify maintenance activities and to ensure that controls have been properly maintained.

G. Failure of Erosion and Pollution Controls:

1. This Article 3.3; Maintenance and Cleaning, is based on the concept that erosion and pollution controls will essentially remain intact under normal rainfall events and that any damage sustained by said controls under normal rainfall may be repaired under the maintenance provisions set forth herein.
2. However, under abnormal weather events it is possible that erosion and pollution controls may be damaged to the extent that the Engineer may direct that they be replaced in their entirety. Under such abnormal conditions the Contractor will replace the particular facilities, and be compensated for same, under the applicable provisions set forth in regarding PERIMETER CONTROLS, CHECK

DAMS, TEMPORARY DEWATERING BASINS, STORM DRAIN PROTECTION, and STILLING BASINS, respectively, of these Specifications.

H. Definition of Abnormal Weather Conditions:

1. For the purposes of Article 3.3, Item G, abnormal weather events are defined as follows:
  - a. For a duration of 1-hour; rainfall equal to or greater than 1/2-inch.
  - b. For a duration of 12-hours; rainfall equal to or greater than 2-inches.
  - c. For a duration of 24-hours; rainfall equal to or greater than 3-inches.
  - d. Extreme weather conditions such as hurricanes, tornadoes, floods, blizzards, etc. Daily rainfall records may be obtained from the National Weather Service.

3.4 REMOVAL

A. Perimeter Erosion Controls:

1. Compost Filter Socks: All stakes and compost filter socks must be removed at a time designated by the Engineer. The compost filter socks may be removed only when the adjacent exposed area has been stabilized, i.e., the area has an established grass or stone cover or has been paved, and is free from future uncontrolled discharges. Prior to such removal, however, all silt, mud, and debris entrapped by the haybales shall be removed and the area cleaned up in accordance with the applicable provisions of Article 3.3 of these Specifications. Immediately upon removal of the bales the remaining exposed areas (under the bales) will be backfilled, raked, and graded as necessary to match the surrounding grade and then seeded.
2. Baled Hay Erosion Checks: All stakes must be removed from the haybales at a time designated by the Engineer. In general, the bales will be allowed to rot in place. If the Contract requires the haybales to be removed, they may be removed only when the adjacent exposed area has been stabilized, i.e., the area has an established grass or stone cover or has been paved, and is free from future uncontrolled discharges. Prior to such removal, however, all silt, mud, and debris entrapped by the haybales shall be removed and the area cleaned up in accordance with the applicable provisions of Article 3.3 of these Specifications. Immediately upon removal of the bales the remaining exposed areas (under the bales) will be backfilled, raked, and graded as necessary to match the surrounding grade and then seeded.
3. Silt Fence: This work will include the removal of the silt fence erosion checks and posts. Silt fence will not be left to rot in place. The silt fence may be removed only when the adjacent exposed area is stabilized, i.e., the area has an established grass or stone cover or has been paved, and is free from future uncontrolled discharges. Prior to such removal, however, all silt, mud, and debris entrapped by the silt fence shall be removed and the area cleaned up in accordance with the applicable provisions of Article 3.3 of these Specifications. Immediately upon removal of the bales the remaining exposed areas (under the

bales) will be backfilled, raked, and graded as necessary to match the surrounding grade and then seeded.

B. Check Dams:

1. Baled Hay Ditch and Swale Erosion Checks: Bales of hay used in this work will not normally be left to rot in place. The bales may be removed only when the adjacent exposed area is stabilized, i.e., the area has an established grass or stone cover or has been paved, and is free from future uncontrolled discharges. Prior to such removal, however, all silt, mud, and debris entrapped by the respective erosion checks shall be removed and the area cleaned up in accordance with the applicable provisions of Article 3.3 of these Specifications. Immediately upon removal of the bales, the remaining exposed areas (under the bales) will be backfilled, raked, and graded as necessary to match the surrounding grade and then seeded.
2. Sand Bag Erosion Dikes: Sand bag erosion dikes will be removed prior to the completion of the project at a time designated by the Engineer. Prior to such removal, however, all silt, mud, and debris entrapped by the erosion dike shall be removed and the area cleaned up in accordance with the applicable provisions of Article 3.3 of these Specifications.
3. Stone Check Dams: Stone check dams will be removed prior to the completion of the project at a time designated by the Engineer. Prior to such removal, however, all silt, mud and debris entrapped by the check dam shall be removed and the area cleaned up in accordance with the applicable provisions of Article 3.3 of these Specifications.

C. Temporary Dewatering Basins:

1. Dewatering Basin: The dewatering basin will not be removed until all dewatering operations are complete. Prior to such removal, however, all accumulated sediment within the basin shall be removed and legally disposed of in accordance with the applicable requirements of Article 3.3 of these Specifications. The area covered by the basin shall be seeded and mulched immediately after the basin is removed.
2. Filter Fabric Retention Basin: Removal requirements for the filter fabric retention basin are the same as set forth above for the dewatering basin.

D. Storm Drain Protection:

1. Sandbag Gutter Inlet Sediment Barrier: The sandbag sediment barrier will be removed prior to the completion of the project at a time designated by the Engineer. Prior to such removal, however, all silt, mud, and debris entrapped by the sediment barrier shall be removed and the area cleaned up in accordance with the applicable provisions of Article 3.3 of these Specifications.
2. Silt Fence Catch Basin Inlet Protection: The silt fence inlet protection shall be removed, and the area prepared for pavement construction once the contributing drainage area is free from future uncontrolled discharges. Prior to such removal, however, all silt, mud, and debris entrapped by the silt fence shall be removed and the area cleaned up in accordance with the applicable provisions of Article 3.3 of these Specifications.

3. Baled Hay Catch Basin Inlet Protection: The baled hay inlet protection shall be removed, and the area prepared for pavement construction the contributing drainage area is free from future uncontrolled discharges. Prior to such removal, however, all silt, mud, and debris entrapped by the baled hay shall be removed and the area cleaned up in accordance with the applicable provisions of Article 3.3 of these Specifications.

**END OF SECTION**

**SECTION 02272**  
**GEOTEXTILE MATERIALS**

**PART 1 - GENERAL**

**1.01 SUMMARY**

**A. Section Includes**

1. Requirements for installation of geotextile filter fabric as separation fabric between layers of material as necessary to maintain drainage.
2. Related Sections
  - A. Section 02100 - Site Preparation
  - B. Section 02200 – Earthwork
  - C. Section 02215 – Aggregate Materials

**1.02 REFERENCES**

**A. American Society for Testing and Materials (ASTM)**

1. D3786, Test Method for Hydraulic Bursting Strength of Knitted Goods and Nonwoven Fabrics: Diaphragm Bursting Strength Tester Method
2. D4355, Test Method for Deterioration of Geotextiles From Exposure to Ultraviolet Light and Water (Xenon-Arc Type Apparatus)
3. D4491, Test Method for Water Permeability of Geotextiles by Permittivity
4. D4533, Test Method for Trapezoid Tearing Strength of Geotextiles
5. D4632, Test Method for Grab Breaking Load and Elongation of Geotextiles
6. D4751, Test Method for Determining Apparent Opening Size of a Geotextile
7. D4833, Test Method for Index Puncture Resistance of Geotextiles, Geomembranes and Related Products
8. D5261, Measuring Mass per Unit Area of Geotextiles.

**1.03 QUALITY ASSURANCE**

**A. General**

1. Producer of fabric to maintain competent laboratory at point of manufacture to ensure quality control in accordance with ASTM testing procedures.
2. Laboratory to maintain records of quality control results.



#### 1.04 SUBMITTALS

##### A. Shop Drawings

1. Submit in accordance with SECTION 01300
2. Include manufacturer's recommended method of joining of adjacent fabric panels.

##### B. Certificate of Conformance

1. Upon each shipment/delivery of product to the work site, furnish mill certificate(s) from the company manufacturing the fabric attesting that the fabric meets the chemical, physical, manufacturing and performance requirements specified. Fabric will be rejected if it is found to have defects, rips, flaws, deterioration or other damage.

#### 1.05 DELIVERY, STORAGE AND HANDLING

- A. Provide fabric in rolls wrapped with a heavy-duty protective covering to protect fabric from, mud, dirt, dust, debris and other deleterious sources until it is installed. Label each roll of fabric with number or symbol to identify production run.
- B. Do not expose fabric to ultraviolet radiation (sunlight) for more than 20 days total in period of time following manufacture until fabric is installed and covered.
- C. If Engineer determines material is damaged in any way or has excessive sunlight exposure, the Contractor shall immediately make all repairs and replacements as directed by the Engineer, at no additional cost to the Owner.

#### 1.06 SCHEDULING

- A. Schedule Work so that the covering of the fabric with a layer of the cover material is accomplished immediately after inspection and approval of the placed fabric by the Engineer. Failure to comply with this requirement shall require replacement of the fabric.

### **PART 2 - PRODUCTS**

#### 2.01 IMPERMEABLE LINER

- A. Impermeable liner shall be 10 mil thermoplastic resin (PVC impermeable liner) by RH Moore or approved equal.

## 2.02 GEOTEXTILE FABRIC

- A. The geotextile fabric shall be nonwoven polypropylene. Fabric shall be non-woven and needle punched pervious sheets of polyester, polyethylene, nylon, or polypropylene filaments formed into a uniform pattern. Impermeable liner shall be as manufactured by Nicolon/Mirafi Group, Norcross, Georgia; or acceptable equivalent and shall meet the following minimum requirements listed in the following table. Style 4512 as manufactured by Amoco Fabrics and Fibers Company or approved equal. The geotextile fabric shall have the following minimum properties when measured in accordance with the referenced standards.

B. Minimum

<u>Property (Unit)</u>	<u>Unit</u>	<u>Test Method</u>	<u>Requirements</u>
Weight	oz/sy	ASTM D5261	4.3
Grab Tensile Strength	lbs	ASTM D4632	120
Grab Tensile Elongation	%	ASTM D4632	50
Mullen Burst Strength	psi	ASTM D3786	240
Puncture Resistance	lbs	ASTM D4833	70
Trapezoid Tear Strength	lbs	ASTM D4533	50
Equivalent Opening Size (EOS)	US Std. Sieve (mm)	ASTM D4751	70 (0.21)
Permittivity	sec <sup>-1</sup>	ASTM D4491	1.5
Permeability	cm/sec	ASTM D4491	0.22
Flow Rate	gal/min/sf	ASTM D4491	120
Ultraviolet Resistance (strength retained at 500 hrs)	%	ASTM D4355	70

- C. As designated as MIRAFL 140N, or Style 4512 as manufactured by Amoco Fabrics and Fibers Company or approved equal. The geotextile fabric shall have the above referenced minimum properties when measured in accordance with the referenced standards.
- D. To keep the number of overlay joints to a minimum, fabric shall be provided in sections not less than 15 feet in width unless otherwise approved by the Engineer prior to delivery to the site.

## PART 3 - EXECUTION

### 3.01 SUBGRADE PREPARATION

A. For Reservoir Courses

1. Prepared areas to receive impermeable liner in accordance with SECTION 02100 and SECTION 02200.

2. Clear subgrade of all sharp objects, large stones, roots, debris, or any other foreign materials that may contribute to puncturing, shearing, rupturing or tearing of the geotextile.
3. Grade even transitions. Grade area as flat as possible and lightly compact with a hand roller or other method approved by the Engineer.
4. Inspect subgrade and repair all unstable areas or soft spots with the installation of gravel and re-compact prior to the placement of geotextile.

### 3.02 IMPERMEABLE LINER INSTALLATION

#### A. For Reservoir Areas

1. In accordance with manufacturers recommendations
2. Place impermeable liner on graded sub-grade prior to placing crushed stone.
3. Overlap impermeable liner 18 inches minimum for unsewn lap joints.
4. Do not permit equipment to travel directly on impermeable liner.
5. Place impermeable liner in smooth condition to prevent tearing or puncture.
6. Lay impermeable liner loosely, without wrinkles or creases.
7. Leave slack in impermeable liner to allow for adjustment.

### 3.03 FABRIC INSTALLATION

#### A. Fabric Installation in Trenches

1. In accordance with manufacturers recommendations
2. Place fabric in trench prior to placing crushed stone pipe bedding.
3. Overlap fabric 18 inches minimum for unsewn lap joints.
4. Do not permit equipment to travel directly on fabric.
5. Place fabric in smooth condition to prevent tearing or puncture.
6. Lay fabric loosely, without wrinkles or creases.
7. Leave slack in fabric to allow for adjustment.

### 3.04 PROTECTION

- #### A.
1. Protect the work before, during and after installation, and protect the installed work covered by other Sections.

3.05 REPAIR

- A. Geotextile fabric and impermeable liner damaged during installation shall be repaired by a piece of geotextile material cut, placed and adequately anchored over the damaged area, subject to a three (3) foot minimum overlap requirement or as directed by the Engineer.
- B. If detrimental movement of the geotextile fabric occurs during any step of the installation, as determined solely by the Engineer, the Contractor shall remove the cover material and/or sections of fabric to the limits deemed necessary and reinstall the fabric.
- C. Any fabric or liner damaged during its installation or during placement of cover materials shall be replaced by the Contractor at no additional cost to the Owner.

**END OF SECTION**

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**SECTION 02370**

**STORMWATER POLLUTION PREVENTION**

**PART 1 GENERAL**

**1.01 SCOPE.**

A. The work specified in this section includes the installation, maintenance, and removal of perimeter erosion controls, check dams, temporary dewatering basins, storm drain protection, stilling basins for water pollution control, turbidity curtains/floating silt curtains, and construction accesses. Soil erosion and sediment controls shown on the Plans shall be installed by the Contractor. Some soil erosion and sediment controls specified herein may or may not be shown or detailed on the Drawings, but may be utilized by the Contractor. Soil erosion and sediment controls not detailed on the Plans shall be in accordance with this specification and the latest edition of the Rhode Island Department of Environmental Management (RIDEM) Soil Erosion and Sediment Control Handbook, and all addendums. The methods described in this section are approved means for soil erosion and sediment control, the actual means and methods shall be determined by the Contractor. The Contractor shall be responsible for preparing and establishing a stormwater pollution prevention plan at each work site for approval by the Engineer.

B. Related Work Described Elsewhere:

1. Section 02200 -- Earth Excavation, Backfill, Fill, and Grading
2. Section 02215 -- Aggregate Materials

**1.02 GENERAL REQUIREMENTS.**

A. Perimeter Erosion Controls: Work shall consist of the provision of perimeter erosion controls in reasonably close conformity with the dimensions and details indicated on the Drawings, all in accordance with these Specifications. Perimeter erosion controls consist of the following two types:

1. Baled Hay Erosion Checks. Baled hay erosion checks shall consist of baled hay or straw, each bale of which is embedded and attached to the ground with wood stakes, and are constructed as indicated on the Drawings.
2. Silt Fence. Silt fencing shall consist of oak fence posts to which are attached industrial support netting and sediment control filter fabric, and are constructed as indicated on the Drawings.

B. Check Dams: Work shall consist of the provision of check dams and dikes in reasonably close conformity with the RIDEM Soil Erosion and Sediment Control Handbook. Check dams consist of the following three types:

1. Baled Hay Ditch and Swale Erosion Checks. Baled hay ditch and swale erosion checks shall consist of baled hay or straw, each bale of which is embedded and attached to the ground with wood stakes.
  2. Sand Bag Erosion Dikes. This work shall consist of the placement of sand bags across either riprap or earth ditches, thereby forming a dike, to create temporary stilling basins for pollution control.
  3. Stone Check Dams. This work shall consist of the placement of stone in ditches or drainage swales to reduce flow velocities, to prevent soil erosion.
- C. Temporary Dewatering Basins: Work shall consist of the provision of temporary dewatering basins for the purpose of controlling water pollution caused by sediment-laden discharge from excavation sites. The basins shall be constructed in reasonably close conformity to means and methods of the RIDEM Soil Erosion and Sediment Control Handbook. Temporary dewatering basins consist of the following two types:
1. Dewatering Basin. The basin consists of a rectangular concrete barrier enclosure, the bottom and sides of which are lined with filter fabric. The bottom fabric is stabilized with filter stone. The basin is divided into the required number of 12-foot sections by stone berms approximately 18-inches high.
  2. Filter Fabric Retention Basin. The basin consists of a rectangular enclosure formed by a 2-foot high chain link fence. Both the fence and the bottom of the enclosure are lined with filter fabric which is stabilized by a layer of rock riprap.
- D. Storm Drain Protection: Work shall consist of the provision of temporary storm drain protection facilities. Storm drain protection facilities shall consist of the following three types:
1. Sandbag Gutter Inlet Sediment Barrier. This work consists of placing a sandbag barrier upstream of a gutter inlet prior to the placement of roadway pavement.
  2. Silt Fence Catch Basin Inlet Protection. This work consists of placing filter fabric between frames and grates (beneath grates) of catch basins.
  3. Baled Hay Catch Basin Inlet Protection. This work consists of placing baled hay around catch basin inlets. Baled hay inlet protection shall be constructed as indicated on the Drawings.
- E. Stilling Basins for Water Pollution Control: Work shall consist of the provision of temporary and/or permanent stilling basins in accordance with the RIDEM Soil Erosion and Sediment Control Handbook.
- F. Construction Accesses: Work shall consist of the provision of temporary construction accesses of stabilized stone pads for the purpose of reducing the amount of mud that construction vehicles track onto Town roadways.

1.03 QUALITY CONTROL.

- A. The turbidity curtain shall be installed and removed by a professional with three (3) years or more experience in the installation and removal of turbidity curtains.
- B. Provide Quality Assurance / Quality Control services in accordance with Section 01400.

1.04 SUBMITTALS.

- A. In accordance with Section 01300 submit a Stormwater Pollution Prevention Plan in conformance with the requirements specified in the General Permit for Storm Water Discharges Associated with Construction Activities (Section 01060).

1.05 REFERENCE STANDARDS.

- A. Rhode Island Department of Environmental Management (RIDEM). 1988. Recommendations of the Stormwater Management and Erosion Control Committee Regarding the Development and Implementation of Technical Guidelines for Stormwater Management. RIDEM, Office of Environmental Coordination, Providence, RI.
- B. Latest Version of RI Stormwater Design & Installation Standards Manual
- C. Rhode Island Department of Environmental Management and USDA Soil Conservation Service (SCS). 1989. Rhode Island Soil Erosion And Sediment Control Handbook. RIDEM, Providence, RI.
- D. Rhode Island Discharge Elimination System. General Permit for Discharges Associated with Construction Activities.
- E. Rhode Island Department of Transportation Standard Specifications for Road and Bridge Construction, together with all errata addenda additional revisions, and supplemental specifications, (referred to as the Standard Specification).
- F. American Society for Testing and Materials (ASTM)
  - 1. ASTM B928/B928M-09 – Standard Specification for High Magnesium Aluminum Alloy Sheet and Plate for Marine Service and Similar Environments.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Perimeter Erosion Controls:



1. Baled Hay Erosion Checks. Baled hay or straw shall be baled within twelve months of use. Bindings shall be sufficiently strong to act as handles when placing bales in position by hand. The minimum dimension of any bale shall be 18-inches. Wood stakes shall be oak, 1-inch by 1-inch in section, and at least 3.0 feet in length.
2. Silt Fence. The filter fabric shall be a material suitable for erosion control applications. Wood posts shall be oak, two (2) inch by two (2) inch in section, and at least four and one half (4-1/2) feet in length. Support netting shall be heavy-duty plastic mesh. For prefabricated silt fence, one (1) inch by one (1) inch wood posts will be permitted.

B. Check Dams:

1. Baled Hay Ditch and Swale Erosion Checks. Baled hay or straw shall be baled within twelve months of use. Bindings shall be sufficiently strong to act as handles when placing bales in position by hand. The minimum dimension of any bale shall be 18 inches. Wood stakes shall be oak, 1-inch by 1-inch in section, and at least three (3) feet in length.
2. Sand Bag Erosion Dikes. The sand bags and the sand material shall be of a quality acceptable to the Engineer. Dumped stone, when required, shall meet the requirements for Modified NSA Class R-4 riprap in Section 02220. The filled sand bags will weigh a minimum of 60 pounds.
3. Stone Check Dams. The stone shall meet the requirements for Filter Stone under Table I, Column V.

C. Temporary Dewatering Basins:

1. Dewatering Basins. Precast concrete barrier units shall conform to the RIDEM Soil Erosion and Sediment Control Handbook. Filter fabric shall conform to the applicable requirements of Article 2.01, Item A, Para. 2; Silt Fence, of these Specifications. Filter stone shall conform to the requirements of Section 02215. Sand bags shall be of a quality acceptable to the Engineer. Hay bales and wood stakes shall conform to the requirements of Article 2.01, Item A, Para. 1 of these Specifications.

D. Storm Drain Protection:

1. Sandbag Gutter Inlet Sediment Barrier. The sandbags and the sand material shall be of a quality acceptable to the Engineer.
2. Filter Fabric Catch Basin Inlet Protection. The filter fabric shall be a material suitable for erosion control applications utilized.
3. Baled Hay Catch Basin Inlet Protection. Baled hay or straw and wood stakes shall conform to the requirements of Article 2.01, Item A, Para. 1 of these Specifications.

- E. Stilling Basins for Water Pollution Control: The various materials required for the construction of stilling basins will be determined by the Contractor and provided in the Soil Erosion and Sediment Control Plan for approval by the Engineer.
- F. Construction Accesses: Construction access shall consist of crushed stone that meets the requirements of Section 02215. The filter fabric shall be a material suitable for erosion control applications utilized.

### PART 3 EXECUTION

#### 3.01 GENERAL.

- A. Construction Methods: Those erosion and pollution controls indicated on the Drawings shall be installed to the satisfaction of the Engineer before the commencement of any construction.

#### 3.02 INSTALLATION.

- A. Perimeter Erosion Controls:

- 1. Baled Hay Erosion Checks. Baled hay erosion checks shall be constructed at the locations, and in accordance with the details indicated on the Drawings to the satisfaction of the Engineer. The following stipulations also apply:
  - a. Bales shall be placed in a single row, lengthwise on the contour, with ends of adjacent bales tightly abutting one another.
  - b. The erosion check shall be entrenched and backfilled. The trench shall be excavated the width of the bale and the length of the check to a minimum depth of three (3) inches. After the bales are staked and chinked, the excavated soil shall be backfilled against the check. Backfill shall conform to the ground level on the downhill side and shall be built up to four (4) inches against the uphill side.
  - c. The bales are to be installed so that the bindings are oriented around the sides of the bales rather than along their tops and bottoms.
  - d. Each bale shall be securely anchored by at least two stakes driven through the bale. The first stake in each bale should be driven toward the previously laid bale to force the bales together.
  - e. The gaps between bales shall be chinked (filled by wedging) with straw to prevent water from escaping between bales. Loose straw shall be scattered over the area immediately uphill from the bale erosion check to increase efficiency.
  - f. At approximate intervals of 100 feet, one bale is to be placed against those bales positioned along the limit of clearing. This bale is to be placed at a right angle to the line of the toe of slope.

2. Silt Fence. Silt fence shall be constructed at the locations, and in accordance with the details indicated on the Drawings, to the satisfaction of the Engineer. The following stipulations also apply:
    - a. A six (6) inch by six (6) inch minimum trench shall be dug where the fence is to be installed.
    - b. The fence shall be positioned in the trench with the fence posts set at eight (8) feet on center (maximum).
    - c. The sedimentation control fabric and the industrial netting shall be stapled to each post. When joints are necessary, filter fabric shall be spliced together only at support posts. Splices shall consist of a six (6) inch overlap, and shall be securely sealed.
    - d. Each wood post with industrial support netting and filter fabric attached shall be driven into the undisturbed soil in the trench as indicated on the Drawings.
    - e. The trench shall be backfilled and the soil compacted over the filter fabric.
    - f. The installed height of the fence shall be two and one half (2-1/2) feet (minimum). However, height shall not exceed 36-inches since higher barriers impound volumes of water sufficient to cause failure of the fence structure.
- B. Check Dams:
1. Baled Hay Ditch and Swale Erosion Checks. Erosion checks shall consist of two or more bales placed and staked perpendicular to the flow line of a ditch formed by the intersection of its slopes. The following stipulations also apply:
    - a. A pair of erosion checks shall be placed a minimum of 12 feet apart at each location.
    - b. The ditch erosion checks shall be entrenched and backfilled. The trench shall be excavated the width of the bale(s) and the length of the check to a minimum depth of three (3) inches. After the bales are staked and chinked, the excavated soil shall be backfilled against the check. Backfill shall conform to the ground level on the downhill side and shall be built up to four (4) inches against the uphill side.
    - c. The bales are to be installed so that the bindings are oriented around the sides of the bales rather than their tops and bottoms.
    - d. The edges of overlapped bales shall overlap in such a manner that there will be no opening between the bales. Where bales butt together the gap between bales shall be chinked with loose straw to prevent water from escaping.
    - e. Each bale shall be securely anchored by a least two stakes driven through the bale. The first stake in each bale should be driven toward the previously laid bale to force the bales together.
    - f. All earth ditch areas are required to have the protection of baled hay ditch erosion checks prior to their outfall onto existing ground, or natural or man-made water courses.
    - g. The haybale barrier shall be extended such a length that the bottoms of the end bales are higher in elevation than the top of the lowest middle bale. This configuration will insure that the sediment-laden runoff will flow either through or over the barrier, but not around it.

2. Sand Bag Erosion Dikes. Sand bags will be placed a minimum of four layers high. Over the center of the ditch the top layer of sand bags will have a weir opening equal to one half the bottom ditch width. The sand bags shall be extended such a length that the bottom of the end sand bags are higher in elevation than the top of the lowest middle sand bag. When the sand bag dike is constructed across an earth ditch, the down stream side of the dike at the weir opening is to be protected with Modified NSA Class R-4 dumped riprap.
3. Stone Check Dams. Stone shall be placed across the ditch or swale to achieve complete coverage and shaped to the required configuration by the use of hand tools. The stone shall be sloped from the sides of the ditch/swale towards the center such that the center is six (6) inches lower than the stone at the sides of the ditch/swale. The check dam shall have two to one (2:1) horizontal to vertical side slopes and shall not exceed two (2) feet in height.

C. Temporary Dewatering Basins:

1. Dewatering Basin. The following stipulations shall apply:
  - a. The precast concrete barrier units shall be placed on level, or nearly level, ground.
  - b. Filter fabric shall be placed on the bottom of the entire area enclosed by the concrete barrier units. If more than one sheet of fabric is required, the adjacent section shall be overlapped a minimum of 12 inches to insure full coverage. Filter fabric shall be turned up along the inside face of the concrete barriers to the top of same, there to be folded across the top of the barriers. The fabric will be maintained in position by the placement of sand bags, end-to-end, along the top of the concrete barrier enclosure.
  - c. A minimum layer of six (6) inches of filter stone shall be spread over the bottom of the basin. Stone berms shall be constructed at 12 foot intervals along the length of the basin.
2. Filter Fabric Retention Basin. The following stipulations shall apply:
  - a. The filter fabric retention basin will be placed on stabilized and level, or nearly level, ground to prevent erosion by water exiting the basin.
  - b. A six (6) inch by six (6) inch minimum trench shall be dug where the basin is to be constructed.
  - c. The filter fabric and wire backing shall be three (3) feet wide (minimum) positioned in the trench and secured to metal posts positioned 4-feet on center (maximum).
  - d. The metal posts shall be driven into undisturbed soil next to the trench to a minimum depth of 12-inches.
  - e. Fill material shall be placed in the trench and compacted.
  - f. The installed height of the fence shall be two (2) feet (minimum).
  - g. A minimum layer of six (6) inches of filter stone (Modified NSA Class R-4 riprap) shall be spread evenly over the bottom of the basin.

D. Storm Drain Protection:

1. Sandbag Gutter Inlet Sediment Barrier. The following stipulations shall apply:
    - a. The sandbags shall be placed in a curved row extending from the curb or berm. The row shall be at least six (6) feet upstream of the inlet and should overlap the curb or berm.
    - b. Several layers of sandbags shall be placed over the first layer to a minimum height of one (1) foot. The bags shall be overlayed and packed tightly together.
    - c. A gap of one sandbag should be left in the middle of the top row to serve as a spillway. The spillway shall be at least eight (8) inches high.
    - d. Additional sediment storage capacity can be obtained by constructing a series of these barriers along the gutter upstream of the inlet.
  2. Filter Fabric Catch Basin Inlet Protection. The following stipulations shall apply:
    - a. The filter fabric shall extend to a height between four (4) and six (6) inches above the top of the inlet grate around the entire perimeter of the grate.
    - b. Filter fabric shall be installed beneath the grate, secured between the frame and the grate.
    - c. Filter fabric shall be installed with sufficient excess material below the grate to provide at least six (6) inches of vertical clearance between the fabric and the bottom of the grate.
  3. Baled Hay Catch Basin Inlet Protection. The baled hay inlet protection shall be constructed as indicated on the Drawings. The following stipulations shall also apply:
    - a. The bales shall be entrenched and backfilled. The trench shall be excavated the width of the bale and the length of the check to a minimum depth of three (3) inches. After the bales are staked and chinked, the excavated soil shall be backfilled against the check. Backfill shall conform to the ground level on the inside and shall be built up to four (4) inches around the outside.
    - b. The bales are to be installed so that the bindings are oriented around the sides of the bales rather than along their tops and bottoms.
    - c. Each bale shall be securely anchored by at least two stakes driven through the bale. The first stake in each bale should be driven toward the previously laid bale to force the bales together.
    - d. The gaps between bales shall be chinked (filled by wedging) with straw to prevent water from escaping between bales.
- E. Stilling Basins for Water Pollution Control:
1. The stilling basins will be constructed in such a manner to allow any material which may cause a natural water course or the surrounding environment to be damaged to be retained in the basin. During the life of the Contract, the Contractor will be required to periodically clean the pool and to maintain the basin to the satisfaction of the Engineer. If the basin is temporary, the Contractor will be required to fill the basin with suitable material and to restore the area in which the basin was located to either its original condition or to the requirements of the Contract.

2. In all cases the stilling basins are to be constructed immediately after the clearing and grubbing operation and before commencement of any excavation and/or embankment. The single exception to this requirement is the construction of a leveling course to create a work platform. Excavation for stilling basins is to take place from the downstream end of the basin and to proceed upstream. Prior to the start of excavation, temporary baled hay ditch erosion checks are to be constructed immediately beyond the downstream end of the basin. When the basin is complete the above temporary erosion control measures are to be removed.
- F. Construction Accesses: Construction accesses shall be constructed at the locations, and in accordance with the details as indicated on the Drawings, to the satisfaction of the Engineer. Construction accesses shall be constructed as detailed in Section 211 of the Standard Specifications.

### 3.03 MAINTENANCE AND CLEANING.

#### A. Definitions:

1. Cleaning consists of removing debris and accumulated sediment-laden deposits from the upstream side of perimeter controls, check dams and temporary drainage protection and from the bottom of temporary dewatering basins and stilling basins. All material so-removed shall be legally disposed of.
2. Maintenance consists of the repair and restoration to original configuration of damage sustained by erosion and pollution controls caused by "normal" rainfall events. (Abnormal weather events are defined in Article 3.03, Item 1)

#### B. Methods:

1. Erosion and pollution controls shall be maintained by the Contractor to the satisfaction of the Engineer. Erosion and pollution controls must be able to prevent, under normal weather conditions, both the movement of soil materials and the intrusion of sediment-laden discharges into environmentally sensitive areas.
2. Construction shall not commence or continue until all specified erosion and pollution controls are in place, properly installed and accepted by the Engineer.
3. Erosion and pollution controls shall be routinely inspected by the Engineer. The Engineer shall notify the Contractor immediately if problems develop. The Contractor shall commence cleaning and maintenance measures no later than the next consecutive calendar day after receiving a directive from the Engineer to perform such measures. The Contractor shall aggressively and expeditiously perform such cleaning and maintenance work until the original problem is remedied to the complete satisfaction of the Engineer. In the event of a weekend storm, the Contractor must have resources available to restore, and, if necessary, to replace any damaged controls.

C. Applicable Controls:

1. The specific erosion and pollution control facilities to be cleaned and maintained under this Section are outlined in Article 1.02 and consist of the following:
  - a. Perimeter Controls:
    - 1) Baled Hay Erosion Checks
    - 2) Silt Fence
  - b. Check Dams:
    - 1) Baled Hay Ditch and Swale Erosion Checks
    - 2) Sand Bag Erosion Dikes
    - 3) Stone Check Dams
  - c. Temporary Dewatering Basins:
    - 1) Dewatering Basins
    - 2) Filter Fabric Retention Basins
  - d. Storm Drain Protection:
    - 1) Sandbag Gutter Inlet Sediment Barrier
    - 2) Filter Fabric Catch Basin Inlet Protection
    - 3) Baled Hay Catch Basin Inlet Protection
  - e. Stilling Basins
  - f. Construction Accesses

D. Materials:

1. Materials required to repair and restore damaged erosion and pollution controls shall meet the applicable requirements of Article 2.01, Items A thru G; for Perimeter Erosion Controls, Check Dams, Temporary Dewatering Basins, Storm Drain Protection, Stilling Basins and Construction Accesses, respectively, of these Specifications.

E. Threshold for Cleaning Erosion Controls:

1. Erosion and pollution controls will be cleaned when directed by the Engineer, after a rainstorm, and when sediment deposits reach the heights indicated in the following table:

	<u>Height</u>
a. Perimeter Controls	
1) Baled Hay Erosion Checks	1/2 Bale Height
2) Silt Fence	6-inches
b. Check Dams	
1) Baled Hay Erosion Checks	1/2 Bale Height
2) Sand Bag Erosion Dike	1/2 Dike Height
3) Stone Check Dam	1/2 Dam Height

- |    |  |                                     |
|----|--|-------------------------------------|
| c. | Temporary Dewatering Basins                |                                     |
| 1) | Dewatering Basins                          | 1/2 Original Basin Height           |
| 2) | Filter Fabric Retention Basin              | 1/2 Original Basin Height           |
| d. | Storm Drain Protection                     |                                     |
| 1) | Sandbag Gutter Inlet Sediment Barrier      | 1/2 Dike Height                     |
| 2) | Filter Fabric Catch Basin Inlet Protection | 4 inches                            |
| 3) | Baled Hay Catch Basin Inlet Protection     | 1/2 Bale Height                     |
| e. | Stilling Basins                            | 1/2 Depth Below<br>Outlet Elevation |

F. Other Requirements:

1. Perimeter Controls, Check Dams and Storm Drain Protection. The following requirements apply:
  - a. Damaged controls will be repaired or replaced after each storm events.
  - b. Before controls are removed all accumulated sediment on the upstream side shall be removed and legally disposed of.
  - c. Erosion controls shall not be removed until the adjacent exposed areas are relatively free from future uncontrolled discharges.
  - d. The Engineer has the authority to verify, enforce, and to specify maintenance activities and to ensure that erosion and pollution controls have been properly maintained.
2. Temporary Dewatering Basins and Stilling Basins. The following requirements apply:
  - a. The basins will be periodically inspected for signs of erosion around the basin and downslope area.
  - b. Repairs will be promptly carried.
  - c. The Engineer has the authority to verify, enforce, and to specify maintenance activities and to ensure that controls have been properly maintained.
3. Construction Accesses. The following requirements apply:
  - a. The construction access shall be maintained to keep mud and debris from tracking onto public roadways. This may require additional stone or additional length as required.
  - b. Erosion controls shall not be removed until the adjacent exposed areas are relatively free from future uncontrolled discharges.
  - c. The Engineer has the authority to verify, enforce, and to specify maintenance activities and to ensure that erosion and pollution controls have been properly maintained.

G. Failure of Erosion and Pollution Controls:

1. This Article 3.03; Maintenance and Cleaning, is based on the concept that erosion and pollution controls will essentially remain intact under normal rainfall events and that any damage sustained by said controls under normal rainfall may be repaired under the maintenance provisions set forth herein.



2. However, under abnormal weather events it is possible that erosion and pollution controls may be damaged to the extent that the Engineer may direct that they be replaced in their entirety. Under such abnormal conditions the Contractor will replace the particular facilities, and be compensated for same, under the applicable provisions set forth in regarding PERIMETER CONTROLS, CHECK DAMS, TEMPORARY DEWATERING BASINS, STORM DRAIN PROTECTION, STILLING BASINS, and SILT FENCE, respectively, of these Specifications.

H. Definition of Abnormal Weather Conditions:

1. For the purposes of Article 3.03, Item G, abnormal weather events are defined as follows:
  - a. For a duration of 1-hour; rainfall equal to or greater than 1/2-inch.
  - b. For a duration of 12-hours; rainfall equal to or greater than 2-inches.
  - c. For a duration of 24-hours; rainfall equal to or greater than 3-inches.
  - d. Extreme weather conditions such as hurricanes, tornadoes, floods, blizzards, etc. Daily rainfall records may be obtained from the National Weather Service.

3.04 REMOVAL.

A. Perimeter Erosion Controls:

1. Baled Hay Erosion Checks. All stakes must be removed from the haybales at a time designated by the Engineer. In general, the bales will be allowed to rot in place. If the Contract requires the haybales to be removed, they may be removed only when the adjacent exposed area has been stabilized, i.e., the area has an established grass or stone cover or has been paved, and is free from future uncontrolled discharges. Prior to such removal, however, all silt, mud, and debris entrapped by the haybales shall be removed and the area cleaned up in accordance with the applicable provisions of Article 3.03 of these Specifications. Immediately upon removal of the bales the remaining exposed areas (under the bales) will be backfilled, raked, and graded as necessary to match the surrounding grade and then seeded.
2. Silt Fence. This work will include the removal of the silt fence erosion checks and posts. Silt fence will not be left to rot in place. The silt fence may be removed only when the adjacent exposed area is stabilized, i.e., the area has an established grass or stone cover or has been paved, and is free from future uncontrolled discharges. Prior to such removal, however, all silt, mud, and debris entrapped by the silt fence shall be removed and the area cleaned up in accordance with the applicable provisions of Article 3.03 of these Specifications. Immediately upon removal of the bales the remaining exposed areas (under the bales) will be backfilled, raked, and graded as necessary to match the surrounding grade and then seeded.

B. Check Dams:

1. Baled Hay Ditch and Swale Erosion Checks. Bales of hay used in this work will not normally be left to rot in place. The bales may be removed only when the adjacent exposed area is stabilized, i.e., the area has an established grass or stone cover or has been paved, and is free from future uncontrolled discharges. Prior to such removal, however, all silt, mud, and debris entrapped by the respective erosion checks shall be removed and the area cleaned up in accordance with the applicable provisions of Article 3.03 of these Specifications. Immediately upon removal of the bales, the remaining exposed areas (under the bales) will be backfilled, raked, and graded as necessary to match the surrounding grade and then seeded.
2. Sand Bag Erosion Dikes. Sand bag erosion dikes will be removed prior to the completion of the project at a time designated by the Engineer. Prior to such removal, however, all silt, mud, and debris entrapped by the erosion dike shall be removed and the area cleaned up in accordance with the applicable provisions of Article 3.03 of these Specifications.
3. Stone Check Dams. Stone check dams will be removed prior to the completion of the project at a time designated by the Engineer. Prior to such removal, however, all silt, mud and debris entrapped by the check dam shall be removed and the area cleaned up in accordance with the applicable provisions of Article 3.03 of these Specifications.

C. Temporary Dewatering Basins:

1. Dewatering Basin. The dewatering basin will not be removed until all dewatering operations are complete. Prior to such removal, however, all accumulated sediment within the basin shall be removed and legally disposed of in accordance with the applicable requirements of Article 3.03 of these Specifications. The area covered by the basin shall be seeded and mulched immediately after the basin is removed.
2. Filter Fabric Retention Basin. Removal requirements for the filter fabric retention basin are the same as set forth above for the dewatering basin.

D. Storm Drain Protection:

1. Sandbag Gutter Inlet Sediment Barrier. The sandbag sediment barrier will be removed prior to the completion of the project at a time designated by the Engineer. Prior to such removal, however, all silt, mud, and debris entrapped by the sediment barrier shall be removed and the area cleaned up in accordance with the applicable provisions of Article 3.03 of these Specifications.
2. Filter Fabric Catch Basin Inlet Protection. The filter fabric inlet protection shall be removed and the area prepared for pavement construction once the contributing drainage area is free from future uncontrolled discharges. Prior to such removal, however, all silt, mud, and debris entrapped by the filter fabric shall be removed

and the area cleaned up in accordance with the applicable provisions of Article 3.03 of these Specifications.

3. Baled Hay Catch Basin Inlet Protection. The baled hay inlet protection shall be removed and the area prepared for pavement construction the contributing drainage area is free from future uncontrolled discharges. Prior to such removal, however, all silt, mud, and debris entrapped by the baled hay shall be removed and the area cleaned up in accordance with the applicable provisions of Article 3.03 of these Specifications.
- E. Construction Accesses: This work will include the removal of the construction accesses. The construction accesses may be removed only when the adjacent exposed area is stabilized, i.e., the area has an established grass or stone cover or has been paved, and is free from future uncontrolled discharges. The construction accesses shall be removed and the area prepared for final cover.

END OF SECTION

**SECTION 02400**  
**SIGNAGE**

**PART 1 - GENERAL**

1.01 SUMMARY

A. Section Includes

1. Traffic signs & sign supports (posts).
2. Removing and resetting existing signs & sign supports.
3. Removing and stockpiling existing signs.

1.02 RELATED SECTIONS

A. None

1.03 REFERENCES

A. Materials and construction methods shall conform, insofar as applicable, to:

1. The requirements of the Rhode Island Department of Transportation, Standard Specifications for Road and Bridge Construction, including all addenda, issued by the State of Rhode Island Department of Public Works. (hereinafter referred to as the Standard Specifications);
2. The latest edition of the Manual of Uniform Traffic Devices (hereinafter referred to as the MUTCD);
3. All applicable requirements of the Americans with Disabilities Act (hereinafter referred to as the ADA);
4. All errata, addenda, additional revisions, and supplemental specifications applicable to each.

**PART 2 - PRODUCTS**

2.01 SIGNS

- A. Materials for traffic signs shall conform to the requirements of Section M16 of the RIDOT Standard Specifications.
- B. For Sign Panels refer to: M16.01 Sign Panels.

C. Regulatory Signs shall consist of:

1. Sign R1-1: Standard 18" x 18" Stop Sign. Sign face layout and content shall be in accordance with the MUTCD.
2. Sign BRBW-S: 12"x18" Blackstone River Bikeway (Straight
3. Sign BRBW-L: 12"x18" Blackstone River Bikeway (Left)
4. Sign BRBW-R: 12"x18" Blackstone River Bikeway (Right)
5. Sign R9-6: Standard 12"x18" Yield to Peds Sign. Sign face layout and content shall be in accordance with the MUTCD.
6. R7-1R: Standard 12"x18" No Parking Any Time (Right). Sign face layout and content shall be in accordance with the MUTCD.
7. R7-1L: Standard 12"x18" No Parking Any Time (Left). Sign face layout and content shall be in accordance with the MUTCD.
8. R3-17: 12"x18" Blackstone River Bikeway Sign.
9. R3-17bP: Standard 12"x6" Ends Sign. Sign face layout and content shall be in accordance with the MUTCD.

## 2.03 SIGN SUPPORTS

A. Materials for sign supports shall conform to the requirements of Section M16 of the RIDOT Standard Specifications.

B. Signs shall be set on Type P-5 A. Square Tube Posts.

## 2.04 SIGN BASES

A. All signs installed within the limits of the EPA Mandated Cap areas shall be surface mounted. Signs Posts shall be paired with a compatible sign base and surface mounted as indicated on the Plans. Sign posts shall be affixed to a cast iron pedestal base designed to be compatible with the sign post, with necessary tamper proof and four (4) 4 inch anchor bolt hardware.

B. A Manufacturer that produces surface mount sign bases is:

TSP -Traffic Safety Products.

Model PBS 200 SQ-G

1.800.285.3056

Traffic safety products.net

C. Or approved equal.

## **PART 3 - EXECUTION**

### **3.01 INSTALLATION**

A. Installation of signs and sign supports shall conform to the requirements of Section T15 of the RIDOT Standard Specifications.

B. Bolt sign bases to concrete walk or base with 4" anchor bolts minimum, as shown on the Plans. Shim sign bases if necessary, to ensure sign post is set plumb. Post shall be within ¼" or vertical when measure at the top.

C. Removing and resetting of Street Signs and Traffic Signs, including the sign supports (post), shall include the dismantling, removal, transporting and resetting of signs and sign supports (post) at the location indicated on the plans.

D. Removing and resetting of traffic signs on new posts shall include the dismantling, removal, transporting and resetting of existing signs at the location indicated on the plans.

E. Signs and sign supports (posts) noted to be removed and shall be carefully removed and transported to the City of Pawtucket DPW yard or as directed by the Engineer.

F. The Contractor will be held responsible for any damage during removal and resetting of signs and sign supports (posts) and shall replace or repair the damaged item as directed by the Engineer at no additional cost to the City.

G. Locations of signs shall be in accordance with the MUTCD and the applicable requirements of the ADA.

### **3.02 TOLERANCES**

A. Shall be in accordance with the RIDOT Standard Specifications.

END OF SECTION

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**SECTION 02500**

**HOT MIX ASPHALT (HMA) PAVEMENT**

**PART 1 - GENERAL**

**1.1 SUMMARY**

**A. Section Includes**

1. Requirements for construction of all temporary and permanent pavement identified as Bituminous Asphalt Pavement on the plans in the paved roadway, parking lots and any other related areas affected or damaged by construction operations, whether inside or outside the normal work limits, as indicated on the drawings and as herein specified.

**B. Related Sections**

1. Section 01570 – Traffic Control
2. Section 02200 - Earth Excavation, Backfill, Fill and Grading
3. Section 02215 – Aggregate Materials

**1.2 REFERENCES**

- A. This specification makes reference to the requirements of additional specifications as listed. The Contractor shall obtain and familiarize himself with all requirements referenced by this specification prior to preparation and installation of any pavements.
1. Rhode Island Department of Transportation, Standard Specifications for Road and Bridge Construction, including all addenda, issued by the State of Rhode Island Department of Transportation (referred to as the Standard Specification).

**1.3 PAVEMENT SCHEDULE**

- A. The Contractors attention is directed to the various pavements required under this contract, and their locations as detailed below.
- B. All pavement thickness specified in this specification shall be of the thickness required after compaction.
1. Location: All Roadways, Trench Patches, Parking Lots  
Type: Hot Mix Bituminous Asphalt  
Full Width Paving  
Requirements: 12-inch Gravel Borrow Base Course,  
2-inch Bituminous Hot Mix Asphalt Base Course HMA 19.5  
2-inch Bituminous Hot Mix Asphalt Surface Course HMA 12.5



2. Location: Asphalt Pavement – Bike Path
- Type: Hot Mix Bituminous Asphalt  
Full Width Paving
- Requirements: 8-inch Gravel Borrow Base Course,  
2-inch Bituminous Hot Mix Asphalt Base Course HMA 19.5  
1.5-inch Bituminous Hot Mix Asphalt Surface Course HMA 12.5

## **PART 2 - PRODUCTS**

### **2.1 MATERIALS**

### **2.2 GENERAL**

- A. Pavement materials installed within the City of Pawtucket right of ways shall meet requirements of Rhode Island Department of Transportation Standard Specification.
- B. Asphalt Tack
1. Tack coat shall consist of either emulsified asphalt, grade RS-1 or cutback asphalt, grade RC-70 conforming to the requirements of the Rhode Island Standard Specification Section M.03.
- C. Bituminous Base
1. Bituminous Base shall conform to the requirements of the Rhode Island Standard Specification Section 401 and M.03 for Base: HMA Class 19.0 Base Class.
- D. Bituminous Surface, (Trench)
1. Bituminous Surface Course shall conform to the requirements of the Rhode Island Standard Specification Section 402 and M.03 for Surface: HMA Class 12.5 Surface Class.
- E. Bituminous Surface, (Curb to Curb)
1. 1. Bituminous Surface Course shall conform to the requirements of the Rhode Island Standard Specification Section 401 and M.03 for Surface: HMA Class NMAS 12.5 Surface Class.
- F. Reinforced Concrete Base: Not Utilized
- G. Temporary Pavement
1. Temporary Pavement shall be Base Course conforming to the requirements of the State of Rhode Island Standard Specification, Subsection 401 and M.03 for Base Course.
- H. Gravel Base Course
1. Gravel base course in accordance with State of Rhode Island Standard Specification, Subsection M.01, meeting the gradation requirements of Table 1, Column 1a, with 100% Passing 3-inch Square Mesh Sieves.

## 2.3 SOURCE QUALITY CONTROL

- A. The paving plant used by the Contractor for preparation of bituminous paving materials shall be acceptable to the Engineer who shall have the right to inspect the plant and the making of the material.

## PART 3 - EXECUTION

### 3.1 PREPARATION

- A. Maintain Traffic Control in accordance with SECTION 01570
- B. Prior to placing pavement, all backfill shall have been properly compacted as specified under SECTION 02200 to eliminate settling of backfill. No pavement shall be placed over poorly compacted backfill. Backfill and gravel base course shall be compacted, brought to the proper elevation, and dressed so that new pavement construction shall be at the required grade. The Contractor shall maintain the surfaces of all excavated and disturbed areas until the pavement is placed. If there is a time lapse of more than 24 hours between completion of preparation of sub grade or placing of gravel base course and placing of paving, or if sub grade or gravel base course has been eroded or disturbed by traffic, the sub grade or gravel base course shall be restored before placing pavement.
- C. When installing permanent pavement on bituminous concrete roadway the edges of existing pavement shall be cut back 12-inches, or more as required, from the trench excavation wall or damaged area to sound undamaged material, straightened, cleaned, and painted with an accepted asphalt emulsion to ensure a satisfactory bond between it and the newly placed surface courses. Existing surface courses shall be stripped from the bituminous concrete base course for at least a 6-inch width and trimmed square and straight so that new permanent surfacing shall be placed on undisturbed bituminous concrete base course. Existing pavement shall be swept clean prior to placing any asphalt emulsion over it. Existing pavement that will be under new pavement shall be painted with asphalt emulsion to ensure a satisfactory bond.
- D. Before permanent pavement is installed, the base shall be brought to the proper grade, and temporary pavement and excess gravel base shall be removed.
- E. All manhole covers, catch basin grates, valve and meter boxes, curbs, walks, walls and fences shall be adequately protected and left in a clean condition. Where required, the grades of manhole covers, catch basin grates, valve boxes, and other similar items shall be adjusted to conform to the finished pavement grade.
- F. The Contractor shall remove and acceptably dispose of all surplus and unsuitable material.

### 3.2 INSTALLATION

- A. General
  - 1. All construction methods and materials shall be satisfactory to the Engineer.

2. Unless indicated otherwise, all permanent bituminous pavement shall be installed in two courses or more. Bituminous base courses shall be carefully spread and raked to a uniform surface and thoroughly rolled before application of the top course.
3. All top courses of permanent paving shall be applied with acceptable mechanical spreaders unless otherwise approved by the Engineer.
4. The rolling for all bituminous and gravel base courses shall conform to the standards listed in the appropriate Subsection of the Standard Specification.
5. Pavement shall be placed so that the entire roadway or paved area shall have a true and uniform surface, and the pavement shall conform to the proper grade and cross section with a smooth transition to existing pavement.

B. Gravel Base Course

1. The gravel base shall be placed to such depth that the furnished compacted gravel base course is the depth as indicated on the drawings and specified herein.
2. The top of the compacted gravel base shall be below the furnish grade a distance required to accommodate the compacted pavement material as indicated on the drawings and specified herein.
3. The gravel base as herein specified shall be 12-inches thick for hot mix asphalt driveway and 8-inches thick for hot mix asphalt bike path.
4. The gravel base shall be spread and compacted in layers not exceeding 8 inches in depth compacted measurement, to not less than 95 percent of the maximum dry density of the material, as determined by the Standard AASHTO Test Designation T99 compaction test Method C within 5% of optimum moisture content as determined by the Engineer. Any stone with a dimension greater than the maximum size specified shall be removed from the base material before the gravel is compacted. Compaction shall continue until the surface is even and true to the proposed lines and grades within a tolerance of ½-inch above or below the required cross sectional elevations and to a maximum irregularity not exceeding ½ inch under a 10 foot line longitudinally. Any specific area a gravel sub-base which, after being rolled, does not form a satisfactory, solid, stable foundation shall be removed, replaced and recompact by the Contractor without additional compensation.

C. Temporary Pavement

1. Temporary pavement shall be placed over all trenches in paved areas where directed by the Engineer.
2. The Contractor, upon completing the backfilling and compaction of the trenches in the streets and the placing of the gravel base course, shall be required to construct temporary pavement unless otherwise directed by the Engineer.
3. Temporary Pavement in city roads shall be placed in one course and shall consist of 2-inch compacted thickness of hot bituminous mix, on compacted gravel base as directed by the Engineer.
4. The Contractor shall maintain temporary pavement in good repair and flush with the existing pavement at all times until the permanent pavement is placed.

5. The temporary pavement shall not be removed until such time that the Engineer authorizes the placement of permanent pavement.
- D. HMA Base Course
1. Base course shall be installed in streets or as indicated in the Contract Drawings.
  2. Base Course shall be placed to the thickness as indicated in Article 1.3 of this Specification and installed in accordance with the requirements of Section 401 of the RIDOT Standard Specification and as detailed in the Contract Drawings.
  3. Prior to placing base course, all temporary pavement and sufficient gravel base course shall be removed, to proper depths as detailed in the contract drawings.
- E. Reinforced Concrete Base: Not Utilized.
- F. HMA Surface Course
1. Surface Course shall be installed in streets or as indicated in the Contract Drawings.
  2. Surface Course shall be placed to the thickness as indicated in Article 1.3 of this Specification and installed in accordance with the requirements of Section 401 of the RIDOT Standard Specification and as detailed in the Contract Drawings.
- G. Sidewalks, Driveways, Parking Lots and Curbing
1. Sidewalks, driveways, parking lots and curbing that are or damaged by the Contractor's operations shall be restored to a condition at least equal to that in which they are found immediately prior to the start of operations. Materials and methods used for such restoration shall be in conformance with the requirements of the State of Rhode Island Standard Specification.
  2. Where the trench locations are in a sidewalk, the entire width of the sidewalk shall be replaced with new material. Side forms shall be set so as to obtain and preserve a straight edge along both sides of the walk. Meet existing grades unless otherwise noted.
  3. Where trench is in a driveway, the driveway shall be repaved across its entire width with even edges.
  4. Parking lots shall be repaved in accordance with Article 3.1 of this section.
  5. Gravel base course under sidewalks and driveways shall not be less than 12" inch thick.
- H. Surface Maintenance
1. During the guarantee, period, the Contractor shall maintain the bituminous surface and shall promptly make good all defects such as cracks, depressions, and holes that may occur. At all times, the surfacing shall be kept in a safe and satisfactory condition for traffic. If defects occur in surfacing constructed by the Contractor, the Contractor shall remove all bituminous concrete and base courses as is necessary to properly correct the defect. After removing bituminous concrete and base course, the Contractor shall correct the cause of the defect and replace the base course and bituminous concrete in accordance with these specifications.

2. In case of settlement or other defects in new or replaced pavement, the Contractor shall cut out, replace, restore or repair the damaged pavements at no additional expense to the Owner. This requirement shall remain in effect for 2 years after the acceptance of the Work by the Engineer. The pavement area to be replaced, repaired or restored, shall extend from edge of pavement to edge of pavement, a minimum of 20 feet on either side of the defect; final pavement course shall be keyed or feathered as directed by the Engineer, to provide a smooth finish detail.

**END OF SECTION**

**SECTION 02530**

**RESTORATION OF CURB AND SIDEWALKS**

**PART 1 - GENERAL**

**1.01 SUMMARY**

**A. Section Includes**

1. Requirements for removal and replacement of granite curb, concrete and bituminous sidewalks including sidewalks at driveways and installation of wheelchair ramps.
2. Restoration to include those areas designated by the Contract Drawings and those affected or damaged by the construction operations, outside the limits of Work.

**B. Related Sections**

1. Section 02200 - Earth Excavation, Backfill, Fill and Grading
2. Section 02500 – Hot Mix Asphalt Pavement
- 3.

**1.02 REFERENCES**

- A.** This specification makes reference to the requirements of additional specifications as listed. The Contractor shall obtain and familiarize himself with all requirements referenced by this specification.
1. Rhode Island Department of Transportation, Standard Specifications for Road and Bridge Construction, 2018 Edition, including all addenda, issued by the State of Rhode Island Department of Transportation (referred to as the Standard Specification).

**1.03 SUBMITTALS**

**A. Submit in accordance with Section 01300**

1. Sieve analysis for aggregates and loams.
2. Mix designs for batched materials.
3. Samples when requested by the Engineer.

## **PART 2 - PRODUCTS**

### **2.01 MATERIALS**

- A. Gravel Borrow
  - 1. In accordance with State of Rhode Island Department of Transportation Standard Specification, Subsection M.01.02, Meeting the gradation requirements of Table 1, Column 1, with 100% Passing 3-inch Square Mesh Sieves.
- B. Granite Curb
  - 1. In accordance with the requirements of the State of Rhode Island Standard Specification, Section M.09, including transition curb for wheelchair ramps.
- C. Cement Concrete
  - 1. In accordance Section 03300 Cast in Place Concrete.
- D. Bituminous Asphalt Pavement for temporary access and sidewalks.
  - 1. In accordance with the requirements of the Rhode Island Department of Transportation Standard Specification Section 401 and M.03.01 for Surface Course HMA Class 12.5 Surface Class or as directed by the Engineer.

### **2.02 SOURCE QUALITY CONTROL**

- A. The plants used by the Contractor for preparation of bituminous paving materials and cement concrete shall be acceptable to the Engineer who shall have the right to inspect the plant and the making of the material.

## **PART 3 - EXECUTION**

### **3.01 INSTALLATION/RESTORATION**

- A. Excavation to be in accordance with Section 02200 unless noted otherwise by the referenced specifications below.
- B. Granite Curb
  - 1. Installing or Remove, Salvage and Reset granite curb at the locations indicated on the Drawings or as directed by the Engineer shall be in accordance with Section 906 of the State of Rhode Island Standard Specification.
  - 2. Install concrete curb lock in a manner that allows a single lift of wearing course HMA to be utilized directly over the concrete for all roadway surface repairs.
  - 3. Utilize new curbing for the wheel chair ramps and areas with new alignments.

C. Sidewalks

1. Installation of new or replacement of existing sidewalks, driveways and wheelchair ramps at the locations shown on the Drawings or as directed by the Engineer.
2. Conform to RIDOT standard detail 43.3.0 for wheelchair ramp maximum and minimum grades, clearances and geometry. Conform to the American with Disabilities Act (ADA) in all aspects of the work.
3. Refer to Section 02535 for Concrete Sidewalk Finishes, and for surface treatment finishes.
4. Unless otherwise specified and indicated on the plans, Work shall conform to Section 905 of the State of Rhode Island Standard Specification.

D. Remove and Dispose Sidewalks in Sensitive Areas

1. This work shall include removing concrete sidewalks from areas where sensitive tree roots and or near-surface utilities are located below the sidewalk. All work shall be performed under direct on-site supervision of the Engineer.
2. Removal of concrete shall be accomplished by using hand tools and light power equipment. Pavement breakers and large backhoes shall not be used for this operation.
3. Remove sidewalk material taking special care not to damage underlying tree roots or near-surface utilities. The existing gravel subbase will be left in place where directed by the Engineer.
4. Remove and dispose all debris immediately from the job site. No stockpiling of removed material will be allowed around in the street Right of Way.

E. Restoration Limits

1. Install new any damaged traffic signal loop detectors to fully operational condition.
2. Where the curb line trench location is in a sidewalk, the entire width of the sidewalk shall be replaced with new material. Side forms shall be set so as to obtain and preserve a straight edge along both sides of the walk.
3. Sidewalks shall be cut at existing joints or as directed otherwise by the Engineer.
4. Where trench is in a driveway, the driveway shall be repaved across its entire width with even edges.

F. Restoration outside Limits of Work

1. Sidewalks, driveways, parking lots and curbing that are or damaged by the Contractor's operations shall be restored to a condition at least equal to that in which they are found immediately prior to the start of operations. Materials and methods used for such restoration shall be in conformance with the requirements of the Standard Specification.
2. There shall be no extra cost to the Owner for this work.



G. Salvaged Granite Curb

1. All existing granite curb which is called to be removed and salvaged and/or determined to be extra and is un-used at the conclusion of the project shall be returned by the Contractor to the Pawtucket Department of Public Works located at 250 Armistice Boulevard, Pawtucket RI 02860.

**END OF SECTION**

**SECTION 02535**

**CONCRETE SIDEWALK FINISHES**

**PART 1 - GENERAL**

**1.01 SUMMARY**

**A. Section Includes**

1. Requirements for finish concrete sidewalks as shown on the plans.

**B. Related Sections**

1. Section 02530 – Restoration of Curb and Sidewalk
2. Section 03200 - Concrete Reinforcement.
3. Section 03300 - Cast-In-Place Concrete.

**1.02 REFERENCES**

**A. American Concrete Institute (ACI)**

1. ACI 318, Building Code Requirements for Structural Concrete.
2. ACI 347R, Guide to Formwork for Concrete.

**1.03 SUBMITTALS**

**A. Submit in accordance with Section 01300.**

**B. Manufacturer's Data Sheets**

1. Concrete Set Retarder and Concrete Sealer

**C. Quality Control Submittals:**

1. Statements of installer's experience and qualifications.
2. Manufacturer's warranty information.

**1.04 QUALITY ASSURANCE**

**A. Cement Concrete Sidewalk – Type A –**

1. Form, pour and finish a minimum 6' x 6' sample panel for review and approval by the Engineer.
2. Cement Concrete Sidewalk – Type A (Exposed aggregate concrete sidewalk) shall appear as a visual match to the new City sidewalks installed at Slater Mill, located at 67 Roosevelt Avenue, Pawtucket, RI.

- B. Rejected work shall be removed at no cost to the Owner. Sample panel may be poured and finished as part of the sidewalk area to be constructed. If approved the panel may remain in place.
- C. Continue to provide sample panels until finish is accepted by the Engineer.

## **PART 2 - PRODUCTS**

### **2.01 CONCRETE SET RETARDER**

- A. Concrete Set Retarder
  - 1. Retarder shall be a chemical concrete set retarder designed to be applied to the surface of the concrete immediately following the trowel finishing operations. The amount of retardant applied will be sufficient to expose 1/8 inch of the coarse aggregate using a water spray and provide an overall surface with a rough texture.
- B. As manufactured by the following or by approved equal:
  - 1. The Burke Company: "True Etch Surface Retarder".
  - 2. Anti-Hydro: "Spec No. 8-8A – Concrete Surface Retarder".
  - 3. Sika Corp. "Rugasol-S".

### **2.02 CONCRETE SEALER**

- A. Sealer shall be THORO® ENVIROSEAL 40 or approved equal. Other Sealers that may be acceptable are Super Seal 30, Endura Seal and Duck Back 1G clear select sealer.

## **PART 3 - EXECUTION**

### **3.01 GENERAL**

- A. All work shall conform to current American with Disabilities Act Standards. The Contractor is hereby notified that they are ultimately responsible for constructing all project elements in strict compliance with the current ADA rules, regulations and standards. The ADA Rules and Regulations specify maximum slopes and minimum dimensions required for construction acceptance. There is no tolerance allowed for slopes greater than the maximum slope, nor for dimensions less than the minimum dimensions.

- B. Sidewalks shall be constructed in accordance with requirements of the Standard Specifications, including placement of alternating sections, 30 feet in length and provided with expansion joints. Expansion filler shall also be used at pours against buildings, walls or other hard fixed objects. Contractor is responsible for securing areas with curing concrete, and shall supply barricades or watchmen as necessary to prevent defacement of concrete surfaces.

### 3.02 SPECIFIC

- A. Work shall consist of installing cement concrete surface and removing a consistent depth of mortar from the surfaces to expose the aggregates and attain a rough texture finish. The Contractor shall layout, pour and finish a sample section of exposed aggregate sidewalk for review and approval prior to proceeding. Multiple samples may be required, as the Contractor is responsible for producing a sample panel that is acceptable to the Engineer. Removal of rejected samples will be at no cost to the project. The approved panel shall remain on site until the sidewalk work has been completed. The Contractor shall demonstrate an ability to procure a uniform 'release' or reveal of the aggregate, which shall be consistent and uniform in appearance.
- B. The method employed to achieve the desired results shall be in applying a chemical concrete set retarder admixture to the surface of the concrete immediately following the trowel finishing operations. The amount of retardant applied will be sufficient to expose 1/8 inch of the coarse aggregate using a water spray and provide an overall surface with a rough texture.
- C. The Contractor shall follow the manufacturer's recommendations for using the set retarder to attain the desired results with consideration given to the concrete mix, ambient, curing temperatures, and recommended curing time before performing the mortar procedure.
- D. Application of Sealer:
  - 1. Surface, air and material temperature should be between 5°C and 35°C during application or otherwise recommended by the manufacturer. Surfaces to be treated shall be dry. THORO® ENVIROSEAL 40 should not be applied if frost, ice or standing water are visible on the surface to be treated.
  - 2. All vegetation shall be protected from over-spray of this product. Test a small area of the concrete surface before starting general application of any clear, penetrating sealer to assure desired results and coverage rates. Stir material thoroughly before and during application. Apply to saturation. This may be done with a low-pressure spray, or by pouring, followed by brooming for even distribution on horizontal surfaces.

3. Normal coverage rates are approximately 13 to 23 square yards per gallon. The surfaces treated shall be left for 4 hours for proper penetration and shall not be opened to pedestrian traffic until completely dry as determined by the Engineer.

3.03 CEMENT CONCRETE TYPE B – BROOM FINISH

- A. Wearing Surface Finish: Float the surface by hand using a wooden or magnesium float. Finish with a flexible bristle broom. Permit surface to harden sufficiently to retain the scoring or ridges. Broom transverse to traffic or at right angles to the slope of the pavement.

**END OF SECTION**

**SECTION 02550  
PAVEMENT MARKINGS**

**PART 1 - GENERAL**

**1.1 SECTION INCLUDES**

- A. Requirements to furnish and install,
  - 1. Reflectorized white and yellow line markings (epoxy resin),
  - 2. Reflectorized pavement markings (paint),
- B. Requirements to remove existing pavement markings.

**1.2 RELATED SECTIONS**

- A. Section 02500 – Hot Mix Asphalt Pavement
- B. Section 02795 – Porous Pavement

**1.3 REFERENCES**

- A. This specification makes reference to the requirements of additional specifications as listed. The Contractor shall obtain and familiarize himself with all requirements referenced by this specification prior to preparation and installation of any reflectorized pavement markings.
- B. The State of Rhode Island Blue Book, latest edition, together with all errata addenda additional revisions, and supplemental specifications, all of which are hereinafter referred to as the RIDOT Standard Specifications.

**1.4 SUBMITTALS**

- A. In accordance with Section 01300.

**PART 2 - PRODUCTS**

**2.1 MATERIALS**

- A. Materials for reflectorized white lines (epoxy resin) shall conform to the requirements of Section M17.04 of the RIDOT Standard Specifications.
- B. Materials for reflectorized yellow lines (epoxy resin) shall conform to the requirements of Section M17.04 of the RIDOT Standard Specifications.
- C. Material for crosswalks and stop bars to be 3M “Stamark” Brand Pliant Polymer

- D. Pavement Markings (Inlay) to be Series 5730: 12-inch White line
- E. Material for precut symbols and legends to be 3M "Stamark" Brand Pliant
- F. Polymer Pavement Markings (Inlay) to be Series SMS-900
- G. For existing pavement and bituminous patch work on existing streets with painted pavement markings,
  - 1. Material and methods of installing painted reflectorized white lines shall conform to the requirements of Sub Section M17.06 of the RIDOT Standard Specifications.
  - 2. Material for crosswalks and stop bars shall conform to the requirements of Sub Section M17.04 of the RIDOT Standard Specifications.

### **PART 3 - EXECUTION**

#### **3.1 INSTALLATION OF TEMPORARY AND PERMANENT PAVEMENT MARKINGS**

- A. Installation of reflectorized markings shall be in accordance with Section T20 of the RIDOT Standard Specifications.
- B. Reflectorized markings shall be installed only after permanent pavement has been installed in accordance with Specification Section 02500 and approved by the Engineer.
- C. All pavement markings shall be in accordance with Manual on Uniform Traffic Control Devices
- D. The contractor shall notify the Engineer 48 hours in advance of installation of pavement marking.
- E. The contractor shall furnish adequate protection to freshly completed markings to keep traffic off of them until thoroughly dry. Pavement markings shall be installed on temporary pavement at the direction of the Owner or Engineer.

#### **3.2 REMOVAL OF EXISTING PAVEMENT MARKINGS**

- A. Removal of existing pavement markings shall be in accordance with **Section T20** of the RIDOT Standard Specification.
- B. Pavement markings shall be removed to the fullest extent possible as shown on the plans by an approved method. Any damage to the pavement or surface caused by pavement marking removal shall be repaired by the Contractor at his expense.

END OF SECTION

## **SECTION 02614**

### **REINFORCED CONCRETE DRAIN PIPE**

#### **PART 1 GENERAL**

##### **1.01 SUMMARY**

###### **A. Section Includes**

1. Requirements for furnishing and installing the reinforced-concrete pipe as indicated on the drawings.

###### **B. Related Sections**

1. Section 02200 – Earthwork, Backfill, Fill and Grading
2. Section 02215 - Aggregate Materials.

##### **1.02 QUALITY ASSURANCE**

- A. Reinforced-concrete pipe shall be made by a manufacturer of established good reputation in the industry and in a plant adapted to meet the design requirements of the pipe.

##### **1.03 REFERENCES**

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

1. M 170, Standard Specification for Reinforced Concrete Culvert, Storm Drain and Sewer Pipe.

###### **B. American Society for Testing and Materials (ASTM).**

1. C76, Specification for Reinforced Concrete Culvert, Storm Drain and Sewer Pipe.
2. C361, Specification for Reinforced Concrete Low-Head Pressure Pipe.
3. C443, Specification for Joints for Circular Concrete Culvert and Sewer Pipe, Using Rubber Gaskets.
4. C497, Standard Test Methods for Concrete Pipe, Manhole Sections, or Tile.

###### **C. Rhode Island Department of Transportation, Standard Specifications for Road and Bridge Construction, including all addenda, issued by the State of Rhode Island Department of Public Works, (referred to as the Standard Specification).**

##### **1.04 SUBMITTALS**

- A. In accordance with SECTION 01300 submit for review drawings showing the pipe dimensions reinforcement, joint, and other details for each type and class of pipe to be furnished for the project. All pipe furnished under the contract shall be manufactured only in accordance with the specifications and the reviewed drawings.



## **PART 2 PRODUCTS**

### **2.01 GENERAL**

- A. Concrete Pipe within the project limits shall meet requirements of Rhode Island Department of Transportation Standard Specifications.

### **2.02 PIPE**

A. Each unit of pipe shall have an interior surface, which is free from roughness, projections, indentations, offsets, or irregularities of any kind. The pipe units shall be of the classes indicated on the drawings and shall conform to ASTM C76 and AASHTO M170 with the following exceptions and additions:

1. Type II cement shall be used unless otherwise permitted by the Engineer. Admixtures shall not be used except with the prior permission of the Engineer.
  2. Aggregates shall conform to the requirements set forth hereinafter.
  3. Elliptical reinforcement will not be permitted. Longitudinal reinforcement shall be continuous. Reinforcement shall have a minimum cover of 3/4 in.
  4. Absorption shall be as specified under "inspection, Tests and Acceptance."
  5. Pipe units have a minimum laying length of 8 ft., except as otherwise indicated or permitted by the Engineer.
  6. Pipe units shall be cured in accordance with ASTM C76.
  7. No pipe shall be shipped until the pipe has meet strength requirements in accordance with ASTM C76.
  8. There shall be no lift holes in the pipe.
  9. Mortar used for repairs shall have a minimum compressive strength of 4,000 psi. at the end of 7 days and 5,000 psi. at the end of 28 days, when tested in 3-in. by 6 in. cylinders stored in the standard manner. Only those repairs permitted by the above-mentioned ASTM C76 will be allowed.
  10. The date of manufacture, class of pipe unit, size of pipe unit, and trademark of the manufacturer shall be clearly and permanently marked on the inside and the outside at one end of each pipe unit.
  11. Certified copies of tests on materials and the pipe units will be required.
- B. Specials, if required, shall conform to the specifications for straight pipe insofar as applicable. Special design or construction necessary for specials shall be subject to acceptance by the Engineer.

### **2.03 JOINTS**

A. Pipe joints shall be of the rubber gasket type in which the gaskets are in compression and which will permit both longitudinal and angular movement. Each unit of pipe shall be provided with proper ends made of concrete formed true to size and formed on machined rings to ensure accurate joint surface. Joints and gaskets shall be O-ring or ribbed gasket type and shall conform to the requirements of ASTM C443, and ASTM C361 and to the additional requirements specified.

## 2.04 INSPECTION, TESTS AND ACCEPTANCE

A. Acceptance will be on the basis of tests of materials, absorption tests, plant load-bearing tests, pressure tests, and inspection of the complete product. The required tests are enumerated hereinafter. The quality of all materials used in the pipe, the process of manufacture, and the finished pipe shall be subject to inspection by the Engineer.

Inspection may be made at the place of manufacture, or on the work site after delivery, or both, and the pipe shall be subject to rejection at any time due to failure to meet any of the specification requirements, even though sample pipe units may have been accepted as satisfactory at the place of manufacture. All pipe which is rejected shall be immediately removed from the project site by the Contractor.

B. Tests and certified copies in triplicate of test results will be required for the materials and the finished pipe units as described herein. If less than 100 units of a given size and class of pipe are required, the Contractor may submit certified copies of tests made on identical pipe units made by the same manufacturer within the past year. If more than 100 units of a given size and class of pipe are required, the Contractor shall, at his own expense, engage the services of an acceptable independent testing laboratory to perform or witness all tests, other than mill tests on reinforcing steel and cement, and certify the results. In addition, the Owner reserves the right to have any or all pipe units inspected or tested, or both, by an independent testing laboratory at either the manufacturer's plant or elsewhere. Such additional inspection and/or tests shall be at the Owner's expense and shall be the test results of record.

C. All pipe units to be tested shall be selected at random by the Engineer. Unless otherwise permitted, all load-bearing tests on pipe units shall be made in the presence of the Engineer.

D. All tests shall be made in accordance with the latest applicable ASTM specifications.

1. Reinforcing Steel--Mill test reports, or reports on samples taken from each shipment to the pipe manufacturer, shall be submitted for reinforcing steel to be used on this project stating that the reinforcing meets the specified requirements.

2. Cement--Mill test reports shall be submitted for each shipment to the pipe manufacturer of cement to be used on this project stating that the cement meets the specified requirements. All cement accepted for this project shall be kept segregated from other cement.

3. Aggregates--Tests reports shall be submitted stating that the aggregates to be used on this project meet the requirements for concrete aggregates as specified "Fine Aggregate" and "Coarse Aggregate" under SECTION 03300. The first report shall be submitted prior to the manufacturer of any pipe for this project. Additional tests and reports shall be made monthly thereafter during the production of the pipe.

4. Absorption Tests--Three cores shall be taken from each pipe unit that is to be load tested. The cores shall be taken before the load-bearing tests are performed. All cores shall be tested for absorption by the boiling absorption test.

Average absorption shall not exceed 8 percent of the dry weight and no single test shall exceed 9 percent.

5. Pipe Unit Load-Bearing Tests (ASTM C497)--A load-bearing test shall be made on one pipe unit of each size and class and the report of the test submitted before delivery to the project of that size and class of pipe unit. An additional test will be required for each 200 units of each size and class of pipe. The load-bearing test shall be performed after the cores for the absorption tests have been taken. Each load-bearing test shall be carried to the specified load to produce the 0.01 in. crack. If the 0.01 in. crack is not formed, the pipe unit may be used in the project. Cored holes shall be plugged with the mortar specified above for repairs.

6. Pressure Test (ASTM C497)--A pressure test shall be made on two pipe units of each size and class to be used. Each pipe unit shall be bulkheaded independently and then joined together in a normal manner with the joint to be used in the work. The pipe units shall be held in place in such manner that no external compression force is exerted on the joint during the test. The test pressure shall be an average internal hydrostatic pressure of 12 psi and shall be maintained for at least 10 minutes without visible leakage from the joint. A description of the bulk-heading and pipe holding arrangement shall be submitted to the Engineer for review prior to performing the test. All pressure tests shall be made in the presence of the Engineer.

7. Concrete Cylinders--Compression tests shall be made on standard concrete cylinders for the first or test pipe unit and then for every 100 cubic yards of concrete used in pipe manufacture, or for each additional 200 units of pipe, whichever represents the lesser amount of concrete. Four cylinder shall be made for each test and they shall be broken at 7, 14, and 28 days with one cylinder as a spare to be used in the event of an unsatisfactory break. The reports shall be submitted within three days after each of the compression tests.

## PART 3 EXECUTION

### 3.01 HANDLING PIPE

- A. Each pipe unit shall be handled into its position in the trench only in such manner and by such means as is acceptable to the Engineer.
- B. The Contractor will be required to furnish suitable devices to permit satisfactory support of all parts of the pipe unit when it is lifted.

### 3.02 INSTALLATION

- A. Each pipe unit shall be inspected before being installed. Any pipe discovered to be defective either before or after installation shall be removed and replaced with a sound pipe.

B. Except as otherwise indicated on the drawings, the pipe shall be supported by compacted crushed stone. No pipe or fitting shall be permanently supported on saddles, blocking, or stones. Crushed stone shall be as specified under SECTION 02215.

C. Suitable bell holes shall be provided, so that after placement only the barrel of the pipe receives bearing pressure from the supporting material.

D. All pipe units shall be cleared of all debris, dirt, etc., before being installed and shall be kept clean until accepted in the completed work.

E. Pipe and fittings shall be installed to the lines and grades indicated on the drawings or as required by the Engineer. Care shall be taken to ensure true alignments.

F. Before any joint is made, the unit shall be checked to assure that a close joint with the next adjoining unit has been maintained and that the inverts are matched and conform to the required grade. The pipe shall not be driven down to the required grade by striking it with a shovel handle, timber, or other unyielding object.

G. All joint surfaces shall be cleaned. Immediately before jointing the pipe, the bell or groove shall be lubricated in accordance with the manufacturer's recommendation. Each pipe unit shall then be carefully pushed into place without damage to pipe or gasket. Suitable devices shall be used to force the pipe unit together so that they will fit with a minimum open recess inside and outside and have tightly seated joints.

Care shall be taken not to use such force as to wedge apart and split the bell or groove ends. Joints shall not be pulled or cramped without the permission of the Engineer.

H. Immediately after the pipe joint is completed, the position of the gasket in the joint shall be inspected using a suitable feeler gage furnished by the Contractor, to be sure it is properly put together and is tight. Joints in which the gasket is damaged or not properly positioned shall be pulled apart and remade using a new gasket.

I. Where any two pipe units do not fit each other closely enough to enable them to be properly jointed, they shall be removed and replaced with suitable units and new gaskets.

J. Details of gasket installation and joint assembly shall follow the directions of the manufacturer of the joint materials and of the pipe, all subject to acceptance by the Engineer. The resulting joints shall be watertight and flexible.

K. After each pipe to be supported on screened gravel has been properly bedded, enough gravel shall be placed between the pipe and the sides of the trench, and thoroughly compacted, to hold the pipe in correct alignment. Bell holes provided for jointing shall be filled with screened gravel and compacted, and then screened gravel shall be placed and compacted to complete the pipe bedding, as indicated on the

drawings.

L. The Contractor shall take all necessary precautions to prevent floatation of the pipe in the trench.

M. At all times when pipe installation is not in progress, the open ends of the pipe shall be closed with temporary watertight plugs or by other suitable means. If water is in the trench when work is to be resumed, the plug shall not be removed until all conditions are suitable to prevent water, earth, or other material from entering the pipe.

N. Pipelines shall not be used as conductors for trench drainage during construction.

### 3.03 CLEANING

A. Care shall be taken to prevent earth, water, and other materials from entering the pipeline. As soon as possible after the pipe and manholes are completed, the Contractor shall clean out pipelines and manholes, being careful to prevent soil, water, and debris from entering any existing pipe.

END OF SECTION

**SECTION 02650**

**WORK ADJACENT TO EXISTING UTILITIES**

**PART 1 - GENERAL**

**1.1 SECTION INCLUDES**

- A. Coordination of improvements to avoid existing utilities to the greatest extent possible. Modify covers of existing electric handhole structures where indicated on the plans.
- B. Coordination with the impacted utility entity. Conform to these requirements for relocating existing utilities if there is unresolvable conflict with the proposed Work.

**1.2 SUBMITTALS**

- A. In accordance with Section 01300 submit utility relocation plans indicating limits and details of the relocation work.

**1.3 PROJECT/SITE CONDITIONS**

**A. Existing conditions**

- 1. The presents of utilities within the streets, roads and right of ways customarily indicate service lines connecting the buildings and structures along the route. Safeguard all utilities and their respective service connections from damage during the performance of the Work.
- 2. The presence of utility poles indicate overhead wires for electric, telephone and cable TV also exist. Protect all overhead wires, including service lines, from damage caused by equipment used to perform the Work under this Contract.
- 3. Existing utilities, as indicated on the Drawings are from the best available information. The accuracy of such is not guaranteed.

**B. Relocation of Utilities**

- 1. Relocation of existing utilities will be required when;
  - a. The existing utility interferes with the location of a structure or open cut piping installations or;
  - b. Realignment of the proposed Work will have detrimental effects on the proposed Work or existing utility.

**C. Support of Utilities**

- 1. Support of existing utilities will be allowed when;
  - a. The location of the existing utility does not interfere with the excavation, excavation support, installation of piping, structures or appurtenances.
  - b. Support in place will not be detrimental to the utility itself.
  - c. Support of utility is in accordance with the requirements of the utility in question.

#### 1.4 SCHEDULING

##### A. Coordination

1. Coordinate all existing utility relocation work with the appropriate utility company.
2. Notification of "Dig Safe" in accordance with State of Rhode Island requirements.
3. Conduct test pits to identify utility locations needed to perform the Work only after coordination with the utility company and in time to prevent delay of the Work.
4. Coordinate with local water authority to operate water valves as required.

### **PART 2 - PRODUCTS**

#### 2.1 MATERIALS

- A. As required by the utility company, or as specified, or as approved by the Engineer.
- B. To be new.

### **PART 3 - EXECUTION**

#### 3.1 EXAMINATION

- A. Perform by hand digging test pit excavations, and submit as built information to utility company and the Engineer.

#### 3.2 INSTALLATION

- A. In strict accordance with the requirements of the Utility Company responsible for the Work.

#### 3.3 TESTING

- A. Perform pressure and leakage testing on water lines relocated and infiltration or exfiltration testing on storm drains and sewers relocated in accordance with local agencies responsible for the utility.

#### 3.4 INSPECTION

- A. Allow access to the relocation work for inspections and recording as-built information.

**END OF SECTION**

## **SECTION 02700**

### **MODIFICATIONS TO EXISTING VETERANS MEMORIAL**

#### **PART 1 – GENERAL**

##### **1.1 RELATED DOCUMENTS**

- A. Drawings and General Provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this section.
  - a. Section 02200 Earth Excavation, Backfill, Fill and Grading
  - b. Section 02215 Aggregate Materials
  - c. Section 03300 Cast in Place Concrete
  - d. Section 04100 Mortar and Masonry Grout
  - e. Section 04850 Granite Cut Stone

##### **1.02 SUMMARY**

- A. Work Includes:
  - 1. Furnish all labor, equipment and perform all operations in as required to dis-assemble, stockpile, modify and re-assemble existing stone stair treads as part of the memorial,
  - 2. Installation of new concrete grade beam and installation of Granite Cut Stones as indicated on the plans.
  - 3. Granite Cut Stones shall be fabricated to the dimensions as shown in the specifications and drawings.

##### **1.03 REFERENCES**

- A. Rhode Island Department of Transportation Standard Specifications for Road and Bridge Construction, latest edition, hereinafter called the "Standard Specifications".
- B. ASTM C615: Standard Specification for Granite Dimension Stone.

##### **1.04 SUBMITTALS**

- A. Set date: Hold pre-construction meeting with Engineer to review scope and approach to executing work in this area.
- B. Furnish Stone Sample(s) of stone proposed for use. Sample(s) shall not be less than 6"x6".



- C. The contractor shall verify all dimensions of existing elements in the field. Prepare and submit Shop Drawings for all cut stone to be fabricated and supplied as per Section 04850 Granite Cut Stone.
- D. Submit shop drawings as applicable arcs, radii, etc. indicating lengths, locations and dimensions based on field conditions.
- E. Coordinate with Curb type 2 profile for curb transitions.
- F. Mortar and Masonry Grout as per Section 04100.

#### **1.05 DELIVERY, STORAGE, AND HANDLING**

- A. Refer to Section 04850 Granite Cut Stones.

### **PART 2 - PRODUCTS**

#### **2.01 MATERIALS**

- A. Granite Cut Stone - Furnished and supplied under Section 04850 Granite Cut Stone.
- B. Section 02215 Aggregate Materials
- C. Section 03300 Cast in Place Concrete.
- D. Section 04100 Mortar and Masonry Grout.

### **PART 3 - EXECUTION**

#### **3.1 GENERAL**

- A. Confirm all measurements shown on the drawings, furnish dimensional information in sketch form to the Owner and Engineer. Identify and report any discrepancies to the Engineer prior to the start of the work.
- B. Remove & salvage existing granite stones identified on the Drawings: 1A, 1B, 1C and 2A. Stones shall be relocated to an off-site location determined by the Owner.
- C. Remove & stockpile existing stones shown to be reset: 2B, 2C, 2D, 2E and 2F.
- D. It is anticipated that existing stones 3B, 3C, 3D, 3E and 3F may be required to be reset to accommodate the work. If removal is determined not to be necessary, temporarily support stones to allow for installation of the proposed grade beam.

- E. Hold a site meeting to review the exposed existing foundation conditions with the Engineer before proceeding.
- F. Mark out line and grades required. Sawcut at the limits of demolition as determined per the field meeting. Remove & dispose of existing concrete stair foundations to horizontal or vertical limits shown on drawings or as otherwise defined based on field conditions. Saw cut edges cleanly to accommodate the reconfigured monument stair. Treat cut, exposed rebar ends with epoxy paint.
- G. Protect existing concrete stem walls and granite monument components shown to remain.
- H. Excavate soil to the depth needed to obtain the required clearances.
- I. Install and compact crushed stone in lifts not to exceed 4" thickness.
- J. Form the concrete grade beam, coordinate formwork to accommodate the landscape curb.
- K. Place reinforcing as approved grade beam configuration per final conditions. Pour concrete grade beam to lines and grade necessary. Protect and cure concrete.
- L. Install CMU block as shown to support stones 3B-3F. Mortar and set CMU block in place.
- M. Reset Existing Granite Cut Stones 2B thru 2F on concrete grade beam.
- N. Reset Existing Granite Cut Stones 3B thru 3F on existing concrete foundation and on CMU set on proposed concrete grade beam.
- O. Drill, pin and set stones, ensure pitch to drain. Set level where shown. Meet required grades. Mortar set in place.
- P. Install Granite Cut Stones CS1, set on a crushed stone base (min. 6" depth), quantity as shown on the plans.
- Q. Joints between stones shall match existing and shall not exceed 1/2".
- R. Grout all open, exposed joints between granite pieces.
- S. Clean all exposed surfaces of excess mortar.
- T. Contractor shall protect existing stones not part of the work.

### **3.2 PROTECTION OF THE WORK**

- A. All installed granite cut-stone work shall be properly installed and adequately protected under the responsibility of the Contractor until Final Acceptance of the Project by the Owner.

### **END OF SECTION**

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**SECTION 02720**

**CATCH BASINS & GUTTER INLETS**

**PART 1 GENERAL**

**1.01 SUMMARY**

- A. Section Includes
  - 1. Requirements to construct, adjust abandon, or rebuild all catch basins as indicated on the drawing and as specified.
- B. Related Sections
  - 1. Section 03300 - Cast-In-Place Concrete

**1.02 REFERENCES**

- A. American Society for Testing and Materials (ASTM).
  - 1. A48, Specification for Gray Iron Castings.
  - 2. C32, Specification for Sewer and Manhole Brick (Made from Clay or Shale).
  - 3. C139, Specification for Concrete Masonry Units for Construction of Catch Basins and Manholes.
  - 4. C150, Specification for Portland Cement.
  - 5. C207, Specification for Hydrated Lime for Masonry Purposes.
  - 6. C478, Specification for Precast Reinforced Concrete Manhole Sections.

**1.03 DESIGN REQUIREMENTS**

- A. Catch basins shall conform in shape, size, dimensions, materials, and other respects to the details indicated on the drawings or bound in the specifications or as ordered by the Engineer.

**PART 2 PRODUCTS**

**2.01 MATERIALS**

- A. Catch basin walls shall be precast concrete masonry units. The top of the cone (not to exceed 6 inches.) shall be built of brickwork to permit adjustment of the frame to meet the finished surface.

- B. Catch basin sumps shall be one piece precast concrete or concrete masonry units on cast-in-place or precast concrete bases.
- C. The cast-iron frames and grates shall be the standard as indicated on the drawings.
- D. All cast-in-place concrete shall be 4,000 psi and shall conform to the requirements specified under SECTION 03300.

## 2.02 PRECAST CONCRETE MASONRY UNITS

- A. Precast concrete masonry units shall be machine-made solid segments, conforming to ASTM C139 with the following exceptions and additional requirements:
  - 1. Type II cement shall be used except as otherwise permitted.
  - 2. The width of the units shall be as indicated on the drawings.
  - 3. The inside and outside surfaces of the units shall be curved to the necessary radius and so designed that the interior surfaces of the structures shall be cylindrical, except the top batter courses shall be designed to reduce uniformly the inside section of the structure to the required size and shape at the top.
  - 4. Units shall be designed such that only full-length units are required to lay any one course.
  - 5. Acceptance of the units will be on the basis of material tests and inspection of the completed product.

## 2.03 PRECAST CONCRETE SUMPS

- A. Precast concrete sumps shall conform to the ASTM C478, with the following exceptions and additional requirements:
  - 1. The wall section shall be not less than 6-inch thick.
  - 2. Type II cement shall be used except as otherwise permitted.
  - 3. Sumps shall be cured by subjecting them to thoroughly saturated steam at temperature between 100 and 130 degrees. F. for a period of not less than 12 hours or, when necessary, for such additional time as may be needed to enable the sections to meet the strength requirements.
  - 4. No more than two lift holes may be cast or drilled in each sump.
  - 5. Acceptance of the sumps will be on the basis of material tests and inspection of the completed product.
- B. All holes in sumps used for their handling shall be thoroughly plugged with rubber plugs made specifically for this purpose or with mortar. The mortar shall be one part cement to 1-1/2 parts sand, mixed slightly damp to the touch (just short of "balling"),

hammered into the holes until it is dense and an excess of paste appears on the surface, and then finished smooth and flush with the adjoining surfaces.

#### 2.04 BRICKS

- A. The brick shall be sound, hard, and uniformly burned brick, regular and uniform in shape and size, of compact texture, and satisfactory to the Engineer. Brick shall conform to ASTM C32 for Grade SS, hard brick, except that the mean of five tests for absorption shall not exceed 8 percent by weight.
- B. Rejected brick shall be immediately removed from the work.

#### 2.05 MORTAR FOR BRICKWORK

- A. The mortar shall be composed of Portland cement, hydrated lime, and sand, in which the volume of sand shall not exceed three times the sum of the volumes of cement and lime. The proportions of cement and lime shall be as directed and may vary from 1:1/4 for dense, hard-burned brick to 1:3/4 for softer brick. In general, mortar for Grade SS Brick shall be mixed in the proportions of 1-1/2:4-1/2.
- B. Cement shall be Type II Portland cement conforming to the ASTM C150.
- C. Hydrated lime shall be Type S conforming to the ASTM C207.
- D. The sand shall comply with the specifications for fine aggregate, specified in Section 03300, except that all of the sand shall pass a No. 8 sieve.

#### 2.06 MORTAR FOR MASONRY UNITS

- A. Mortar shall be composed of one part Portland cement and two parts of sand by volume with sufficient water to form a workable mixture. Cement and sand shall be as specified for mortar for brickwork.

#### 2.07 CATCH BASIN FRAMES AND GRATES

- A. Furnish and install all cast-iron catch basin frames and grates conforming to the details indicated on the drawings and as specified.
- B. Castings shall be of good quality, strong, tough, even-grained cast iron, smooth, free from scale, lumps, blisters, sand holes, and defects of every nature which would render them unfit for the service for which they are intended. Contact surfaces of grates and frame seats shall be machined to prevent cocking of grates.

- C. All castings shall be thoroughly cleaned and subject to a careful hammer inspection.
- D. Castings shall be at least Class 25 conforming to the ASTM A48.
- E. Unless otherwise specified or indicated on the drawings, castings in paved areas shall be capable of withstanding AASHO H-20 loading and shall meet the requirements of the municipality in which they are installed.

## 2.08 CURB INLETS

- A. Granite for curb inlets shall have a horizontal bed. The stone shall be sawn or peen hammered on top, and the front and back edges shall be pitched true to line. The back face for a distance of 3-inches down from the top shall have no projection greater than 1 inch. The front face shall be straight split, free from drill holes, and it shall have no projection greater than 1-inch or depression greater than 1/2 inch for a distance of 10-inch down from the top, and for the remaining distance there shall be no depression or projection greater than 1 inch. The ends shall be squared with the top for the depth of the face finish and so cut that the curb inlet can be set with joints of not more than 1/2 inch.
- B. Granite curb inlet shall be, 3 ft. minimum in length, plus or minus 1/2 inch, from 17 to 19 inches in depth, 7 inch wide at the top and at least 7 inches wide at the bottom.
- C. A gutter mouth at least 3 inches in depth and at least 2 feet in length shall be cut in the front face of the stone as shown on the plans.
- D. Where curb inlets are used to replace a section of existing curbing, the width of the curb inlet shall be the same as the adjoining existing curbing.

## PART 3 EXECUTION

### 3.01 LAYING BRICKWORK AND GRADING RINGS

- A. Only clean bricks and grading rings shall be used. Bricks shall be moistened by suitable means, as directed, until they are neither so dry as to absorb water from the mortar nor so wet as to be slippery when laid.
- B. Each brick shall be laid in a full bed and joint of mortar without requiring subsequent grouting, flushing, or filling, and shall be thoroughly bonded as directed.

- C. Each grading ring shall be laid in a full bed of mortar and shall be thoroughly bonded.

### 3.02 PLASTERING AND CURING BRICK MASONRY

- A. Outside faces of brick masonry shall be plastered with mortar from 1/4 in. to 3/8 in. thick. If required, the masonry shall be properly moistened prior to application of the mortar. The plaster shall be carefully spread and troweled. After hardening, the plaster shall be carefully checked by tapping for bond and soundness. Unbonded or unsound plaster shall be removed and replaced.
- B. Brick masonry and plaster shall be protected from too rapid drying by the use of burlaps kept moist, or by other acceptable means, and shall be protected from the weather and frost, all as required.

### 3.03 SETTING CASTINGS

- A. Curb inlets and frames shall be set with the tops conforming accurately to the grade of the pavement or finished ground surface or as indicated on the drawings or directed. Circular frames shall be set concentric with the top of the masonry and in a full bed of mortar so that the space between the top of the manhole masonry and the bottom flange of the frame shall be completely filled and made watertight. A thick ring of mortar extending to the outer edge of the masonry shall be placed all around and on the top of the bottom flange. The mortar shall be smoothly finished and have a slight slope to shed water away from the frame.
- B. Grates shall be left in place in the frames on completion of other work at the manholes.

### 3.04 CATCH BASINS ADJUSTED TO GRADE

- A. Existing catch basin tops shall be adjusted to line and grade as indicated on the drawings or as directed by the Engineer.
- B. All catch basins adjusted to grade shall be provided with concrete grading rings or brick as specified for new drain manholes.

### 3.05 REBUILDING OF EXISTING CATCH BASIN

- A. Cut suitable openings in existing structures to make connections to drains as indicated on the drawings and as specified or directed. In doing so, confine the cutting to the smallest amount possible consistent with the work to be done.



- B. After the drains are installed, carefully fit around, close up, and repair the structures watertight, all as acceptable to the Engineer.
- C. Prior to starting work, assembled all tools, materials, and construction equipment required to complete the work in the shortest possible time.

**END OF SECTION**

**SECTION 02855**

**BRICK PAVERS**

**PART 1 GENERAL**

**1.01 SUMMARY**

**A. Section Includes**

1. The work of this Section consists of providing all labor, equipment, materials, incidental work, and construction methods necessary to perform brick paver work and related items as indicated on the Drawings and as specified in this Section.

**B. Related Sections**

1. Section 02200 - Earth Excavation, Backfill and Grading
2. Section 02215 – Aggregate Material
3. Section 03200 - Cast-In-Place Concrete
4. Section 04850 – Granite Cut Stone
5. Section 16560 – Exterior Lighting

**1.02 QUALITY ASSURANCE**

- A. Existing brick paving shall be removed, evaluated and stockpiled per Section 02100 – Site Preparation
- B. Paving Contractor Qualifications: Utilize an installer having successfully completed paver installation similar in design, material, and extent indicated on this project.
- C. Brick Pavers shall be cut to fit at structures (drains, manholes, etc.) that interface with the pavers to a tolerance of 1/8".
- D. Paving work shall be done only after excavation and construction work which might injure them has been completed. Damage caused during construction shall be repaired before acceptance.
- E. Existing paving areas shall, if damaged or removed during course of this project, be repaired or replaced. Workmanship and materials for such repair and replacement, except as otherwise noted, shall match as closely as possible those employed in existing work installed under this Contract.
- F. Install Brick Pavers only on unfrozen and dry Setting Bed Sand.

- G. Install Polymeric Joint Sand only when ambient temperature is above 40°F (5°C), under dry conditions with no rain forecast for 24 hours and when surface of pavement is completely dry.
- H. The contractor shall convene a pre-construction meeting on site with all parties involved in the installation, prior to the placement of an section of concrete base. The meeting shall include the Contractor, paving sub-contractor(s), and the Engineer. The Contractor's foreman and installer shall be present at this meeting. This meeting shall occur at a minimum of 24 hours before the full installation is set to begin.
- I. Mockup:
  - 1. Only after the concrete rigid base has been installed and approved, install a 5 ft x 5 ft brick paving area.
  - 2. Use this area to determine surcharge of the Setting Bed Sand layer, 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 the Owner or Engineer, mock-up may be retained as part of finished work.
  - 4. If mock-up is not accepted or retained as part of the finished work, the Contractor shall remove and dispose of legally at no additional cost to the Owner.

### 1.03 REFERENCES

- A. This specification makes reference to the requirements of additional specifications as listed. The Contractor shall obtain and familiarize himself with all requirements referenced by this specification prior to preparation and installation of any pavements.
  - 1. ASTM International, latest edition:
    - a. C 33, Standard Specification for Concrete Aggregates.
    - b. C 67, Standard Test Methods for Sampling and Testing Brick and Structural Clay Tile, Section 8, Freezing and Thawing.
    - c. C 136, Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.
    - d. C 140, Standard Test Methods for Sampling and Testing Concrete Masonry Units and Related Units.
    - e. C 144 Standard Specifications for Aggregate for Masonry Mortar.
    - f. D 448, Standard Classification for Sizes of Aggregate for Road and Bridge Construction.

- g. C 936, Standard Specification for Solid Concrete Interlocking Paving Units.
- h. C 979, Standard Specification for Pigments for Integrally Colored Concrete.
- i. 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.
- j. 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.
- k. C1645 Standard Test Method for Freeze-thaw and De-icing Salt Durability of Solid Concrete Interlocking Paving Units
- l. D 1883, Test Method for California Bearing Ratio of Laboratory-Compacted Soils.
- m. D 2940 Graded Aggregate Material for Bases or Subbases for Highways or Airports.
- n. D 4254, Standard Test Methods for Minimum Index Density and Unit Weight of Soils and Calculation of Relative Density.

#### 1.04 SUBMITTALS

##### A. Installer Qualifications

Submit manufacturer's product data for the following:

- 1. Polymeric Joint Sand – Manufacturer's Product Data & Color Options
- 2. Setting Bed Sand

#### PART 2 PRODUCTS

##### 2.01 MATERIALS

##### A. BRICK PAVING

- 1. Brick pavers shall be removed, evaluated and stockpiled per the Drawings and Specification Section 02100 – SITE PREPARATION.
- 2. All Brick Paving shown in the drawings and specifications are existing pavers to be reset. No new brick pavers are anticipated to be installed as part of this Contract.

**B. POLYMERIC JOINT SAND**

1. Provide Polymeric Joint Sand as manufactured by: Techniseal RG+ Product Type: Dry mix, contains polymeric binding agent, activated with water or approved equal. Final Color shall be determined by the Owner or Engineer.

**C. SETTING BED SAND**

1. Provide Setting Bed Sand as follows:
  - a. Washed, clean, non-plastic, free from deleterious or foreign matter, symmetrically shaped, natural or manufactured from crushed rock.
  - b. Do not use limestone screenings, stone dust, or sand material that does not conform to the grading requirements of ASTM C 33.
  - c. Do not use mason sand or sand conforming to ASTM C 144.
  - d. Conform to the grading requirements of ASTM C 33 with modifications as shown in Table below:

**TABLE – SETTING BED SAND  
GRADATION REQUIREMENTS FOR SETTING BED SAND**

ASTM C 33	
Sieve Size	Percent Passing
3/8 in (9.5 mm)	100
No. 4 (4.75 mm)	95 to 100
No. 8 (2.36 mm)	85 to 100
No. 16 (1.18 mm)	50 to 85
No. 30 (0.600 mm)	25 to 60
No. 50 (0.300 mm)	10 to 30
No. 100 (0.150 mm)	2 to 10
No. 200 (0.075)	0 to 1

**PART 3 EXECUTION**

**3.01 PREPARATION**

- A. Verify the concrete rigid base is cured, clean and dry, certified by General Contractor as meeting material, installation and grade specifications.

- B. Stockpile Setting Bed Sand and Joint Sand such that they are free from standing water, uniformly graded, free of any organic material or sediment, debris, and ready for placement.

### 3.02 INSTALLATION

#### A. SETTING BED SAND

1. Provide and spread Setting Bed Sand evenly over the Concrete Underlayment and screed to a nominal thickness of 1 in. (25 mm).
  - a. Protect screeded Setting Bed Sand from being disturbed by either pedestrian or vehicular traffic.
  - b. Screed only the area which can be covered by pavers in one day.
  - c. Do not use Setting Bed Sand material to fill depressions greater than depths showing the drawings in the base surface.
2. Keep moisture content constant and density loose and constant until Brick Pavers are set and compacted.
3. Screed the Setting Bed Sand using either an approved mechanical spreader (e.g.: an asphalt paver) or by the use of screed rails and boards.
4. Carefully maintain spread Setting Bed Sand in a loose condition, and protected against incidental compaction, both prior to and following screeding. Loosen any incidentally compacted sand or screeded sand left overnight before further paving units are placed.
5. Provide lightly screeded Setting Bed Sand in a loose condition to the predetermined depth, only slightly ahead of the paving units.
6. Fully protect screed Setting Bed Sand against incidental compaction, including compaction by rain. Remove any screeded Setting Bed Sand that is incidentally compacted prior to laying of the paving units. Do not permit either pedestrian or vehicular traffic on the screeded Setting Bed Sand.
7. Inspect the Setting Bed Sand course prior to commencing the placement of the Brick Pavers. Acceptance of the Setting Bed Sand occurs with the initiation of Brick Paver placement.

#### B. BRICK PAVING

1. Exercise care in handling brick pavers to prevent surfaces from contacting backs or edges of other units.

2. Provide Brick Paving using a 'Running Bond' or 'Herringbone' laying pattern, as per the Plans, unless otherwise indicated in the Plans. Adjust laying 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.
3. Use string lines or chalk lines on Setting Bed Sand to hold all pattern lines true.
4. Set surface elevation of pavers 1/8 in. (3 mm) above adjacent drainage inlets, concrete collars or channels.
5. Place pavers hand tight. Adjust horizontal placement of laid pavers to align straight.
6. Provide space between paver units of 1/32 in. (1 mm) wide to achieve straight bond lines.
7. Prevent joint (bond) lines from shifting more than  $\pm 1/2$  in. ( $\pm 13$  mm) over 50 ft. (15 m) from string lines.
8. 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.
9. Prevent all traffic on installed Brick Pavers until Joint Sand has been vibrated into joints. Keep skid steer and forklift equipment off newly laid Brick Pavers that have not received initial compaction and Joint Sand material.
10. Vibrate Brick 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 or before surface is exposed to rain.
  - b. Compact installed Brick Pavers to within 6 feet (2 meters) of the laying face before ending each day's work. Cover Brick Pavers that have not been compacted and leveling course on which pavers have not been placed, with nonstaining plastic sheets to prevent Setting Bed Sand from becoming disturbed.
11. Protect face Brick Paver surface from scuffing during compaction by utilizing a urethane pad.
12. Remove any cracked or structurally damaged Brick Pavers and replace with new units prior to installing Polymeric Joint Sand material.

C. BRICK PAVING BAND

1. Brick Paving Band where shown shall be installed per the Drawings and per the instruction provided under Section B – Brick Paving.

D. JOINT SAND

1. Polymeric Joint Sand

- a. Install Polymeric Joint Sand per manufacturers recommended instructions. Protect surfaces from pedestrian and vehicular traffic for a minimum of 24 hours

3.03 FIELD QUALITY CONTROL

- A. Verify final elevations for conformance to the drawings after sweeping the surface clean.
  1. Prevent final Brick Paver finished grade elevations from deviating more than  $\pm 3/8$  in. ( $\pm 10$  mm) under a 10 ft (3 m) straightedge or indicated slope, for finished surface of paving.
- B. Lippage: No greater than 1/32 in. (0.8 mm) difference in height between Brick Pavers and adjacent paved surfaces.

3.04 REPAIRING, CLEANING AND SEALING

- A. Remove and replace brick pavers that are loose, chipped, broken, stained, or otherwise damaged or that do not match adjoining units. Replace with stockpiled brick pavers 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 brick pavers discolored and stained by concrete cutters slurry immediately. Do not let pavers sit with foreign materials on the surface.

3.05 PROTECTION

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

END OF SECTION



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**SECTION 02871**

**SITE AMENITIES**

**PART 1 - GENERAL**

**1.03 SUMMARY**

**A. Section Includes**

1. Requirements for site amenities shown of the plans and specified herein.  
Amenities include
  - a) Bike Racks
  - b) Ornamental Bollard and Chain
  - c) Bench

**B. Related Sections**

1. Section 022535 – Restoration of Curb and Sidewalk
2. Section 02850 – Modular Pavers
3. Section 03300 - Cast-In-Place Concrete
4. Section 04850 – Granite Cut Stone
5. Section 05010 – Miscelanous Metals

**1.04 REFERENCES**

- A. American Concrete Institute (ACI)**

**1.05 SUBMITTALS**

- A. Submit in accordance with Section 01300.**

**B. Manufacturer's Data Sheets and Shop Drawings:**

1. Bike Racks
2. Ornamental Bollard and Chain
3. Bench

**C. Quality Control Submittals:**

- i. Manufacturer's Data Sheets
- ii. Scale shop drawings

## 1.06 QUALITY ASSURANCE

### Qualifications:

- A. Utilize Manufacturer regularly engaged in the manufacture of site amenities.
- B. All products shall be supported by manufacturer's shop drawings with full dimensions shown.
- C. All work shall be performed by certified welders and machine operators.
- D. Provide all components with the Manufacturer's stated warranty.
- E. All products shall be installed by a single installer with a minimum of five (5) years of demonstrated experience installing products of the same size, scope and nature as specified for use in this project.

## PART 2 - PRODUCTS

### 2.01 BIKE RACK

A. Bike Rack: Metal 'Post and Ring' style rack consisting of a post with two circular opposing metal rings on which to secure bicycles. Bike Rack shall be model R-7906 – Post & Ring Bike Bollard from Reliance Foundry Co. Ltd.

B. 4" (nominal) diameter carbon steel post 36" high (nominal). Post shall be round, 1/8 " min. Wall thickness.

C. Fixed embedment mounting with stem configured to be embedded and secured in concrete footing.

D. Hot dipped galvanized. Factory finish shall be polyester powdercoat paint, color: black.

E. Manufacturers that produce products that may meet these specifications are:

Reliance Foundry Co. Ltd.  
Unit 207 6450  
148 Street  
Surrey, British Columbia Canada  
1.888.735.5680  
Info@RelianceFoundry.Com  
Product: Bike Bollard R-7906

The Park and Facilities Catalog  
Highland Products Group  
220 Congress Park Drive, Suite 215

Delray Beach FL 33445  
800-695-3503  
[www.theparkcatalog.com](http://www.theparkcatalog.com)  
Product: Bollard Bike Rack Item # 509-9159

Dero  
42 Northern Stacks Drive  
Minneapolis, MN 55421  
(888) 337-6729 (NY Office)  
Product: Bike Hitch

## 2.02 ORNAMENTAL BOLLARD AND CHAIN

A. Ornamental Bollards: To be erected as a system consisting of multiple bollards with eyes, connector links and chain between.

B. 4" (nominal) diameter carbon steel post 36" high (nominal) inclusive of spherical ball finial (cap) Post shall be round, 10" (nominal at the base) with fluted, tapered sides and detailed concentric rings.

C. Bollard side wall shall be 3/8 " min. wall thickness.

D. Fixed anchor mounting. Secure with concealed fasteners, set screws and internal threaded rod anchors or similar.

E. Welded 1/4" dia. steel with 3/8" (nominal) opening 'eye' loops to receive lengths of chain from two directions as indicated on the plans. Eye loops should be positioned below spherical ball finial (cap).

F. Hot dipped galvanized. Factory finish shall be polyester powdercoat paint, color: Black.

G. Chain shall be 5/16" links with matching connector links at each bollard eye location. Color: Black.

H. Manufacturers that produce products that may meet these specifications are:

Reliance Foundry  
Unit 207 6450  
148 Street  
Surrey, British Columbia Canada  
1.888.735.5680  
[www.reliancefoundry.com](http://www.reliancefoundry.com)  
Product: Bollard R-7539

Iron Age Designs  
2104 SW 152nd St. Suite#4  
Burien, WA 98166

(877) 418-3568 Name: Main Street  
Product ID: MBBO351  
<https://www.ironagergates.com/product>

Neri North America Inc.  
1547 NW 79th Avenue  
Miami, FL 33126 • USA  
1 786 315 4367  
neri.us@neri.biz  
Name: MELIA | Bollard  
Bollard post with chains  
Item # 2970, 2971

## 2.03 BENCH

A. Bench shall be model DuMor Bench 58-60 manufactured by DuMor, P.O. Box 142, Mifflintown, PA, 17059. Phone number – 800-589-4018. Email – sales@dumor.com or approved equal, to match existing benches in veterans memorial park. Located and installed as shown on the drawings.

B. Bench should be 6' in length, be made of steel, and have both back and end arm rests. Color shall be black. Finish is to be polyester powder coated

## PART 3 - EXECUTION

### 1.03 BIKE RACKS

A. Bike racks shall be installed per manufacturers surface mount requirements. Bike rack is to be installed on granite cut stone Bike Rack Base (CS4).

### 1.04 ORNAMENTAL BOLLARD AND CHAIN

A. Ornamental Bollard and Chain: Coordinate and confirm final locations of bollards. Utilize templates and measurements to ensure accurate placement. The contractor shall take care that all locations are equal and proportional in order to maintain uniform chain- sag and overall appearance.

B. Drill granite to receive approved bollard mounting hardware. Size and depth of holes shall be per manufacturer's instructions. Use care to set and drill holes plumb. Utilize a vacuum to remove all dust and debris from holes drilled.

C. Coordinate chain eye locations to align correctly between bollards. Utilize string to ensure alignment is accurate between bollard eyes in each of the six locations.

- D. Install bollards plumb on granite pieces indicated in the plan set. Utilize plastic shims where needed to maintain correct installation position. Install with threaded rod or bolts with chemical anchors sized for the holes drilled as per manufacturer's instructions. Set and let cure per product requirements.
- E. Once bollards are set, pack and gaps or spaces where bases are shimmed with mortar and finish smooth without voids or space for water to gain entry. Protect finished bollards from marring. Clean all surfaces.
- F. Install connector links in bollard eyes.
- G. Size lengths of chain to meet chain-sag tolerances. Stretch chain temporarily for final review and approval by Engineer. Upon Engineer's approval install chain between bollards.
- H. Utilize touch up paint (color to match bollards) on chain, connector links, and bollards to address any scuffed or chipped surfaces.

#### 1.05 BENCH

- A. Benches shall be installed per manufacturer's surface mount requirements. Bench is to be installed on granite cut stone Bench Base (CS5).

END OF SECTION

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**SECTION 02875**

**ADA DETECTABLE WARNING UNIT**

**PART 1 - GENERAL**

**1.1 GENERAL PROVISIONS**

- A. All Documents, as listed on the Table of Contents, and applicable parts of General Conditions and Special Conditions, shall be included in and made a part of this Section.
- B. Examine all Contract Documents and all other Sections of the Specifications for requirements therein affecting the work of this trade.

**1.2 SUMMARY**

- A. The work of this Section consists of providing all labor, equipment, materials, and incidentals to perform the work, and construction methods necessary to purchase, deliver and install ADA compliant Tactile Warning Units comprised of Detectable Warning Panels and Directional Detectable Wayfinding Panels as shown in locations on the plans and as detailed on the Drawings.

**1.3 RELATED WORK UNDER OTHER SECTIONS**

- A. The following items of related work are specified and included in other Sections of the Specifications:
  - 1. Section 02200 Earth excavation.
  - 2. Section 03300 Cast –in-place Concrete.

**1.4 REFERENCES**

- A. The following standards shall apply to the work of this Section.
  - 1. ADA, Accessibility Guidelines, Section 4.29, Section 705.
  - 2. Conforming to ASTM A48.
  - 3. RIDOT Standard 48.1.0.

**1.5 SUBMITTALS**

- A. Product literature.
- B. Shop Drawings.



1.6 DELIVERY, STORAGE, AND HANDLING

- A. The Detectable Warning Panels and Directional Detectable Wayfinding Panels shall be secured and protected against theft and damage. Damaged items shall be replaced at no additional cost to the Owner.

**PART 2 - PRODUCTS**

A. DETECTABLE WARNING PANEL – TYPE 1

1. Detectable Warning Plates shall be constructed of grey (cast) iron, 12" or 24" wide by 24" wide, rated at CL 35. Configured and 'ganged' as shown on the drawings.
2. Plates shall be a minimum of 3/8 "thick, with a minimum of 6 1/2" diameter vent holes.
3. Plates shall have anchor tabs on the edges suitable for anchoring when placed in wet concrete.
4. The plates shall be surfaced with truncated domes configured as an ADA compliant warning surface.
5. Domes shall be .9" base diameter minimum, and 1.4" maximum, top diameter shall be .50" minimum.
6. Dome Height shall be .2"
7. Dome Spacing shall have a center to center distance of 1.6" minimum, and 2.4" maximum, and a base to base spacing of .65" as measured between most adjacent domes on a square grid.
8. The plates shall be configured with a slip resistant surface, with no coating.
9. A manufacturer that produces plates that may meet these specifications:

Duralast Detectable Warning Plate #00700611  
East Jordan Iron Works  
301 Spring Street  
East Jordan Mi 49727  
1.800. 874.4100 or at [www.ejco.com](http://www.ejco.com)

B. DETECTABLE WARNING PANEL – TYPE 1A

1. Detectable Warning Panel Type 1A shall be custom ordered to match the radii shown on the plans for Ramps 3 & 4, as identified on the Plans.
2. Detectable Warning Panel Type 1A shall be constructed of grey (cast) iron, 24" wide, rated at CL 35. Configured and as shown on the drawings.
3. Plates shall be a minimum of 3/8 "thick, with a minimum of 6 1/2" diameter vent holes.
4. Plates shall have anchor tabs on the edges suitable for anchoring when placed in wet concrete.

5. The plates shall be surfaced with truncated domes configured as an ADA compliant warning surface.
6. Domes shall be .9" base diameter minimum, and 1.4" maximum, top diameter shall be .50" minimum
7. Dome Height shall be .2"
8. Dome Spacing shall have a center to center distance of 1.6" minimum, and 2.4" maximum, and a base to base spacing of .65" as measured between most adjacent domes on a square grid.
9. The plates shall be configured with a slip resistant surface, with no coating.
10. A manufacturer that produces plates that may meet these specifications:

Duralast Detectable Warning Plate #00700611  
East Jordan Iron Works  
301 Spring Street  
East Jordan Mi 49727  
874.4100 or at [www.ejco.com](http://www.ejco.com)

C. DETECTABLE WARNING PANEL – TYPE 2

1. Detectable Warning Plates shall be constructed of grey (cast) iron, 12" or 24" wide by 24" wide, rated at CL 35. Configured and 'ganged' as shown on the drawings.
2. Plates shall be a minimum of 3/8 "thick, with a minimum of 6 1/2" diameter vent holes.
3. Plates shall have anchor tabs on the edges suitable for anchoring when placed in wet concrete.
4. The plates shall be surfaced with truncated domes configured as an ADA compliant warning surface.
5. Domes shall be .9" base diameter minimum, and 1.4" maximum, top diameter shall be .50" minimum
6. Dome Height shall be .2"
7. Dome Spacing shall have a center to center distance of 1.6" minimum, and 2.4" maximum, and a base to base spacing of .65" as measured between most adjacent domes on a square grid.
8. The plates shall be configured with a slip resistant surface, with no coating.
9. A manufacturer that produces plates that may meet these specifications:

Duralast Detectable Warning Plate #00700611  
East Jordan Iron Works  
301 Spring Street  
East Jordan Mi 49727  
874.4100 or at [www.ejco.com](http://www.ejco.com)

C. CONCRETE

1. Concrete slab for embedment shall be as per Section 03300 in these specifications

**PART 3 - EXECUTION**

3.1 INSTALLATION

A. DETECTABLE WARNING PANEL

1. Coordinate installation with all sidewalk work. Note various configurations based on different locations.
2. For work to be set into pavers and incorporated in the brick areas of the sidewalk, beginning this phase means full acceptance of the curbing and gravel base conditions. Verify sidewalk and roadway grades.
3. Field verify all dimensions. Construct wood forms to the dimensions shown in the plans-. Set forms in place on the gravel or in staging area with plywood bottom on form if unit is to be 'pre-cast' on-site then set when cured. Assemble or gang multiple warning plate units as shown.
4. Mix and pour concrete into the form(s) "Rod" the concrete to ensure settlement. Let stand. Follow the manufacturer's instructions for setting the panels into the concrete. Lift warning plates, hold over surface, align correctly and lay onto the wet concrete at determined final position. Press plate firmly into wet concrete to embed anchor lugs. Align corners to correct and final elevations. Set the tactile plates securely with non-marring hammer or equal.
5. Allow 24 hours to cure. Install as a 'pre-cast' unit as large paver over the gravel base. Place the completed Tactile Warning Unit in the lengths and locations shown on the Drawings in conjunction with the modular brick pavers.
6. For work within the C-I-P concrete wheelchair ramps, identify all surfaces, planes and grades of the ramp, including 'folds' in the surface for landings, etc. Gang or bolt plates together in largest segments determined workable. Configure to provide a continuous tactile and detectable surface at the edges indicated.
7. Coordinate with the placement of the concrete slab surface for the ramp. Concrete shall align and conform the correct accessible route line and grade. Elevations shall be set to allow the plates to be installed at finish grade.
8. Lift Warning Plates, hold over surface, align correctly and lay onto the wet concrete determined final position. Press plate firmly into wet concrete. Align corners to correct and final elevations.
9. Trowel/finish edges of plates and concrete pour. Remove any excess concrete on the plates while still wet.
10. Protect work from pedestrian and vehicular traffic for 24 hours.

**END OF SECTION**

SECTION 02930

LOAMING AND SEEDING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Requirements for loaming, fertilizing, seeding, and related work in areas disturbed in the process of performing the Work under this contract.

1.02 SUBMITTALS

- A. In accordance with SECTION 01330, submit the following:
  - 1. Submit intended source of loam.
  - 2. Submit loam sample with laboratory analysis for review and approval.
  - 3. Submit seed, certificates listing proposed seed mixture, purity, germinating value, and crop year identification.
  - 4. No loam shall be imported to the site or placed without the Engineers approval.

1.03 DELIVERY, STORAGE AND HANDLING

- A. Fertilizer:
  - 1. Delivered mixed as specified in standard size, unopened containers showing weight, analysis, and name of manufacturer.
  - 2. Store in a weatherproof place.
- B. Seed:
  - 1. Delivered in original unopened containers with mixture listed.

PART 2 PRODUCTS

2.01 LOAM

- A. Per Rhode Island Department of Transportation Standard Specifications for Road and Bridge Construction, most current edition. Section M18.
- A. Loam, imported to the site, shall be fertile, natural topsoil, typical of locality, without admixture of subsoil, refuse or other foreign materials, and obtained from well-drained arable site. Mixture of sand, silt and clay particles in approximately equal proportions. Free of stumps, roots, heavy or stiff clay, stones large than 1/2 inch in diameter, lumps, coarse sand, noxious weeds, sticks, brush or other deleterious matter. Use loam having prior vegetative growth that does not contain toxic amounts of either acid or alkaline elements. Acidity range shall be 5.5 pH to 7.6 pH.

LOAMING AND SEEDING

- B. Loam shall contain neither less than 5 percent nor more than 20 percent organic matter as determined by loss on ignition of oven-dried samples.
- C. Loam test samples shall be dried to constant weight at temperature of 230 degrees F., plus or minus nine (9) degrees.

## 2.02 LIME, FERTILIZER AND SEED

- A. Per RIDOT Standard Specifications for Road and Bridge Construction, Section M18 Materials.
- B. Agricultural limestone containing not less than 85 percent of total carbonates.
- C. Complete fertilizer, at least 50 percent of nitrogen derived from natural organic sources of ureaform and containing following percentages by weight:

Nitrogen (N) 10%	Phosphorus (P)10%	Potassium (K)10%
------------------	-------------------	------------------

- D. Grass Seed Type 2 per RIDOT Standard Specifications Section M18 Materials.

Chewings Fescue (Improved)	30%by weight	85% by volume
Kentucky Bluegrass (Improved)	30% by weight	90% by volume
Perennial Ryegrass	40%by weight	90% by volume

- E. The seed shall applied at 75 Lbs per acres /4 lbs per 1,000 SF. Seed may be applied using Hydroseeding techniques.

## PART 3 EXECUTION

### 3.01 GENERAL

- A. The Contractor is responsible for providing the Owner with a stand of healthy, well-established grass. It is expected that establishment of the grass and will occur in Spring 2024.
- B. The Contractor shall coordinate the loaming and seeding with the installation of the irrigation system. System shall be functional prior to seeding.
- C. Contractor is responsible for establishing the seeded grass. Supply suitable quantities of water, hose and related distribution appurtenances.

### 3.02 LOAM

- A. Obtain approval for the Engineer of the rough grade before proceeding with the placement of the loam. If this surface has been compacted, scarify to a depth of 3 inches prior to importing loam to the area.

- B. Spread imported loam over areas indicated to ensure a minimum of 4" inch depth after compaction.
- C. Hand rake areas uniformly with even transitions. Low points shall only be located as shown on the plans or as directed in the field by the Engineer.
- D. Remove and dispose of all sticks, litter, wire, weeds, cobbles, stones or other deleterious materials over ½" in any dimension.
- E. When meeting paved surfaces, the finished loam elevation shall be a minimum of ½" below the paved surface unless directed otherwise.
- F. After hand raking, utilize a hand roller with a weight of less than 175 lbs. to hand roll the entire area to be seeded .

### 3.03 LIME, FERTILIZER AND SEEDING

- A. Apply lime by mechanical means at rate of 2,000 pounds per acre.
- B. Apply fertilizer at rate of 850 pounds per acre.
- C. Remove weeds and/or replace loam & re-establish finish grades, if there have been any delays in seeding lawn areas and weeds have grown on surface, or if loam has washed out prior to sowing seed, without additional compensation.
- D. Sow seed at rate of 4 lbs per 1,000 SF. Conduct seeding on a calm day. Do not seed prior to severe weather.
- E. If seeding manually, sow one-half of seed in one direction, and other half at right angles to original direction. Rake seed lightly into loam to a depth of not more than 1/4 inch, and compact by means of an acceptable lawn roller weighing 100 to 150 pounds per linear foot of width.
- F. The Contractor shall coordinate seeding with the installation of the irrigation system. Water lawn areas adequately at time of sowing and daily thereafter with fine spray and continue throughout maintenance and protection period.
- G. Seed shall be applied from April 1 to May 31 or from August 15 to October 15. Seed only when weather and soil conditions are suitable for such work, unless otherwise authorized. Coordinate with the installation of the irrigation system.

### 3.04 MAINTENANCE OF SEEDED AREAS

- A. Maintain lawn areas and other seed areas at maximum height of three (3) inches by mowing at least three (3) times. Weed thoroughly once and maintain until time of Final Acceptance.
- B. Begin maintenance immediately after each portion of lawn is seeded, and continue until Final Acceptance.

- C. If determined necessary, scarify, de-thatch, re-seed with original mixtures and re-fertilize, perform additional watering or implement whatever measures are necessary to establish a close stand of grasses over the entire area of lawn, reasonably free of weeds and undesirable coarse native grasses.
- D. Repair or replace all seeded areas that, in judgment of Owner, have not survived and grown in satisfactory manner, for a period of one (1) year after acceptance.
- E. For seeding replacement, use same seed mixture as specified, and furnish and install as specified.

### 3.05 ESTABLISHMENT

- A. The Contractor is responsible for establishing a uniform stand of healthy grass on all seeded areas.
- B. Seeded areas must exhibit uniformly dense, satisfactory growth of grass. The grass must be approved by the Engineer to achieve Final Acceptance.

### 3.06 TEMPORARY COVER CROP

- A. If conditions require, sow a temporary cover crop of domestic annual rye grass or other acceptable seed if there is insufficient time in the planting season to complete seeding, fertilizing, and permanent seeding at the option of Contractor or direction of the Engineer.
- B. Cut and water cover crop as necessary until the beginning of the following planting season, at which time it shall be tilled into the soil, the grassed areas re-fertilized and permanent grass seed sown as specified.

END OF SECTION

**SECTION 02935**

**TREE & SHRUB CONSERVATION MEASURES**

**PART 1 - GENERAL**

**1.01 WORK INCLUDED:**

- A. This section consists of providing all labor, equipment, materials, tools, and required professional services for conducting work within existing tree root zones. This work shall include but not be limited to the following:
  - 1. Utilizing hand digging in areas where proposed work is to be conducted within the existing tree root zones. Hand dig to remove and break up soil around existing trees as to not damage the roots and to facilitate root pruning.
  - 2. In areas where existing tree roots are exposed at the surface, remove and break up soils around existing trees to facilitate application of blended soils to the grades shown on the plans. Root prune as required to ensure that roots are no longer exposed once the work is complete. Roots shall be trained to encourage healthy root growth.
  - 3. As needed roots, grade soils per the plans and prune existing exposed roots.
  - 4. Remove and break up of soils around existing trees.
  - 5. Hand dig around existing trees and where existing roots are present.
  - 6. Remove and break up of soils around existing trees to locate tree roots.
  - 7. Remove and break up of soils around existing trees to accommodate proposed site construction.
  - 8. Root collar excavation to expose the lower trunk and buttress roots of the designated trees.
  - 9. Tree Canopy and Root pruning
  - 10. Removal of all rubbish, debris, and all materials to be disposed of as a result of the work in this section.

**1.02 RELATED WORK:**

- A. Section 02100 - Site Preparation
- B. Section 02200 – Earth Excavation, Backfill, Fill and Grading
- C. Section 02950 – Landscape Plantings

**1.03 REFERENCED STANDARDS:**

- A. Comply with applicable requirements of the following standards. Where these standards conflict with other specified requirements, the most restrictive requirements shall govern.



1. American National Standards Institute (ANSI).
  - a. Z133.1 Safety Requirements for Pruning, Trimming, Repairing, Maintaining and Removing Trees, and for cutting brush.
  - b. A300 Tree Care Operations – Tree, Shrub and Other Woody Plant maintenance – Standard Practices (Parts 2, 5, And 8).
2. Pruning Standards: ANSI A300 Part 1: Trees, Shrubs & Other Woody Plant Maintenance – Standard Practices (Pruning).

1.04 SUBMITTALS:

- A. Prepare and submit a "Specialized Root Zone and Soil Excavation Plan," 11x17 format indicating the extent of soils to be root pruned /Air-Spaded. Show all areas of proposed staging, vehicle, or equipment access, trenching, excavating, or other disturbance to soils. No work in this section shall commence prior to approval.
- B. Proposed methods, materials, and schedule for pruning and effecting soils and root zones, in accordance with ANSI A300 (all parts, shall be submitted by certified arborist for approval).
- C. Specialized root zone and soil excavation operations shall include, but not be limited to:
  1. Soil aeration and decompaction.
  2. Root pruning.
  3. Soil replacement.
  4. Root training.
  5. Root trenching.

1.05 PROPERTY PROTECTION:

- A. Prevent damage to and movement, settlement, or collapse of adjacent services, utilities, structures, and trees. Assume liability for such damage, movement, settlement, or collapse. Promptly repair damage at no cost to the owner.

1.06 TREE DAMAGE PENALTIES:

- A. The condition of the trees and damage to trees on the property will be assessed.
- B. If at any time during the operation, damage to the trunk or root bark is noticed, the operator shall move the excavation/Air-Spade tool further from the root; or trunk or stop the operation. Bark damage is not acceptable.
- C. Trees or roots visibly abraded, split, torn left exposed or otherwise damaged will cause the Owner to withhold from the contractor an assessed amount.
- D. If any trees or shrubs designated to be saved are damaged and replacement is required, replacement material shall be furnished, and planted by the contractor at no additional expense to the Owner.

1.07 QUALITY ASSURANCE:

- A. Work of this section shall be completed by a professional Arborist licensed in the State of Rhode Island with a minimum five years of experience.

- B. Arborist shall have the following minimum qualifications:
  - 1. Certification by:
    - a. TCIA -- Tree Care Industry Association, Inc. accredited company
    - b. ISA -- International Society of Arborists
  - 2. Meet state requirements for insurance.
- C. Equipment utilized to complete the work of this Section shall be operated by experienced technicians, trained, and certified by equipment manufacturer to operate the compressed air-powered tool safely and properly in accordance with manufacturer's Operator's Manual and the "AirSpade Technical Applications Bulletin (2016)".
- D. AirSpade operations shall not be performed in heavy rain or when soil is deemed too wet or too dry by licensed arborist.
- E. Tree trunks shall be suitably protected from damage by AirSpade operations during all activities specified.

1.08 SITE MONITORING:

- A. While use of an AirSpade can significantly reduce trauma to the tree, it is important to monitor the tree's health and care before, during, and after the procedure. Supplemental watering is typically necessary and should be provided with the direction and continued monitoring of a Licensed Arborist.
- B. Site monitoring shall be the responsibility of a Licensed Arborist. Any damage to existing trees shall be immediately reported to the architect. If any tree has been damaged, work shall be halted and reasons for damage assessed. No work shall commence until contractor has submitted a plan for prevention of further tree damage and plan has been approved in writing by Engineer.

1.09 PRE-CONSTRUCTION CONFERENCE:

- A. Pre-Construction Conference: Prior to implementing specialized root zone and soil excavation measures, conduct meeting with Engineer, certified arborist, (AirSpade manufacturer's rep), and owner to verify and review the following:
  - 1. Project requirements for tree protection measures as set out in Contract Documents.
  - 2. AirSpade manufacturer's product data including application, operation, and safety instructions.
  - 3. Limits where specialized root zone and soil excavation measures shall be implemented.
  - 4. Areas of proposed staging, vehicle, or equipment access, trenching, or other disturbance to soils.
  - 5. Healthcare needs of individual trees, including specific site conditions, that may affect the project goals or construction implementation strategy. ET. Tree health-care implementation strategy before, during, and after construction.

## PART 2 – PRODUCTS

### 2.01 EQUIPMENT

- A. Specialized root zone operations shall be performed using a compressed air-powered tool, also referred to as an AirSpade. High-pressure air will come from a compressor that; is matched to the design flow of the tool, producing a focused jet air stream capable of penetrating and fracturing existing soil for a fast, efficient method of excavating.
  - 1. The compressor shall be in good working condition and exhibit no signs of excessive discharge of oil in the air stream.
  - 2. Tool shall be equipped with a "dead-man trigger."

### 2.02 COMPOST

- A. Compost shall comply with Section 02930 Loaming and Seeding with the below exceptions:
  - 1. Compost from the Reservation stockpile, if suitable after testing, and approved by the Engineer may be applied to the Soil and Vegetation Restoration in place of compost from off-site locations. The Contractor shall coordinate and obtain approval from the Owner for the specific material to be used.
  - 2. Amount of compost to apply shall be determined by recommendations from tests taken on existing loam material. Intent is to mimic soils found along vegetated areas at Purgatory Chasm Reservation Trails.
  - 3. Compost shall have a pH between 4.5 pH and 7.0 pH, and the particle size shall pass through a 1-inch screen or smaller.

### 2.03 MULCH

- A. Straw Mulch - Straw mulch shall consist of stalks or stems of grain after threshing and shall be free of weeds, twigs, debris or other deleterious material. Hay mulch is not acceptable.
- B. Wood Fiber Mulch - Wood fiber mulch shall consist of wood fiber produced from clean, whole, uncooked wood, formed into resilient bundles having a high degree of internal friction and shall be dry when delivered to the project.

## PART 3 - EXECUTION

### 3.01 GENERAL

- A. Prior to any work being done, the arborist shall:
  - 1. Check and adjust tree protection fencing.
  - 2. Provide specified protection to tree trunks when construction activities are expected to be in close proximity.
  - 3. Demarcate sensitive root zones within the construction areas and prevent use of the area for potentially damaging activities such as use of heavy machinery.
- B. In areas where root zones and construction areas overlap, the contractor shall limit the use of machinery and shall hand dig to avoid damage to existing roots. In areas where roots are within a proposed pavement profile, they shall be evaluated by a certified arborist and root pruned, as needed, to prevent future issues with the installed pavement but to also protect the health of the tree.

### 3.02 AIR SPADING

- A. If air-spading is required to loosen the soil around the roots, the area where air-spading is to be performed shall have access restricted. Only personnel that are involved in the operation shall be permitted within 25 feet of the operation. A temporary screen barrier shall be set up to prevent flying rocks and debris from leaving the immediate work area during the operation.
- B. Personnel using the air tool or working in close proximity to the operation shall wear appropriate personal protective equipment, which includes at a minimum:
  - 1. Hard hat with plastic face shield
  - 2. Goggle-type eye protection
  - 3. Ear plugs
  - 4. Earmuffs
  - 5. Long sleeved shirt and long pants.
  - 6. Work boots and socks
- C. If the area has active fire ant activity, personnel shall take precautions including sealing of cuffs and the use of insect repellents to avoid fire ant attack.
- D. Air hoses used in the operation shall have safety pins and whip guards installed at each hose junction.
- E. The air flow heating valve (if present on the compressor) shall be turned off when working near trees so as not to damage bark.

### 3.03 SOIL PREPARATION SPECIALIZED ROOT ZONE

- A. Trees proposed to undergo specialized root zone end soil excavation operations shall be adequately watered before start of operations. Amount and frequency of watering shall be determined by certified arborist. No operations shall commence prior to preparation approval in writing by certified arborist.
- B. Soil shall be moist to the point of field capacity prior to and during the operation. If dust is generated during the operation, it shall be stopped, and the soil should be wetted. If turf, large rock, or mulch is present in the area to be included in the excavation, it shall be removed prior to the start of the operation.

### 3.04 AIR TILLING

- A. Contractor shall utilize the AirSpade tool to aerate and de-compact to the specified depth (typically 6-8 in.) of the topsoil layer.
  - 1. Place plywood sheets over adjacent trenches to prevent refilling.
  - 2. Position the AirSpade at an angle of 30° to 45° (depending on target depth) and about 1 inch from the surface.
  - 3. Move the nozzle from side to side to define the desired trench width.
  - 4. Do not dwell on the same spot.
  - 5. Width, depth, and length of trench, and soil augmentation to be determined based on tree needs and project goals.
  - 6. The adjustable dirt shield should be positioned close to the ground to deflect airborne material away from the operator.
  - 7. Refer to manufacturer's updated safety and operational guidelines.

### 3.09 ROOT PRUNING AND TRAINING

- A. If existing tree roots are identified within the proposed pavement limits and trees are subjected to soil cuts within the root; zone shall be root pruned by a certified arborist utilizing an AirSpade, removing as little of the tree's root system as possible.
- B. Once existing roots have been safely exposed, a certified arborist shall determine the best places to make clean cuts using a hand pruner. Smaller roots shall be lowered down into soil horizon to help train them to follow a future path of growth.
- C. When the tree's excavated root zone will remain exposed for several days or more, protect and cover roots (for example with soil, mulch, or burlap cloth) and provide supplemental water as required.

### 3.11 SOIL REPLACEMENT

- A. Native soil shall be deposited to the depth shown on the Drawings. Soil shall be deposited to minimize travel and subsequent compression of the underlying material and AirSpaded soil. If sufficient native/local soil is not present, the Contractor shall provide, at no additional cost to the Owner, replacement native/local soil.

### 3.12 DISPOSAL OF MATERIALS

- A. Soil moved during the air-spading operations shall be collected and moved off-site or disposed of on-site if it not visually apparent.
- B. Material resulting from the specialized root; zone and soil excavation work and not scheduled to be salvaged and is unsuitable for reuse on the project, shall become the property of the contractor and shall be legally disposed of off-site.
- C. Debris, rubbish, and other material shall be disposed of promptly and shall not be left until final cleanup of site.

### 3.13 PLANTING

- A. Planting shall be in conformance with SECTION 02950 Landscape Planting unless otherwise noted in this specification.

END OF SECTION

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SECTION 02950

PLANTING

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

- A. This Work under this Item consists of furnishing new plant material: planting, watering, mulching, staking and guying trees, shrubs, perennials, and ground covers of the type and sizes indicated on the Plans, in accordance with these Specifications and/or as directed by the Engineer.
- B. Additionally, Work includes the careful transplanting of viable plant material in conjunction with the removal of plant material in poor condition. Transplanting operations shall be organized to adjust the limit of the hedge by removing dead or diseased plants and transplanting viable plants to maintain a healthy hedge.
- C. Provide all materials, equipment and labor necessary to complete the work as indicated on the drawings or as specified herein.
- D. The principal work of this section includes, but may not be limited to, the following:
  - 1. Temporary Transplanting Operations
  - 2. Layout and Excavation of Plant Holes
  - 3. Planting and Backfilling
  - 4. Watering
  - 5. Pre-emergent Weed Control
  - 6. Mulching
  - 7. Fertilizing
  - 8. Staking and Guying
  - 9. Antidesiccant Application
  - 10. Tags and Labels
  - 11. Maintenance
  - 12. Plant Replacement Guarantee

1.02 REFERENCES

ANSI Z-60.1 - Nursery Stock, latest edition (American Association of Nurserymen, Inc.).

SPN: "Standardized Plant Names," latest edition, by the American Joint Committee on Horticultural Nomenclature.

AOAC: Association of Official Agricultural Chemist."

Pruning Standards: ANSI A300 Practices for Trees, Shrubs & Other Woody Plant Maintenance: Secretariat, National Arborist Association, P. O. Box 1094 Amherst, MA.



### 1.03 QUALITY ASSURANCE

- A. The Contractor may sub-contract planting work to a firm specializing in such work unless the Contractor is fully experienced and qualified. The Landscape Contractor shall have five years continuous experience and expertise in management, handling and installation of ornamental plant material in large scale landscape construction projects. Site foreman shall have at least five years' experience, be a licensed Arborist and shall be on-site during all times of transplanting and plant installation.
- B. The Landscape Contractor shall be responsible to coordinate with plant material suppliers in sufficient time to ensure that all of the plants as specified in the contract plant list are available in sufficient quantity for installation.
- C. An arborist, licensed by the State of Rhode Island, is required for any tree pruning work.
- D. At least one tree and one shrub of each variety is to be tagged with a waterproof tag bearing legible designation of botanical and common names, and all other standard products shall be delivered sealed and unbroken.
- E. Do not make substitutions without written approval. If specified landscape material is not available, obtain approval for substitution from the Engineer.
- F. Where formal planting arrangements and adjacent street trees of the same variety are shown, select stock with uniform height and spread, and label with numbers to assure symmetry in planting.
- G. The Engineer reserves the right to inspect all plant materials for compliance with specifications, and to reject unsatisfactory or defective work at any time during progress of work.

### 1.04 SUBMITTALS

- A. Submit written qualifications for Landscape Contractor if applicable, Site Foreman & Arborist.
- B. Submit intended source of loam, certified analysis with any recommended soil additives to loam; rates and type.
- C. Certifications and/or labels of proposed plant materials or substitutions, listing common and scientific names of each.

### 1.05 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Protect all products from weather or other damaging or deteriorating conditions.
- B. Plants which have been damaged or have deteriorated in transit or storage are not acceptable.

- Planting Window: Spring – April 30 to June 30  
Fall - August 15 to October 15

- ## 1.06 SPECIAL CONDITIONS

## 1.07 WARRANTY

- PLANTING  
02950 -3

1.08 MAINTENANCE

- A. Maintenance of all plant material to be performed by installer includes:
- Watering, weeding, cultivating and mulching
  - Tightening, guy webbing and repairing of stakes
  - Replacing of dead material
  - Re-setting plants to proper grades, or to upright position

PART 2 - PRODUCTS

2.01 LOAM:

- A. Per Rhode Island Department of Transportation Standard Specifications for Road and Bridge Construction, most current edition. Section M18.
- B. Loam, imported to the site, shall be fertile, natural topsoil, typical of locality, without admixture of subsoil, refuse or other foreign materials, and obtained from well-drained arable site. Mixture of sand, silt and clay particles in approximately equal proportions. Free of stumps, roots, heavy or stiff clay, stones large than 1/2 inch in diameter, lumps, coarse sand, noxious weeds, sticks, brush or other deleterious matter. Use loam having prior vegetative growth that does not contain toxic amounts of either acid or alkaline elements. Acidity range shall be 5.5 pH to 7.6 pH.
- C. Loam shall contain neither less than 5 percent nor more than 20 percent organic matter as determined by loss on ignition of oven-dried samples.
- D. Loam test samples shall be dried to constant weight at temperature of 230 degrees F., plus or minus nine (9) degrees.
- E. No loam shall be delivered to the site until the review and approval of loam test results by the Engineer, but such approval shall not constitute final acceptance. The Engineer will reject any material delivered to the site which, after on-site, post-delivery testing, does not meet these specifications.

2.02 ANTIDESSICANT

- A. Anti-desiccant shall be an emulsion which permits transpiration while retarding excessive loss of moisture from plants.
- B. Deliver in manufacturer's fully identified containers and mix according to manufacturer's direction. Use "Wiltproof" or approved equal.

2.03 TREE AND SHRUB FERTILIZER:

- A. Complete fertilizer in granular form, from commercial sources bearing manufacturer's analysis; 10-10-10 ratio of N-P-K.

- B. Significant quantities of trace elements such as iron, boron, etc. shall be contained in the fertilizer.
- C. Fifty percent (50%) of available nitrogen shall be in a slow release form as found in certain urea form products or natural organic forms or a combination of both.
- D. Salt index shall not exceed 35.

2.05 STAKING AND GUYING MATERIALS:

- A. Guy Web: Shall be low abrasion woven fiber webbing with break strength of 900 lbs. or better. The width of the webbing shall be no less than 5/8 inch, nor greater than 3/4 inch. The length shall be sufficient enough to be attached to the tree trunk and stake.
- B. Stakes: Shall be on a hardwood source, free of knots, insects and fungi. Stakes shall be of uniform size and shape and shall be a minimum of 2 inches by 3 inches by 8 feet. Stakes shall be pointed with a taper of no less than 4 inches.
- C. The above ground stake height shall be 8 inches above the point of attachment. The type of stakes shall be uniform throughout the job.

2.06 PRE-EMERGENT WEED CONTROL:

- A. Pre-Emergent weed control for application in mulch areas shall be granular and have the active ingredient "Trifluralin 5.0%". All application rates and product use shall be in accordance with manufactures guidelines.

2.07 MULCH:

- A. Pine Bark Mulch shall be derived from evergreen tree bark aged to a minimum of six months and no more than eighteen months. The bark shall be shredded so that the resulting pieces are no more than 1/2 inch thick and no longer than 3 inches. The mulch shall be ninety-eight percent (98%) organic matter with a pH of 3.5 to 4.5. The mulch shall be free of stringy material and shall not contain an excess of fine particles. The mulch shall be brown in color, free of leaves, twigs, sod, weeds, shavings and other foreign materials which are injurious to health plant growth.

2.08 WATER:

- A. Clean, fresh potable water free from injurious chemicals and other toxic substances harmful to plant life. No brackish water will be permitted.
- B. The Engineer may reject any water delivered to the site which, after on-site, post-delivery testing, does not meet these specifications.

2.09 PLANT MATERIALS:

- A. Plant materials shall conform in size, grade and quality to the "American Association of Nurserymen Standards for Nursery Stock." As approved by the United States of America standards institute, in effect at the time of bidding.
- B. Plants of other kinds than those named in the Plant Schedule on the Drawings shall not be accepted without written approval of the Engineer.
- C. Unless otherwise approved by Engineer, all plants shall be nursery-grown in accordance with good horticultural practices and shall have been grown under climatic conditions similar to those in the locality of the project for at least two years. They shall have been transplanted or root pruned at least nine months previous to moving to the site.
- D. Plants shall be dug, handled and transported so as to prevent damage of any sort including but not limited to breakage of branches or limbs, scraped or bruised trunk or broken rootball. Plants shall be protected from desiccation during digging, storage and transportation by watering, covering and application of anti-desiccants as necessary to ensure their continued health and viability.
- E. All plant material shall comply with the state and federal law with respect to inspection for plant disease and insect infestation.
- F. Replacement plants larger in size than existing may be used if approved by the Engineer. And provided use of larger plants does not increase Contract price.
- G. If use of larger plants is approved, increase excavation and loam backfill to accommodate spread of roots in proportion to size of plant.

PART 3 - EXECUTION

3.01 Planting:

- A. Layout: Determine location of underground utilities and layout plants so as to avoid possible damage to such structures. Plant pits and bed locations as shown graphically and/or verbally on plans, shall be staked on ground by contractor and approved by the Engineer/Engineer prior to excavation. Should discrepancies exist between plant quantities in Planting Schedule and Planting Plan, quantities shown on the Planting Plan shall govern. Adjustments in locations and outline shall be made as directed in field. Labor, equipment, and new smooth stakes are to be furnished by the Contractor for this purpose.
- B. Excavation: Planting beds and pits shall conform to the approved staked locations and outlines. Holes dug for plantings shall in all cases be large enough to include the complete root system of the plant (tree, shrub, and groundcover) to be received and also sufficient amounts of approved backfill around the periphery of the root ball. All sod, weeds, roots, cobbles, and stones and other objectionable materials excavated from the plant holes,

which is unsuitable for backfill shall be removed from the site immediately and legally disposed of.

- C. Plant Hole Size: The minimum plant hole size, unless otherwise specified, shown on the plans or directed by the Engineer shall be as follows:
  - 1. Trees and Shrubs - The planting hole shall be twice the diameter of the root ball in width and no deeper than 2 inches less than the distance from the bottom of the root ball to the root collar (i.e. a 12 inch tall ball will require a 10 inch deep hole). Any excavation in excess of that required shall be replaced and compacted to eighty-five percent (85%) of maximum density.
  - 2. Groundcover - The planting hole shall be twice the diameter of the root ball in width and equal to the depth from the bottom of the root ball to the level at which it was grown in the nursery. Any excavation in excess of that required shall be replaced and compacted to eighty-five percent (85%) of maximum density.
- D. Any rocks or underground obstructions shall be removed to a depth necessary for planting as specified, unless alternate locations for the planting are approved by the Engineer. If removal of obstructions results in a deeper hole than specified for planting, backfill material shall be added and compacted to eighty-five percent (85%) of maximum density to the correct depth.

### 3.03 SETTING PLANTS

- A. Plants shall be handled in such a manner that the soil of the root ball will not be loosened from the roots. Carefully place plant into the prepared hole. Set plants plumb and fill in around the root ball to one-half the depth of the hole with backfill mix. Thoroughly tamp the backfill mix to eighty-five percent (85%) of maximum density.
- B. Fill remaining area of planting hole with water. Once the water has completely drained loosen burlap and peel down at least the top one-third. If required wire baskets to be cut off and removed. Roots that have been wrapped around the ball within the burlap shall be made to lay in as natural a manner as possible. Cut broken or frayed roots cleanly.
- C. Fill remaining area of hole with loam and thoroughly tamp to eighty-five percent (85%) of maximum density. Form a saucer around the edge of through backfill hole by constructing a berm. The finish height of the compacted berm shall be 4 inches higher than the surrounding grade. No excess soil shall be allowed to remain within the plant saucer. Fill saucer with water.
- D. The Contractor shall coordinate installation of plants with the installation of the irrigation system to ensure water is available at the time of planting.

### 3.04 PRUNING OF NEW PLANT MATERIAL

- A. After planting, prune only dead, broken or deformed branches and in such manner as to preserve natural character of plant.
- B. Perform all pruning with sharp tools, with cuts flush and clean. Do not apply paint or asphalt emulsion tree wound compound on cut area.
- C. Trees which have had their leaders cut, or so damaged that cutting is necessary, will not be accepted. There shall be no abrasion of bark, nor fresh cuts of limbs over ½ inch.

### 3.05 WATERING

- A. Coordinate with the installation of the irrigation system.
- B. The plants shall be watered immediately following planting.
- C. Soak the plants thoroughly again within a twenty-four-hour period after the initial planting.
- D. Additional watering shall be made at least once every three weeks, or as directed by the Engineer based on weather conditions, until final acceptance of the plant material.

### 3.06 FERTILIZING

- A. During backfill operations, place fertilizer in upper foot of back fill around perimeters at a rate of two ounces per foot of diameter of plant pit, or as recommended by manufacturer.

### 3.07 MULCHING PLANTS

- A. Application of mulch should only occur after planting operations have been completed and initial watering has taken place. Mulch shall be applied no later than forty-eight hours after planting.
- B. Prior to the placement of mulch, the contractor shall apply a pre-emergent weed control with the entire area to be mulched. Pre-emergent weed control shall be applied by a commercial applicator, licensed in the state of Rhode Island at a rate in accordance with the manufacturer's instructions.
- C. Mulch shall be applied a minimum of 3 inches in depth for all individual trees and planting beds, as indicated graphically or verbally on the drawings.
- D. Where mulched plant beds abut seeded lawn areas or other finish grade materials, edge of planting bed shall be cut smooth and cleanly. Mulch shall be placed carefully so as not to spill into adjacent areas. Any excess or spilled mulch shall be promptly removed from the project area. The cost of the mulch shall be considered part of the new plantings.

### 3.08 GUYING AND STAKING

- A. Immediately after planting, stake trees as indicated on the drawings or as directed by Engineer.
- B. Place two stakes outside of the planting pit exercising care not to damage the soil berm.
- C. Guy all trees with a caliper of 2 inches or greater and all evergreen trees greater than 4 feet. Guy webbing shall be attached at a point no higher than one half the height of the tree or lower than one-third the height of the tree.
- D. Guy trees to each stake near top of stake and intertwine webbing at tree trunk. The guy webbing shall lay flat against the trunk. Draw guy webbing tight enough to remove slack but shall not cause deflation or strain to the plant.

### 3.09 TRUNK WRAPPING

- A. Remove all trunk wrap and trunk protection devices prior to staking and guying operations unless otherwise directed by the Engineer.

### 3.10 ANTIDESSICANT SPRAYING

- A. Spray anti-desiccants as directed by the manufacturer's recommendation and as approved by the Engineer.

### 3.11 TAGS AND LABELS

- A. Leave all tree tag and label seals unbroken and visible on plant material until final inspection. Remove all seals immediately after final inspection.

### 3.12 MAINTENANCE

- A. Contractor is responsible for protection and maintenance of all work prior to final acceptance. No plants will be accepted unless they show a healthy growth and satisfactory condition.
- B. Maintenance work for all plantings shall be as listed in Section 1.08.

### 3.13 PLANT REPLACEMENT GUARANTEE

- A. Guarantee that upon Final Acceptance tree, shrub and groundcover planting conforms to requirements of contract documents and that all plants except transplant materials are healthy and will remain so for a period of one year. Such period shall commence with date of final acceptance.
- B. At any time within period of guarantee, Contractor shall replace any planting which for any reason, other than vandalism, has died or is in a dying condition, or which has failed to



flourish in such a manner or to such a degree that its usefulness or appearance has been impaired.

- C. The Engineer will not maintain plantings until after guarantee period. Contractor shall not have any claim that materials have failed to flourish as a result of Engineer's maintenance operations, or lack of maintenance, and shall abide by terms stated herein for guarantee and replacement of plant materials.
- D. Decision of the Engineer as to necessity to replace any plant materials or repair any defects on workmanship, or cause of any destruction or loss, impairment or failure to flourish, shall be conclusive and binding upon Contractor. Replacements shall be of same species and size as specified on Plant List. All plant replacements shall be inspected, sealed, furnished, planted and mulched as specified herein at Contractor's expense.
- E. "Vandalism," is intended to mean any acts, whether intentional or accidental, by other persons occurring following final acceptance, which clearly result in breakage or other damage to individual plants or plant beds, and which may reasonable be considered to be beyond Contractor's reasonable control, as determined by the Engineer.

END OF SECTION

**SECTION 03100**  
**CONCRETE FORMWORK**

**PART 1 - GENERAL**

1.01 SUMMARY

A. Section Includes

1. Requirements for forms to be used for all concrete masonry including footings, except as otherwise permitted.

B. Related Sections

1. Section 03200 - Concrete Reinforcement.
2. Section 03300 - Cast-In-Place Concrete.

1.02 REFERENCES

A. American Concrete Institute (ACI)

1. ACI 318, Building Code Requirements for Structural Concrete.
2. ACI 347R, Guide to Formwork for Concrete.

1.03 SUBMITTALS

A. Submit in accordance with Section 01300.

B. Shop Drawings:

1. Layout of panel joints, tie hole pattern, and form liners.
2. Form Ties - Tapered Through-Bolts: Proposed method of sealing form tie hole; coordinate with details shown.

C. Samples: One each as follows:

1. Form liners.
2. Form ties.

D. Quality Control Submittals:

1. Statements of qualifications for formwork designer.
2. Manufacturer's Certificate of Proper Installation. (After installation)

1.04 QUALITY ASSURANCE

- A. Qualifications: Formwork, falsework, and shoring designs prepared by an engineer licensed in the State of **Rhode Island**.

## **PART 2 - PRODUCTS**

### **2.01 FORM MATERIALS**

- A. Surfaces to be given formliner finish.
  - 1. Form surface in contact with the concrete shall be made shall be formed using Fitzgerald Formliners Pattern No. 16983 as manufactured by Fitzgerald Formliners, 1500 E. Chestnut Avenue, Santa Ana, CA 92701, phone 714-547-6710 or approved equal.
- B. Surfaces to be given burlap-rubbed finish.
  - 1. Form surface in contact with the concrete shall be made of heavy gage metal, new plywood (used plywood which, in the opinion of the Engineer, is substantially equal to new plywood may be used), tempered wood fiberboards with smooth surface, or similar materials.
  - 2. Metal forms or form linings shall have square edges so that the concrete will not have fins or fluting. Joints between form panels shall be well fitted so as to be tight and result in substantially flush concrete surfaces on opposite sides of the joints.
  - 3. Forms shall not be pieced out by use of materials different from those in the adjacent form or in such manner as will detract from the uniformity of the finished surface.
- C. Surfaces other than those to be given burlap-rubbed finish.
  - 1. Forms shall be made of wood, metal, or other acceptable material. Wooden forms shall be constructed of sound lumber or plywood of suitable dimensions, free from knotholes and loose knots. Plywood shall be reasonable good, as accepted. Metal forms shall be of an acceptable type for the work involved. Edges of forms in contact with concrete shall be flush within 1/16 in.
- D. Forms shall be of suitable material, design, and construction as to be rigid, tight enough to prevent the passage of mortar, and plane surfaces shall be plane within 1/16 in. in 4 ft. Particular care shall be taken to ensure that forms are true to line where deviations in the concrete would be obvious or objectionable, as where building superstructures are to be built thereon, or where the tops of walls are exposed. All such deviations which may occur shall be corrected by, and at the expense of the contractor, as directed, even to the extent of tearing down and rebuilding the concrete.
- E. Forms for walls, columns, or piers shall have removable panels at the bottom for cleaning, inspection, and scrubbing-in of bonding grout. Forms for thin sections (such as walls or columns) of considerable height shall be arranged with suitable openings so that the concrete can be placed in a manner that will prevent segregation and accumulations of hardened concrete on the forms or reinforcement above the fresh concrete, unless special spouts are used to place concrete, and so that construction joints can be properly keyed and treated.

- F. Forms shall be sufficiently rigid to prevent displacement or sagging between supports, and so constructed that the concrete will not be damaged by their removal. The Contractor shall be entirely responsible for their adequacy.
- G. All Other Forms: Materials as specified for wall forms.
- H. Form Sealer:
  - 1. Material: Surface sealer will not bond with, stain, or adversely affect concrete surfaces, and will not impair subsequent treatments of concrete surfaces, when applied to most forms of form liners. A ready-to-use water based material formulated to reduce or eliminate surface imperfections, containing no mineral oil or organic solvents. Environmentally safe, meeting local, state, and federal regulations and can be used in clean water treatment plants.
  - 2. Manufacturer and Product: Master Builders, Inc.; Rheofinish; or Equal.
- I. Rustication Grooves and Beveled Edge Corner Strips: Nonabsorbent material, compatible with form surface, fully sealed on all sides prohibiting loss of paste or water between the two surfaces. Match the rustication grooves with the existing configuration and style located at the plant.

## 2.02 FORM TIES

- A. Form ties to be encased in concrete shall not be made of through-bolts or common wire, but shall be of a well-established type, so made and installed as to embody the following features:
  - 1. After removal of the protruding part of the tie, there shall be no metal nearer than 1 in. to the face of the concrete.
  - 2. The part of the tie which is to be removed shall be at least 1/2 in. in diameter, or if smaller, it shall be provided with a wood or metal cone 1 in. long placed against the inside of the forms. cones shall be carefully removed from the concrete after the forms have been stripped.
  - 3. Ties which pass through walls subject to hydrostatic pressure shall be provided with acceptable water stops, such as washers, securely fastened to the ties.
- B. Form Ties:
  - 1. Material: Steel.
  - 2. Spreader Inserts.
    - a. Conical or spherical type.
    - b. Design to maintain positive contact with forming material.
    - c. Furnish units that will leave no metal closer than 1 inch to concrete surface when forms, inserts, and tie ends are removed.
  - 3. Wire ties not permitted.
  - 4. Flat bar ties for panel forms, furnish plastic or rubber inserts with minimum 1 inch depth and sufficient dimensions to permit patching of tie hole.
  - 5. Water Stop Ties: For water-holding structures, basements, pipe galleries, and accessible spaces below finish grade, furnish one of the following:
    - a. Integral steel water stop 0.103-inch thick and 0.625 inch in diameter tightly

- and continuously welded to tie.
- b. Neoprene water stop 3/16-inch thick and 15/16 inch in diameter whose center hole is 1/2 diameter of tie, or a molded plastic water stop of comparable size.
- c. Water Stop: Oriented perpendicular to tie and symmetrical about center of tie.
- d. Design ties to prevent rotation or disturbance of center portion of tie during removal of ends and to prevent water leaking along tie.
- 6. Through-Bolts: Tapered minimum 1-inch diameter at smallest end.
- 7. Elastic Vinyl Plug: Design and size of plug to allow insertion with tool to enable plug to elongate and return to original length, and diameter upon removal forming a watertight seal.
  - a. Manufacturer and Product: Dayton Superior Co., Miamisburg, OH; Dayton Sure Plug, or equal.

### **PART 3 - EXECUTION**

#### **3.01 SYSTEM DESIGN REQUIREMENTS**

- A. Design formwork in accordance with ACI 347R and ACI 318 to provide the concrete finishes specified in Section 03300, CAST-IN-PLACE CONCRETE.
- B. Make joints in forms watertight.
- C. Limit panel deflection to 1/360 of each component span to achieve tolerances specified.

#### **3.02 ERECTION**

- A. General: Unless specified otherwise, follow the applicable recommendations of ACI347R.
- B. Forms shall be so constructed and placed that the resulting concrete will be of the shape, lines, dimensions, and to the elevations indicated on the drawings or specified, and exposed concrete will be substantially free from board or grain marks, poorly matched joints, and other irregularities or defects.
- C. Beveled Edges (Chamfer):
  - 1. Form 3/4-inch bevels at concrete edges, unless otherwise shown.
  - 2. Where beveled edges on existing adjacent structures are other than 3/4-inch, obtain ENGINEER's approval of size prior to placement of beveled edge.
- D. Wall Forms:
  - 1. Do not reuse forms with damaged surfaces.
  - 2. Locate form ties and joints in an uninterrupted pattern for smooth and uniform surface.

3. Inspect form surfaces prior to installation to assure conformance with specified tolerances.
- E. Forms for Curbs, Sidewalks, and Driveways:
  1. Provide standard steel or wood forms to prevent movement.
  2. Set forms to true lines and grades, and securely stake in position.
- F. Form Tolerances: Provide forms in accordance with ACI 347R and ACI 318 and the following tolerances for finishes specified:
  1. Wall Tolerances:
    - a. Straight Vertical or Horizontal Wall Surface: Flat planes within tolerance specified.
    - b. Plumb within 1/4-inch to 10-feet.
    - c. Depressions in Wall Surface: Maximum 5/16-inch when 10-foot straightedge is placed on high points in all directions.
    - d. Thicknesses: Maximum 1/4-inch minus or 1/2-inch plus from dimensions shown.
  2. Slab Tolerances:
    - a. Exposed Slab Surfaces: Comprise of flat planes as required within tolerances specified.
    - b. Slab Finish Tolerances and Slope Tolerances: Crowns on floor surface not too high as to prevent 10-foot straight edge from resting on end blocks, nor low spots that allow a block of twice the tolerance in thickness to pass under the supported 10-foot straightedge.
    - c. Steel gauge block 5/16-inch thick.
    - d. Slab drainage.
      - 1) Finish Slab Elevation: Slope slabs to floor drain and gutter, and shall adequately drain regardless of tolerances.
      - 2) Thickness: Maximum 1/4-inch minus or 1/2-inch plus from thickness shown, except where thickness tolerance will not affect slope, drainage, or slab elevation.

### 3.03 FORM SURFACE PREPARATION

- A. Thoroughly clean form surfaces in contact with concrete or previous concrete, dirt,
- B. Exposed Wood Forms in Contact with Concrete: Apply form sealer as recommended by the sealer material manufacturer.
- C. Steel Forms: Apply form sealer to steel forms as soon as they are cleaned to prevent discoloration of concrete from rust.

### 3.04 FORM COATINGS

- A. All forms shall be oiled with an acceptable nonstaining oil or liquid form coating before reinforcement is placed.

- B. Before form material is reused, all surfaces that are in contact with the concrete shall be thoroughly cleaned, all damaged pieces repaired, and all projecting nails withdrawn.

### 3.05 REMOVAL OF FORMS

- A. Except as otherwise specifically authorized by the Engineer, forms shall not be removed until the concrete has aged for the following number of day-degrees\*:
  - 1. Formwork not supporting weight of concrete, (i.e., sides of beams, walls, columns, and similar parts of the Work) may be removed after cumulatively curing at not less than a total of three 50-degree F days after placing concrete, provided concrete is sufficiently hard to not be damaged by form-removal operations, and provided curing protection operations are maintained.
  - 2. Leave forms and shoring for elevated structural slabs or beams in place, in accordance with ACI 318, Chapter 6, and until concrete has reached compressive strength equal to 80 percent of the specified 28-day compressive strength as determined by test cylinders.
  - 3. \*Day-degree: total number of days times average daily air temperature at surface of concrete. For example, 5 days at a daily average temperature of 60 deg. F. equals 300 day-degrees.

### 3.06 MANUFACTURER'S SERVICES

- A. Provide form manufacturer's representative at site for installation assistance, and inspection.

**END OF SECTION**

**SECTION 03200**

**CONCRETE REINFORCEMENT**

**PART 1 - GENERAL**

**1.01 SUMMARY**

- A. Section Includes
  - 1. Requirements for reinforcing steel bars, wire fabric and accessories as shown on the drawings, specified herein, and as needed for a complete and proper installation.
- B. Related Sections
  - 1. Section 03100 - Concrete Formwork.
  - 2. Section 03300 - Cast-In-Place Concrete.

**1.02 REFERENCES**

- A. American Society for Testing and Materials (ASTM).
  - 1. A82, Specification for Steel Wire, Plain for Concrete Reinforcement.
  - 2. A185, Specification for Steel Welded Wire Fabric, Plain, for Concrete Reinforcement.
  - 3. A497, Specification for Steel Welded Wire Fabric, Deformed, for Concrete Reinforcement.
  - 4. A615, Specification for Deformed and Plain Billet Steel Bars for Concrete Reinforcement.
  - 5. A706, Specification for Low-Alloy Steel Deformed Bars for Concrete Reinforcement.
  - 6. A775, Specification for Epoxy-Coated Reinforcing Steel Bars.
- B. American Concrete Institute (ACI).
  - 1. ACI 318, Building Code Requirements for Structural Concrete.

**1.03 SUBMITTALS**

- A. In accordance with Section 01300 submit cutting and bending drawings and schedules for all reinforcement to be furnished.
- B. Shop Drawings:
  - 1. Prepare in accordance with Concrete Reinforcing Steel Institute (CRSI) Manual of Standard Practice and ACI SP-66 Detailing Manual:
    - a. Bending lists.
    - b. Placing drawings.
  - 2. Welded splice, Cadweld splice, and mechanical threaded splice.
- C. Quality Control Submittals:
  - 1. Lab test reports for reinforcing steel showing stress-strain curves and ultimate strengths.



2. Mechanical Threaded Connections:
  - a. Current International Conference of Building Officials (ICBO) Research Report or equivalent code agency report listing findings to include acceptance, special inspection requirements, and restrictions.
  - b. Manufacturer's instructions.
  - c. Verification that device threads have been checked and meet all requirements for thread quality, in accordance with manufacturer's published methods.
3. Epoxy-Coated Reinforcing Bars: Written certification in accordance with paragraph 4.2.1 of ASTM A775.
4. Welding Qualification: Prior to welding, submit welder qualifications and radiographic nondestructive testing procedures.

#### 1.04 QUALITY ASSURANCE

- A. The steel shall be newly rolled stock substantially free from mill scale, rust, dirt, oil, grease, or other foreign matter. Bars shall be of billet steel and, unless otherwise indicated, shall be Grade 60 bars.
- B. Billet steel bars shall conform to ASTM A 615.
- C. All bars shall be rolled by an acceptable mill. The Contractor shall submit at his own expense certified copies of tests of the bars furnished. The tests shall be as specified in the appropriate ASTM Specification referred to above and shall be made by an acceptable laboratory.
- D. Welder Qualifications: Certified in accordance with AWS D1.4-79.

#### 1.05 DELIVERY, STORAGE, AND HANDLING

- A. Unload, store, and handle bars in accordance with CRSI publication "Placing Reinforcing Bars."
- B. Coated Bars:
  1. Protect epoxy-coated bars contact areas from handling equipment.
  2. Lift bundles of coated bars at multiple pickup points to minimize bar-to-bar abrasion from sags in bundles.
  3. Do not drop or drag coated bars or bundles of coated bars.
  4. Store coated bars on protective cribbing.
  5. Color fading of coating is not cause for rejection of epoxy-coated reinforcing bars.

## PART 2 - PRODUCTS

#### 2.01 MATERIALS

- A. Deformed Billet-Steel Reinforcing Bars:
  1. Includes stirrups, ties, and spirals.

2. ASTM A615, Grade 60, including Supplemental Requirements S1 where welding is not required.
  3. ASTM A706, Grade 60, including Supplemental Requirements for reinforcing to be welded.
- B. Splices and Mechanical Connections:
1. Metal Sleeve: Furnish with cast filler metal, capable of developing, in tension or compression, 125 percent of minimum tensile strength of the bar.
  2. Mechanical Threaded Connections: Furnish metal coupling sleeve for splicing reinforcing in secondary members or in areas of low stress with internal threads engaging threaded ends of bars developing in tension or compression 125 percent of yield strength of bar.
    - a. Manufacturers and Products:
      - 1) Erico Products, Inc., Cleveland, OH; Lenton Reinforcing Steel Couplers.
      - 2) Richmond Screw Anchor Co., Inc. Fort Worth, TX; Richmond DB-SAE Dowel Bar Splicers.
      - 3) Or equal.
- C. Epoxy-Coated Reinforcing Bars: ASTM A775, deformed bars, with bond strength not less than 80 percent of uncoated bars.
- D. Welded Wire Fabric:
1. ASTM A185, or A497, and ACI 318/318R, using ASTM A82, wire of 75 ksi minimum tensile strength.
  2. Furnish flat sheets only, rolled sheets not permitted.
- E. Reinforcement shall be accurately formed to the dimensions indicated on the drawings. Stirrups and tie bars shall be bent around a pin having a diameter not less than two times the minimum thickness of the bar. Bends for other bars shall be made around a pin having a diameter not less than six times the minimum thickness except for bars larger than 1 in., in which case the bends shall be made around a pin of eight bar diameters. All bars shall be bent cold.
- F. Bars shall be shipped to the work with bars of the same size and shape fastened in bundles with securely wired-on metal identification tags giving size and mark.
- G. Deformations on bars for concrete reinforcement shall conform to the requirements of the above-mentioned ASTM Specifications.

## 2.02 ACCESSORY MATERIALS

- A. Tie Wire:
1. Black, soft-annealed 16-gauge wire.
  2. Nylon-, epoxy-, or plastic-coated wire.
- B. Bar Supports and Spacers:
1. Precast concrete bar supports, cementitious fiber-reinforced bar supports, or all-plastic

bar supports and side form spacers meeting the requirements of CRSI Manual of

Standard Practice. Do not use other types of supports or spacers.

2. In Beams, Columns, Walls, and Slabs Exposed to View After Stripping: Small rectangular concrete blocks made up of same color and strength as concrete being placed around them or all-plastic bar supports and side form spacers.
  3. Use supports made of dielectric material for epoxy-coated reinforcing bars supported from formwork.
  4. If epoxy-coated reinforcing is used, furnish epoxy-coated reinforcing bars for spreader bars.
  5. Precast concrete supports of same strength as concrete for reinforcing in concrete placed on grade.
- C. Welded steel wire fabric shall conform to the ASTM A 185. The gage and spacing of wires shall be as indicated on the drawings.
- D. Soffit Clips: Made galvanized steel wire not lighter than No. 12 Stl. W.C. They shall be shaped so that the greater portion of the wire is held about 1 in. from the flange of the steel beam, and shall be spaced not less than 9 in. on centers, the spacing being maintained by suitable longitudinal wires.

## 2.03 FABRICATION

- A. Follow CRSI Manual of Standard Practice.
- B. Bend all bars cold.

## PART 3 - EXECUTION

### 3.01 PREPARATION

- A. Notify ENGINEER when reinforcing is ready for inspection and allow sufficient time for inspection prior to placing concrete.
- B. Repair epoxy coating damaged due to handling, shipment, and placing. Repair with patching material in accordance with ASTM A775, and manufacturer's recommendations.
- C. Clean metal reinforcement of loose mill scale, oil, earth, and other contaminants.
- D. Coat wire projecting from precast concrete bar supports with dielectric material, epoxy, or plastic.
- E. Before being placed in position, reinforcement shall be thoroughly cleaned of loose mill and rust scale, dirt, and other coatings, including ice, that tend to interfere with development of proper bond. Where there is delay in depositing concrete after reinforcement is in place, bars shall be reinspected and cleaned when necessary.

- F. Reinforcement which is to be exposed for a considerable length of time after having been placed shall be painted with a heavy coat of cement grout, if required.

### 3.02 Reinforcing Bar Installation

- A. Bundle or space bars, instead of bending where construction access through reinforcing is necessary.
- B. Spacing and Positioning: Conform to ACI 318/318R.
- C. Location Tolerances: In accordance with CRSI publication, "Placing Reinforcing Bars".
- D. Splicing:
  - 1. Follow ACI 318/318R.
  - 2. Use lap splices unless otherwise shown or permitted in writing by ENGINEER.
  - 3. Welded Splices: Accomplish by full penetration groove welds and develop at least 125 percent of yield strength of bar.
  - 4. Stagger splices in adjacent bars.
  - 5. Metal sleeves may be used.
- E. Mechanical Splices and Connections:
  - 1. Use only in areas specifically approved in writing by the ENGINEER.
  - 2. Install as required by manufacturer with threads tightened and in accordance with ICBO Research Report.
  - 3. Maintain minimum edge distance and concrete cover.
- F. Tying Deformed Reinforcing Bars:
  - 1. Tie every other intersection on mats made up of Nos. 3, 4, 5, and 6 bars to hold them firmly at required spacing.
  - 2. Bend all noncoated tie wire to prevent tie wire from being closer than 1 inch from the surface of concrete.
  - 3. Epoxy-Coated Bars:
    - a. Use epoxy-coated or nonmetallic clips.
    - b. Repair coating damage at clipped or welded intersection.
- G. Reinforcement Around Openings: Place an equivalent area of steel bars or fabric around pipe or opening and extend as shown, on each side sufficiently to develop bond with each bar. See drawing details.
- H. Welding Reinforcement:
  - 1. Only A706/A706M bars may be welded.
  - 2. Do not perform welding until welder qualifications are approved.
  - 3. Provide suitable ventilation when welding epoxy-coated reinforcing bars.
  - 4. After completion of welding on epoxy-coated reinforcing bars, repair coating damage, welds, and steel splice members with same material as used for repair of coating damage.

- I. Straightening and Rebending: Field bending of reinforcing steel bars is not permitted.
- J. Unless permitted by Engineer, do not cut reinforcing bars in the field. When epoxy-coated reinforcing bars are cut in the field, coat ends of bars with same material used for repair of coating damage.
- K. Reinforcement shall be accurately positioned as indicated on the drawings, and secured against displacement by using annealed iron wire ties or suitable clips at intersections. Concrete blocks having a minimum bearing area of 2 in. by 2 in., and equal in quality to that specified for the slab, shall be used for supporting reinforcing bars for slabs on grade. Where the underside of slabs will be exposed to view in the finished work, stainless-steel supports shall be used
- L. Furnish and place all concrete reinforcement as indicated on the drawings and as herein specified. Concrete reinforcement in sizes No. 3 (3/8 in.) and larger shall be deformed steel bars of the shapes and sizes indicated on the drawings.

### 3.03 WELDED WIRE FABRIC INSTALLATION

- A. Extend fabric to within 2 inches of edges of slab, and lap splices at least 1-1/2 courses of fabric or minimum 8 inches.
- B. Tie laps and splices securely at ends and at least every 24 inches with tie wire.
- C. Place welded wire fabric on concrete blocks at correct distance as shown, above bottom of slab and rigidly support equal to that provide for reinforced bars. Do not use broken concrete, brick, or stone.
- D. Follow ACI 318/318R and current Manual of Standard Practice, Welded Wire Fabric.
- E. Do not use fabric that has been rolled. Install flat sheets only.

### 3.04 TESTS AND INSPECTION

- A. Test 10 percent of all welds using radiographic, nondestructive testing procedures referenced in AWS D1.4-79.
- B. Inspect each splice and verify each component is in accordance with manufacturer's instructions and ICBO Research Report.

**END OF SECTION**

SECTION 03250

EXPANSION, CONSTRUCTION, AND CONTROL JOINTS

PART 1 GENERAL

1.01 SUMMARY

- A. Section Includes
  - 1. Requirements for making joints in concrete and masonry.
- B. Related Sections
  - 1. Section 03200 - Concrete Reinforcing
  - 2. Section 03300 - Cast-In-Place Concrete
  - 3. Section 03600 – Epoxy Grout
  - 4. Section 07900 - Joint Sealants

1.02 REFERENCES

- A. Army Corp. of Engineers.
  - 1. CRD-C-572, Specification for Polyvinyl chloride Waterstop.
- B. American Society for Testing and Materials (ASTM)
  - 1. A36, Specification for Carbon Structural Steel.
  - 2. D226, Specification for Asphalt-Saturated Organic Felt used in Roofing and Waterproofing.
  - 3. D227, Specification for Smooth-Surfaced Asphalt Roll Roofing and Waterproofing.
  - 4. D994, Specification for Preformed Expansion Joint Filler for Concrete (Bituminous Type).
  - 5. D1506, Specification for Flexible Cellular Materials-Sponge or Expanded Rubber.
  - 6. D1751, Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types).
- C. National Sanitation Foundation (NSF).
  - 1. 61-90,

1.03 SUBMITTALS

- A. Shop Drawings:
  - 1. Plastic Type Water Stops: Details of splices to be used and method of securing water stop in the forms and supporting water stop so as to maintain proper orientation and location during concrete placement.
  - 2. Construction Joints: Layout and location indicating type to be used.

3. Joint fillers for horizontal and sloped joints.
4. Preformed control joints.
5. Water stop.

C. Quality Control Submittals:

1. Water stop manufacturer's written instructions for product shipment, storage, handling, installation field splices, and repair.
2. Joint filler and primer. Manufacturer's written instructions for product shipment, storage, handling, application and repair.
3. Preformed Control Joint: Manufacturer's written instructions for product shipment, storage, handling, application, and repair.

#### 1.04 QUALITY ASSURANCE

- A. Regulatory Requirements: Acceptance of pourable joint filler for potable water structures by federal EPA or by a state health agency.
1. Pourable Joint Filler: Certified as meeting NSF 61-90.

#### 1.05 DELIVERY, STORAGE AND HANDLING

- A. Acceptance at Site: Verify that water stops delivered are in accordance with cross-section dimensions as shown and manufacturer's product data prior to unloading and storing on site.

### PART 2 PRODUCTS

#### 2.01 PLASTIC WATER STOP

- A. Extruded from an elastomeric plastic compound of which the basic resin shall be polyvinyl chloride (PVC). Reclaimed PVC in the compound is not acceptable.
- B. Specific Gravity: Approximately 1.37.
- C. Shore Durometer Type A Hardness: Approximately 80.
- D. Performance Requirements: Corps of Engineers' Specification CRD-C-572.
- E. Type: Center bulb with a number of parallel ribs or protrusions on each side of strip center.
- F. Corrugated or tapered type water stops are not acceptable.
- G. Thickness: Constant from bulb edge to the outside stop edge.
- H. Minimum Weight per Foot of Water Stop:
1. 1.62 pounds for 3/8 inch by 6 inch.
- I. Manufacturers and Catalog Numbers:

### EXPANSION, CONSTRUCTION, AND CONTROL JOINTS

1. Vulcan Metal Products, Inc., Construction Materials Division, Birmingham, AL; Catalog No. 3/81-15M: Type 8069 (6 inch by 3/8 inch).
2. Vinylex Corp., Knoxville, TN; Catalog No. 03250/VIN (1987): No. RB6-38H (6 inch by 3/8 inch).
3. Greenstreak Plastic Products, St. Louis, MO; Catalog No. 03250/GRD (1987): Style 732 (6 inch by 3/8 inch).
4. A.C. Horn, Inc., Beltsville, MD; Catalog No. CSP-162 (1987): Type 9 (6 inch by 3/8 inch).

## 2.02 WIRE LOOPED PLASTIC WATER STOP

- A. Furnish as an alternative to plastic water stops.
- B. Same material and geometry as plastic water stops.
- C. Furnish with continuous galvanized wire looping at edge for convenience in positioning and securing stop in place in the forms.
- D. Manufacturers and Catalog Numbers:
  1. Paul Murphy Plastics, Roseville, MI; "Wire Stop Water Stop"; geometry numbers ACR 6380, ACR 9380, as shown on Paul Murphy Plastics Co. Drawing No. CCP-120-12M dated 12-89.
  2. Or equal.

## 2.04 PREMOLEDDED JOINT FILLER

- A. Bituminous Type: ASTM D994 or D1751.
- B. Sponge Rubber: Neoprene, closed-cell, expanded; ASTM D1056-85, Type 2C5, with a compression deflection, 25 percent deflection (limits), 119 to 168 kPa (17 to 24 psi) minimum.
  1. Manufacturer and Product:
    - a. Rubatex Corp.; R451N
    - b. Or equal.

## 2.05 PREFORMED CONTROL JOINT

- A. One-Piece, Flexible, Polyvinyl Chloride Joint Former:
  1. Manufacturer and Product:
    - a. Vinylex Corp., Knoxville, TN; Kold-Seal Zip-Per Strip KSF-150-50-50.
    - b. Or equal.
- B. One-Piece Steel Strip with Preformed Groove:
  1. Manufacturer and Product:
    - a. Burke Concrete Accessories, Inc., San Mateo, CA; Keyed Kold Retained Kap.
    - b. Or equal.
- C. Furnish in full-length, unspliced pieces.



## 2.06 POURABLE JOINT FILLERS

- A. Filler for Nonpotable Water Structure:
  - 1. Specific Gravity: Greater than 1.0 for cured, in-place filler.
  - 2. Sloped Joints: Furnish Gun Grade material that will remain as placed in joints and will not run down slope.
  - 3. Manufacturers and Products:
    - a. W.R. Meadows, Inc., Elgin, IL: No. 164 Polymeric sealing compound, hot-pour, or Hi-Spec Polymeric joint sealing, hot-pour compound; or
    - b. A.C. Horn, Inc., North Bergen, NJ: No-Track two-component material (Code 2323), cold-applied, self-leveling filler; or
    - c. W.R. Meadows, Elgin, IL: Gardox, two-component, cold-applied compound filler.

## 2.08 ACCESSORIES

- A. Joint Sealants: As specified in SECTION 07900.
- B. Nonshrink Grout:
  - 1. As specified in SECTION 03600.
  - 2. Compatible with joint sealant.
- C. Reinforcing Steel: As specified in SECTION 03200.

## PART 3 EXECUTION

### 3.01 GENERAL

- A. Construct straight joints; make vertical or horizontal, except where walls intersect sloping floors.
- B. Commence concrete placement after the joint preparation is complete.
- C. Time Between Concrete Pours: As specified in SECTION 03300.

### 3.02 SURFACE PREPARATION

- A. Construction Joints: Prior to placement of abutting concrete, clean contact surface:
  - 1. Remove laitance and spillage from reinforcing steel and dowels.
  - 2. Roughen surface to a minimum of 1/4-inch amplitude:
    - a. Sandblast after the concrete has fully cured.
    - b. Water blast after the concrete has partially cured.
    - c. Green cut fresh concrete with high pressure water and hand tools.
  - 3. Perform cleaning so as not to damage water stop, if one is present.
- B. Expansion Joint with Pourable Filler:
  - 1. Use motorized wire brush or other motorized device to mechanically roughen and thoroughly clean concrete surfaces on each side of joint from plastic water stop to the top of the joint.

2. Use clean and dry high pressure air to remove dust and foreign material, and dry joint.
  3. Prime surfaces before placing joint filler.
  4. Avoid damage to water stop.
- C. Expansion Joint without Pourable Filler:
1. Coat concrete surfaces above and below plastic water stop with bond breaker.
  2. Do not damage water stop.
- D. Control Joint:
1. Coat concrete surfaces above and below plastic water stop with bond breaker.
  2. Do not damage water stop.
  3. Furnish correct type and size of reinforcing and dowels.

### 3.03 INSTALLATION OF WATER STOPS

- A. General:
1. Join water stops at intersections to provide continuous seal.
  2. Center water stop on joint.
  3. Secure water stop in correct position to avoid displacement during concrete placement.
  4. Repair or replace damaged water stop.
  5. Place concrete and vibrate to obtain impervious concrete in the vicinity of all joints.
  6. Joints in Footings and Slabs:
    - a. Ensure that space beneath plastic water stop is completely filled with concrete.
    - b. During concrete placement, make a visual inspection of the entire water stop area.
    - c. Limit concrete placement to elevation of water stop in first pass, vibrate the concrete under the water stop, lift the water stop to confirm full consolidation without voids, then place remaining concrete to full height of slab.
    - d. Apply procedure to full length of plastic water stops.
- B. Plastic Water Stop:
1. Install in accordance with manufacturer's written instructions.
  2. Splice in accordance with the water stop manufacturer's written instructions using a thermostatically controlled heating iron. Butt splice unless specifically detailed otherwise.
    - a. Allow at least 10 minutes before the new splice is pulled or strained in any way.
    - b. Finished splices shall provide a cross-section that is dense and free of porosity with tensile strength of not less than 80 percent of the unspliced materials.
  3. Wire looped plastic water stop may be substituted for plastic water stop.

### 3.04 EXPANSION JOINT INSTALLATION

A. General:

1. Place bond breaker above and below water stop when premolded joint filler and pourable joint filler is not used.
2. Premolded Joint Filler:
  - a. Sufficient in width to completely fill the joint space where shown.
  - b. If a water stop is in the joint, cut premolded joint filler to butt tightly against the water stop and the side forms.
3. Precut premolded joint filler to the required depth at locations where joint filler or sealant is to be applied.
4. Form cavities for joint filler with either precut, premolded joint filler, or smooth removable accurately shaped material. Entire joint above water stop, in slabs, shall be formed and removed so that entire space down to water stop can be filled with the pourable joint filler.
5. Vibrate concrete thoroughly along the joint form to produce a dense, smooth surface.

B. Bituminous Type Premolded Joint Filler:

1. Drive nails approximately 1 foot 6 inches on center through the filler, prior to installing, to provide anchorage embedment into the concrete during concrete placement.
2. Secure premolded joint filler in forms before concrete is placed.
3. Install in walkways, at changes in direction, at intersections, at each side of driveway entrances, and at 45-foot intervals, maximum.

C. Pourable Joint Filler:

1. General: Install in accordance with the manufacturer's written instructions, except as specified below:
  - a. Apply primer prior to pouring joint filler.
  - b. Fill entire joint above the water stop with joint filler as shown.
  - c. Use masking tape on top of slabs at sides of joints; clean spillage. Remove masking tape afterwards.
2. Rubber Asphalt Type, Hot-Applied:
  - a. Heat filler material in a double-walled boiler.
  - b. Place filler in the joint by means of a nozzle from a portable pouring type container to prevent spillage outside of the joint.
  - c. Begin pouring joint filler at the bottom of the horizontal joint and proceed upwards in a manner that will preclude the possibility of trapping air in the joint.
3. Rubber Asphalt Type, Cold-Applied: Place cold-applied two-component fillers in accordance with manufacturer's written instructions.
4. Multicomponent Type for Potable Water Structures: Install in accordance with manufacturer's written instructions.

D. Steel Expansion Joint Dowels:

1. Install coated and lubricated bars parallel to wall or slab surface and in true horizontal position perpendicular to the joint in both plan and section view, so as to permit joint to expand or contract without bending the dowels.
2. Secure dowels tightly in forms with rigid ties.
3. Install reinforcing steel in the concrete as shown to protect the concrete on each side of the dowels and to resist any forces created by joint movement.

### 3.05 CONTROL JOINT INSTALLATION

- A. Locate reinforcing and dowels as shown.
- B. Install PVC water stop.
- C. Concrete surfaces shall be dense and smooth.
- D. Install bond breaker to concrete surfaces above and below water stop.

### 3.06 PREFORMED CONTROL JOINTS

- A. Use only where specifically shown; do not use in water-holding basins.
- B. Locate flush, or slightly below the top of slab.
- C. Install in accordance with manufacturer's written instructions in straight, full-length un-spliced pieces.
- D. Steel Strip Type with Preformed Groove: Brace to withstand pressure of concrete during and after placement.

END OF SECTION

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**SECTION 03252**

**WATERSTOPS**

**PART 1 - GENERAL**

**1.01 SUMMARY**

- A. Section includes requirements for,
  - 1. Flexible PVC waterstops at construction, contraction, and expansion joints in new concrete construction as shown on the Contract Drawings.
  - 2. Hydrophilic rubber waterstops at construction joints between new and existing concrete, or where installation of center bulb-type waterstops is not possible.
  - 3. Preparation of existing concrete surfaces where hydrophilic rubber waterstops are to be installed.

**1.02 RELATED SECTIONS**

- A. Section 03250 – Expansion, Construction and Control Joints
- B. Section 03000 – Cast-In-Place Concrete

**1.03 REFERENCES**

- A. Except as noted, work shall conform to the latest edition of the following codes specifications and standards:
  - 1. American Society for Testing and Materials (ASTM)
  - 2. Army Corps of Engineers, "Specifications for Polyvinyl chloride Waterstop", CRD-C572-74

**1.04 SUBMITTALS**

- A. Submit shop drawings in accordance with Section 01300.
- B. Manufacturer's Data: for all types and sizes of waterstops, including but not limited to:
  - 1. Product data and material specifications
  - 2. Installation instructions
  - 3. Accessories including: crosses, tees, splices, fasteners and adhesives

**1.05 QUALITY ASSURANCE**

- A. Manufacturer Qualifications: shall demonstrate five years (minimum) continuous, successful experience in production of waterstops.
- B. Installer Qualifications: Qualified to perform work specified by reason of experience or training provided by the product manufacturer.

## 1.06 DELIVERY, STORAGE AND HANDLING

- A. Store Products in a location protected from dampness, damage, construction activity, dirt, and direct sunlight in strict accordance with the manufacturer's recommendations.

## PART 2 - PRODUCTS

### 2.01 MATERIALS

#### A. PVC Waterstop

1. Provide flexible PVC waterstop as detailed on the Contract Drawings.
2. The PVC waterstop shall be extruded from an elastomeric plastic material of which the basic resin is prime virgin polyvinyl chloride. The PVC compound shall not contain any scrapped or reclaimed material or pigment whatsoever.
3. Performance requirements are as follows:
  - a. Minimum Tensile Strength, 2000 psi
  - b. Specific Gravity, Approx. 1.4
  - c. Shore Durometer Type A Hardness, 65 to 80
4. Type: Center bulb with a number of parallel ribs or protrusions on each side of strip center.
5. Corrugated or tapered type waterstops are not acceptable.
6. Thickness: Constant from bulb edge to the outside stop edge.
7. Minimum Weight per Foot of Waterstop:
  - a. 1.62 pounds for 3/8 inch by 6 inch.
8. Manufacturers of Products:
  - a. Greenstreak, Inc., St. Louis, MO; Style 732 (3/8 inch by 6 inch).
  - b. Vinylex Corp., Knoxville, TN; No. RB6-38H (3/8 inch by 6 inch).
  - c. Vulcan Metal Products, Birmingham, AL; Type 8069 (3/8 inch by 6 inch).
  - d. Or approved equal.

### 2.02 ACCESSORIES

#### A. PVC Waterstop

1. Provide factory made waterstop fabrications for all changes in direction, intersections, and transitions leaving only straight butt joint splices for the field.
2. Provide hog rings or grommets spaced at 12 inches on center along the length of the waterstop.
3. Provide Teflon coated thermostatically controlled splicing irons for field butt splices.

## **PART 3 - EXECUTION**

### **3.01 INSTALLATION**

#### **A. PVC Waterstop**

1. Field butt splices shall be heat fused welded using a Teflon coated thermostatically controlled waterstop splicing iron at the manufacturer's recommended temperature. Follow approved manufacturer's installation procedures.
  - a. Lapping of waterstop, use of adhesives, or solvents shall not be allowed.
  - b. Allow at least 10 minutes before the new splice is pulled or strained in any way.
  - c. Finished splices shall provide a cross-section that is dense and free of porosity.
2. Center waterstop in joint and secure waterstop in correct position using hog rings or grommets at 12 inches on center along the length of the waterstop and wire tie to adjacent reinforcing steel. In no case shall the waterstop be bent over inside the keyways.
3. Place concrete and vibrate to obtain impervious concrete in the vicinity of the waterstop area.
4. Joints in footings and slabs:
  - a. Ensure that the space beneath PVC waterstop is completely filled with concrete.
  - b. During concrete placement, make a visual inspection of the entire waterstop area.
  - c. Limit concrete placement to elevation of waterstop in first pass, vibrate the concrete under the waterstop, lift the waterstop to confirm full consolidation without voids, then place remaining concrete to full height of slab.
  - d. Apply procedure to full height of PVC waterstops. Follow similar procedures for joints in walls.

### **3.02 FIELD QUALITY CONTROL**

- A. Waterstop splicing defects which are unacceptable include, but are not limited to the following:
1. Tensile strength that is less than 80 percent of parent section.
  2. Misalignment of center bulbs, ribs, and end bulbs greater than 1/16 inch.
  3. Bond failure at joint deeper than 1/16 inch or 15 percent of material thickness.
  4. Misalignment that reduces waterstop cross section more than 15 percent.
  5. Visible porosity in the weld.
  6. Bubbles or inadequate bonding.
  7. Visible signs of splice separation when cooled splice is bent by hand at a sharp angle.
  8. Charred or burnt material.



9. Inadequate or incomplete bond between hydrophilic rubber waterstop and concrete surface.

**END OF SECTION**

**SECTION 03300**

**CAST-IN-PLACE CONCRETE**

**PART 1 - GENERAL**

- 1.1 SECTION INCLUDES
  - A. Formwork, shoring, bracing, and anchorage
  - B. Concrete reinforcement and accessories
  - C. Cement Concrete Sidewalk – Type A and Type B
  - D. Cement Concrete Seat Wall W-1
- 1.2 QUALITY ASSURANCE
  - A. Perform work in accordance with ACI 301, ACI 318 and ACI 350R as modified here-in.
- 1.3 SUBMITTALS
  - A. Submit Concrete Mix designs including past field performance test results.

**PART 2 - PRODUCTS**

- 2.1 CEMENT CONCRETE SIDEWALK – TYPE A
  - A. Cement Concrete Sidewalk – Type A shall be an exposed aggregate finish. See 02535 Concrete Sidewalk Finishes.
- 2.2 CEMENT CONCRETE SIDEWALK – TYPE B
  - A. Cement Concrete Sidewalk – Type B shall be a broom finish. See 02535 Concrete Sidewalk Finishes.
- 2.3 FORM MATERIALS
  - A. Plywood: APA, B-B Ply-form Class I exterior.
  - B. Lumber: Southern pine, No. 2 grade or equal.
  - C. Steel: Minimum 16 ga. sheet, well matched, tight fitting, stiffened to resist loads without excess deflection.
  - D. Form Liner: Plywood conforming to PS-1, Grade B-B exterior (concrete form) not less than 1/4 inch thick.
  - E. Architectural Form Liner: The face of Concrete Wall W-1 shall be formed using Fitzgerald Formliners Pattern No. 16991 – Medium Sandblast as manufactured by Fitzgerald Formliners, 1500 E. Chestnut Avenue, Santa Ana, CA 92701, phone 714-547-6710 or approved equal.
  - F. Form Ties: Factory fabricated assembly providing at least 1.5 inch break back dimension with at least a 1 inch diameter conical wood or plastic cones to leave a uniform hole for patching. Single rod ties require a tightly fitted waterstop washer at the mid point. Multi rod ties do not require washers.

- G. Conform to ACI 301 and ACI 347

## 2.2 REINFORCING STEEL

- A. Bars: ASTM A615 Grade 60; deformed new materials; ASTM A706 for bars to be welded.
- B. Welded wire fabric: ASTM A185
- C. Tie wire: ASTM A82, annealed, Epoxy coated for Epoxy-coated reinforcing.
- D. Bolsters, chairs and supports: plastic coated, stainless steel, or epoxy coated.

## 2.3 FABRICATION OF REINFORCING STEEL

- A. Conform to CRSI Code of Standard Practice-Fabrication.
- B. Cold bend bars.
- C. Bend bars around revolving collar of recommended size.

## 2.4 CONCRETE MATERIALS

- A. Portland cement: ASTM C150; Type II. Tricalcium Aluminate (C<sub>3</sub>A) content in cement less than 8%. Cement shall be furnished from one source during the project.
- B. Aggregates:
  - 1. Fine aggregate shall consist of washed inert natural sand conforming to the requirements of ASTM Specification C-33, and the following requirements:

Sieve	Percent Passing
No. 4	95 to 100
8	80 to 100
16	50 to 85
30	24 to 60
50	5 to 30
100	0 to 10

Fineness Modulus 2.6 to 3.0

- 2. Coarse aggregate shall consist of a well graded crushed stone or a washed gravel conforming to the requirements of ASTM Specification C-33.
- C. Water: potable from municipal water supply or equal.
- D. Admixtures: All from one common manufacturer.

## 2.5 ADMIXTURES

- A. Low Range Water Reducer: Pozzolith 122-N by Master Builders; WRDA with HYCOL by Grace Construction Products Division; or equal meeting ASTM C494 Type A
- B. High Range Water Reducer (superplasticiser): Rheobuild 1000 by Master Builders; Daracem 100 by W.R. Grace; or equal meeting ASTM C494 type F.
- C. Air entraining agent: Micro-Air by Master Builders, DAREX 11 AEA by Grace Construction Products; or equal meeting ASTM C260.
- D. Non-corrosive non-chloride accelerator: Pozzutec 20 by Master Builders; or equal meeting ASTM C494 type C or E.
- E. Not permitted: Calcium chloride, thiocyanates or admixtures containing more than 0.05% chloride ions.

## CAST-IN-PLACE CONCRETE

## 2.6 ACCESSORIES

- A. Joint filler and slab perimeters: J-Joint polyethylene foam with tear off strip for sealant or approved equal; joint filler to be slab thickness in depth less 0.5 inch for sealant.
- B. Expansion joint filler: Self expanding cork by W.R. Meadows or W.R. Grace or equal size as indicated on the Drawings.
- C. Epoxy adhesive: Water based epoxy resin/portland cement bonding agent: Arimatec 110 by Sika corporation or equal.
- D. Bond Breaker: Thompson's Water Seal or equal, or form oil.
- E. High Impact Polystyrene Architectural lettering, size as indicated on the plans. Front shall be Times Roman. As manufactured by Fitzgerald Form liners or approved equal.

## 2.7 CONCRETE CLASS

- A. Slabs on grade: Class A
- B. Foundation footings and walls: Class B

## 2.8 CONCRETE

- A. Concrete proportioning shall conform to ACI 318, Chapter 5 except as modified below:

	Specified Strength Class (f' <sub>c</sub> )	Coarse Aggregate Size	% Air +(1.5%)	Min.- Max. Slump	Min.- Max. Cem.Fac.	High Range Max. W/C	Water Reducer
A	4000 PSI	No. 57 (1 ½")	6	4-6	564-620	0.42	Yes
B	3000 PSI	No. 67 (¾")	6	3-5	564-620	0.42	Yes

- B. The maximum slump as indicated in the above table will be as measured at the batch plant.
- C. Pumped Concrete: Conform to Chapter 4 - ACI 304.2
- D. High range water reducer shall be added on site to obtain 4" - 8" slump.
- E. No water shall to be added on site.
- F. Concrete shall be furnished from one source during the project.

## 2.9 SELECTION OF CONCRETE PROPORTIONS

- A. The Concrete producer shall select the concrete mix proportions on the basis of past field performance or the use of trial mixes. The changes in materials, and proportions within the population of background tests shall not have been more closely restricted than they will be for the proposed work. The test record shall represent only a single record of consecutive tests that span a period of not less than 45 calendar days. The concrete mix proportions shall produce an average strength at least as great as the required average strength (f'<sub>cr</sub>).
- B. Field Experience
  - 1. Concrete mix proportions shall be established on the basis of field test data with similar materials to be used for the project. Past field experience will be

## CAST-IN-PLACE CONCRETE

considered suitable if it consists of data from one group of at least 30 consecutive compressive strength tests. To be acceptable, the test data shall be based on similar mix proportions to those for the project.

2. The Standard Deviation (s) shall be computed from such test data and the required average strength ( $f'_{cr}$ ) to be used for the selection of the concrete proportions shall exceed the specified strength ( $f'_c$ ) in accordance with the following formulae:
  - a. When the standard deviation (s) is less than 500 psi:  
$$f'_{cr} = f'_c + 1.34s$$
  - b. When the standard deviation (s) is greater than or equal to 500 psi:  
$$f'_{cr} = f'_c + 2.33s - 500$$
3. When a Concrete producer does not have test data meeting the requirements listed in Section 2.11.B.1, but does have data based on a single group of 15 to 29 consecutive tests, a standard deviation shall be established as the product of the calculated standard deviation and modification factor indicated below. To be acceptable, the test data shall be based on similar mix proportions to those for the project.

No. of tests	Modification factor for standard deviation
15	1.16
20	1.08
25	1.03
30 or more	1.00

4. When a Concrete producer does not have test data meeting the requirements listed in Section 2.11.B.3, but does have data based on a two groups of consecutive tests totaling at least 30. To be acceptable, none of the two groups shall consist of less than 10 tests with similar mix proportions to those for the project. The group containing 15 or more test results which have different mix proportions from those for the project shall be within 1,000 psi of the specified strength. A standard deviation shall be established as the product of the calculated standard deviation based upon the group containing 15 or more test results and modification factor indicated above.
  5. Document that the calculated average strength for the proposed concrete proportions, using past field performance data for the proposed concrete proportions consisting of at least 10 consecutive test records, is at least greater than or equal to the required average strength ( $f'_{cr}$ ). If the past field performance data consists of two groups of strength tests for two different mixes, plot the average strength versus the water cement ratio of the two mixes. Interpolate between the corresponding mixture proportions to determine the mixture proportions for the required average strength ( $f'_{cr}$ ).
- C. Laboratory Trial Batches
1. When an acceptable record of field test results is not available, concrete proportions established from trial mixtures meeting the following restrictions shall be permitted:
    - a. Combination of materials shall be that for proposed work.
    - b. The required average compressive strength ( $f'_{cr}$ ) shall be 4,600 PSI.

- c. Trial mixtures having proportions and consistencies required for proposed work shall be made using at least three (3) different water-cementitious materials ratios which will be less than or equal to 0.42 and will produce a range of strengths encompassing the required average strength ( $f'_{cr}$ ).
  - d. The maximum cement factor as listed in Section 2.10.A shall not be exceeded.
  - e. Trial mixtures shall be designed to produce a slump within + or - 0.75 in. of maximum permitted, and for air entrained concrete, within + or - 0.5 percent of maximum air content.
  - f. For each water-cementitious materials ratio, at least three (3) test cylinders for each test age shall be made and cured in accordance with ASTM C 192. Cylinders shall be tested at 7, 21 and 28 days.
  - g. Maximum water-cementitious materials ratio for concrete to be used in proposed work shall be selected by the curve to produce the average strength required ( $f'_{cr}$ ).
- D. Adjustments to Required Average Strength ( $f'_{cr}$ ).
- 1. Adjustments in the Required Average Strength ( $f'_{cr}$ ) may be made during the progress of the work on the following basis:
    - a. When a minimum of fifteen 28-day tests from this project are available, the average strength and standard deviation shall be computed. Should these determinations indicate an excessive compressive strength with a low standard deviation, the Engineer may allow modification of the concrete mix to achieve a lower average strength based upon a new standard deviation. In the event such determination should indicate a lower average strength or higher Standard Deviation than anticipated, the Engineer will require corrective measures to be taken immediately which may include one or more of the following but not limited to:
      - (1) An increase in the cementitious material
      - (2) Changes in mixture proportions
      - (3) Reductions in or better control of levels of slump supplied
      - (4) A reduction in the delivery time
      - (5) Closer control of air content.
      - (6) Decrease in the water-cement ratio.
      - (7) An improvement in the quality of the testing, including strict compliance with standard test procedures.
      - (8) To test the fifth cylinder immediately or at 56 days.

## 2.10 STORAGE OF MATERIALS

- A. Protect materials from ground and the elements.
- B. Maintain cement in dry condition.
- C. Store reinforcement on skids.
- D. Remove defective materials from site. Do not store on site.

### PART 3 - EXECUTION

#### 3.1 FORMWORK

- A. Conform to ACI 301 and ACI 347
- B. Verify lines, levels and measurements before proceeding.
- C. For vertical work, erect forms plumb and straight. Maintain straight lines and uniform planes. Brace sufficiently: allow no bowing, sagging or deflection of surfaces. Earth forms are not permitted.
- D. Install form liners and lettering. Align panels to ensure uniform appearance. Concrete leakage past the formwork shall not be permitted. Provide continuous, straight, smooth and or textured exposed surfaces where and as indicated in the plans.
- E. Treat forms and form liners with form release agent. Protect reinforcing from contact with form release agent.
- F. Chamfer top exposed edges, camber formwork as necessary.
- G. Clean out inside of forms of all foreign materials prior to concrete placement.
- H. Maintain forms and shores supporting the cast concrete for the time periods indicated:
  - 1. Walls and Vertical Surfaces  
(Non-water retaining) \*36 Hours
- \* These periods represent cumulative number of days or hours during which the temperature of the air surrounding the concrete is above 50°F and the concrete has been damp and no loss of moisture has occurred.
- I. Re-shore formwork at any time as required prior to and during any pour.
- J. Clean and repair surfaces of forms to be re-used in work. Split, frayed, delaminated or otherwise damaged form facing material will not be acceptable for exposed surfaces. Apply new form release agent as specified for new formwork.
- K. All concrete formwork, including reinforcing steel and embedment items, shall have a temperature greater than or equal to 35°F at the time of concrete placement.

#### 3.2 REINFORCEMENT

- A. Conform to the CRSI Code of Standard Practice - Field Erection for surface condition, bending, spacing and placement tolerance.
- B. Weld no reinforcement unless no exceptions are taken by Engineer in writing.
- C. Splicing reinforcement: conform to ACI 318; welded wire fabric to be lapped 1½ courses or 12 inches; tie fabric at 24 inches on center maximum spacing.
- D. Provide bar supports: on grade use concrete brick; elsewhere use manufactured wire supports.
- E. Do not bend reinforcing partially embedded in the concrete.
- F. Mechanical connections shall be installed in accordance with splice device manufacturer's recommendations.
- G. Epoxy coating damaged shall be repaired with patching material conforming to ASTM A775.

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- H. All parts of mechanical connections on epoxy coated reinforcing bars, including steel splice sleeves, bolts and nuts shall be coated with the same material used for repair of epoxy coating damage.

### 3.3 EMBEDDED ITEMS

- A. Coordinate installation of embedded items.
- B. Place all items secure.
- C. Pipes or Conduits for embedment within a slab, wall or beam, other than those merely passing through, shall satisfy the following:
  - 1. Shall not be larger in outside diameter than one-third ( $1/3$ ) the thickness of the slab, wall or beam.
  - 2. Shall not be spaced closer than 3 diameters on center.
  - 3. Shall not impair significantly the strength of the concrete.

### 3.4 PLACING CONCRETE

- A. Notify Independent Testing Laboratory 24 hours minimum prior to each placement.
- B. Assure placement and proper location of all embedded items.
- C. Place no concrete on frozen ground.
- D. Place concrete from mixing truck to final location quickly and without segregation.
- E. Place concrete within 90 minutes of batching.
- F. Freefall: 4 feet maximum.
- G. Place continuously and against plastic concrete only.
- H. Do not place partially hardened concrete.
- I. Consolidate concrete by vibrating. Penetrate preceding lift 4 inches to blend layers. Do not use vibrator to move fresh concrete laterally. Insert vibrator at approximately 18-inch intervals. Consolidate concrete without segregation. Conform to ACI 309.
- J. Conform to ACI 306R for cold weather concreting when environmental conditions exist as defined in Section 03346, Part 1.5.
- K. Conform to ACI 305R for Hot Weather Concreting when environmental conditions exist as defined in Section 03346 Part 1.5.
  - 1. Temperature of concrete placed shall not exceed 90°F.
- L. Provide concrete Delivery Slip prepared at batch plant with each truck load of concrete showing ticket number, date, truck number, mix strength, maximum stone size, weight of coarse aggregate, weight of fine aggregate, cement weight, volume of concrete, gallons of water added at plant, time water added at plant, quantities of all admixtures used.
- M. High Range Water Reducing admixtures shall be used for all concrete to be pumped or with a specified water/cement ratio below 0.50. Maximum slump 8 inches with admixture.
- N. Use non-corrosive, non-chloride accelerator when placing concrete in air temperatures below 50°F.
- O. Thoroughly moisten subgrade materials prior to placing slabs on grade.
- P. Horizontal wall construction joints deeper than 8' from top of placement, place one inch of sand cement slurry prior to placing concrete.

### CAST-IN-PLACE CONCRETE



- Q. Thoroughly clean the surface of the concrete at construction and control joints and remove laitance prior to placing adjoining concrete. Do not place concrete against the hardened side of a joint for at least 48 hours.

### 3.5 EXPANSION JOINTS

- 1. Expansion joints shall be located as shown on contract drawings.
  - 2. The joint shall include a joint filler, a bond breaker and joint sealant and installed as indicated on contract drawings.
- A. Saw cut control joints for slabs on grade within 24 hours of placement.
  - B. Provide joints only where shown on the drawings or as otherwise approved after written request.

### 3.6 MODIFICATIONS OR REPAIRS TO EXISTING CONCRETE

- A. Field measurements shall be taken at the required structures to determine the quantity of concrete to be removed and/or repair and the amount of patching to be done.
- B. When removing materials or portions of existing structures and when making openings in existing structures, all precautions shall be taken and all necessary barriers and other protective devices shall be erected to prevent damage to the structures beyond the limits necessary for the new work, and to prevent damage to the structures or contents by falling or flying debris.
- C. Remove concrete to the depths shown or required. Roughen concrete surfaces by chipping, sandblasting or scarifying.
- D. Surfaces must be clean and sound. Surfaces may be dry, damp, or wet, but free of standing water. Remove dust, laitance, grease, curing compounds, impregnations, waxes, foreign particles, and disintegrated materials by mechanical abrasion methods such as sandblasting.
- E. Exposed reinforcement shall be cleaned by wire brushing and where shown the reinforcement shall be cut or bent. Additional reinforcement shall be provided as shown on the Drawings.

### 3.7 DRILLING AND GROUT DOWELS

- A. Use rotary drills and cores (non-percussive) and drill holes into concrete to the depth indicated. Hole size shall be one inch (1 in.) larger in diameter than the dowel diameter unless otherwise noted.
  - 1. Drill holes may be offset 2 inches plus or minus from set locations, but shall not be drilled within six inches (6 in.) of the free edge of concrete
- B. Scour the dowel hole by thoroughly roughening the sides with a coarse, wire flue brush.
- C. Clean hole of dust and debris with a power vacuum.
- D. Fill hole with non-shrink grout; insert dowel with twisting motion; add grout as needed.
- E. Maintain dowel stationary until grout cures.

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### 3.8 TOLERANCES

- A. Maximum allowable deviations from dimensions, elevations, slopes and positions as indicated.
1. Variation from plumb:
    - a. In the lines and surfaces of columns, piers, walls, and in arises:  
In any 10 ft. of length ..... 1/4 in.  
Maximum for the entire length ..... 1 in.
    - b. For exposed corner of columns, control-joint grooves, and other conspicuous lines:  
In any 20 ft. length ..... 1/4 in.  
Maximum for the entire length ..... 1/2 in.
  2. Top elevation of columns, piers, walls and arises ..... +1/4 in.
  3. Top elevation of slabs ..... +1/4 in.
  4. Footings\*
    - a. Variations in dimensions in plan:  
Minus ..... 1/2 in.  
Plus ..... 2 in.
    - b. Misplacement or eccentricity:  
2 percent of the footing width in the direction of misplacement but not more than ..... 2 in.
    - c. Thickness:  
Decrease in specified thickness ..... 5 percent  
Increase in specified thickness ..... No limit
    - d. Elevation of top ..... +1/4 in.

\*Tolerances apply to concrete dimensions only, not to positioning of vertical reinforcing steel, dowels, or embedded items.2

### 3.9 FAILURE TO MEET STRENGTH REQUIREMENTS

- A. The strength of the concrete in place will be considered substandard if any one of the following results occur:
1. The arithmetic average of 28-day cylinder tests for any three (3) consecutive test results are less than the specified strength (f'c).
  2. More than 10 percent of the 28-day cylinder tests have strengths less than the specified strength (f'c).
  3. An individual compressive strength test result falls below the specified strength (f'c) by more than 500 psi.
- B. Concrete which fails to meet the strength requirements as outlined above will be reviewed by the Engineer. The Engineer will determine whether the substandard concrete will be accepted, rejected or additional tests performed.
- C. When Substandard concrete as defined in Section 3.11 paragraphs A.1 and A.2 occurs, the Engineer will require corrective measures to be taken immediately, as listed in Section 2.11.D, in order to increase the average of subsequent strength tests.
- D. When substandard concrete as defined in Section 3.11 paragraph A.3 occurs the Engineer may require cores drilled in the area of question in accordance with

### CAST-IN-PLACE CONCRETE

Specification 03305 paragraph 3.2.B. If the core tests are inconclusive or impractical to obtain, load tests may be required and their results evaluated in accordance with ACI 318 Chapter 20. If the average of the three cores is less than 85% of the specified 28-day strength or if one core is less than 75% of the specified 28-day strength, then that portion of the structure shall be strengthened by a method proposed by the Contractor and no exceptions taken by the Engineer or replaced by the Contractor at no additional cost to the Owner.

- E. Concrete not requiring strengthening but still falling below the strength requirements as outlined in Section 3.11 paragraph A may be accepted by the Owner in accordance with Article 13 of the General Conditions, specifically the paragraph entitled "Acceptance of Defective Work".

### 3.10 DEFECTIVE CONCRETE

- A. Defective concrete is defined as concrete in place, which does not conform to strength, shapes, alignments, appearances and/or elevation as shown on the drawings and/or presents faulty surface areas.
- B. Reinforcing steel size, quantity, strength, position, or arrangement at variance with the Drawings will be considered defective.
- C. Concrete which differs from the required dimensions or locations in such a manner as to reduce the strength will be considered defective.
- D. Concrete surfaces not finished or cured in accordance with Section 03346 - Concrete Finishing, Curing, and Repairs shall be classified as defective concrete.
- E. Formed surfaces larger or smaller than dimensional tolerances specified in this Division may be rejected. If the Engineer permits the Contractor to correct the error, such correction shall be as directed and in such a manner as to maintain the strength, function and appearance of the structure.
- F. Concrete members cast in the wrong location may be rejected and shall be removed at no additional cost to the Owner if the strength, appearance or function of the structure is adversely affected.
- G. Inaccurately formed surfaces exposed to view may be rejected and shall be repaired or removed and replaced at no additional cost to the Owner.
- H. Concrete exposed to view with defects which adversely affect the appearance of the specified finish shall be repaired. If, in the opinion of the Engineer, the defects cannot be repaired, the concrete may be accepted or rejected in accordance with the decision of the Engineer.

### 3.11 PROTECTION FROM COLD

- A. Concrete structures shall be covered, insulated and heated as required to prevent frost penetration beneath the structures until acceptance by the Owner.

## CAST-IN-PLACE CONCRETE

3.12 BONDING NEW CONCRETE TO OLD CONCRETE:

3. Mechanically roughen existing concrete surfaces to a clean, rough surface using appropriate mechanical means to remove the existing concrete surface, and provide a minimum roughness profile of ¼-inch.
4. Saturate surface with water for 24 hours, cover with epoxy bonding compound and place concrete as specified for new concrete.

**END OF SECTION**

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**SECTION 03346**

**CONCRETE FINISHING, CURING AND REPAIRS**

**PART 1 - GENERAL**

- 1.1 SECTION INCLUDES
  - A. Concrete Curing
  - B. Concrete Finishing
  - C. Concrete Repairs
- 1.2 RELATED SECTION
  - A. Section 01300 - Submittals
  - B. Section 02535 - Concrete Sidewalk Finishes
  - C. Section 03300 - Cast-in-Place Concrete
  - D. Section 03604 - Non-Shrink Grout
- 1.3 REFERENCES
  - A. ACI 301-96 - Standard Specifications for Structural Concrete
  - B. ACI 302.1R-89 - Guide for Concrete Floor and Slab Construction
  - C. ACI 305R-91 - Hot Weather Concreting
  - D. ACI 306R-88 - Cold Weather Concreting
  - E. ACI 308-92 - Standard Practice for Curing Concrete
  - F. ACI 350R-89 - Environmental Engineering Concrete Structures
  - G. ASTM C309-93 - Specification For Liquid Membrane - Forming Compounds for Curing Concrete
- 1.4 SUBMITTALS
  - A. None.
- 1.5 ENVIRONMENTAL CONDITIONS
  - A. Cold Weather and Hot Weather are defined when temperatures will fall below 40°F during the week following placement or will be above 90°F, respectively.

**PART 2 - PRODUCTS**

- 2.1 FINISHING MATERIALS
  - A. Patching Mortar: 1 part of a mixture of white and grey Portland cement to 2.5 parts of damp loose sand. Cement type to match substrate.
- 2.2 REPAIR MATERIALS
  - A. Epoxy Adhesive: Armatec 110 by Sika Corporation or equivalent.
  - B. Repair Mortar: polymer improved, cementitious, 2 component, trowel grade mortar equal to Concrete Coat by Euclid Chemical; Sikatop 122 by Sika Corp. or equivalent.

### **PART 3 - EXECUTION**

#### **3.1 FINISHES**

- A. Repair all holes and defects and allow to set prior to finishing concrete.
- B. Clean all exposed concrete surfaces and adjoining work stained by leakage of concrete.
- C. Finish concrete surfaces as scheduled.

#### **3.2 FINISHING SLABS AND FLATWORK**

- A. Screed to bring concrete surface to proper contour and elevation.
- B. Highway straightedge, bull float or Darby float the concrete surface immediately after screeding.
- C. Allow bleed water to evaporate or remove.
- D. (STF) Steel Troweled Finish: Float the surface with magnesium or cast aluminum float or with a power-finishing machine. Steel trowel surface immediately after floating to produce smooth surface. Steel trowel again after concrete has hardened enough so that mortar does not adhere to trowel edge. Ringing sound should be apparent when performing second troweling due to tilted, compacting motion.
- F. (LBF) Light Broom Finish for equipment pads): while plastic draw a soft-bristled broom, over the concrete in long even strokes with downward pressure.
- G. Tolerances for trowel finished floors: ACI 302 class BX. 5/16 inch maximum deviation from 10 foot long straightedge placed anywhere on the surface.

#### **3.3 FINISHING VERTICAL SURFACES**

- A. (RFF) Rough Form Finish: Repair structural defects only and patch tie holes as specified in paragraph 3.5 - STRUCTURAL DEFECTS. Fins exceeding 1/4 in. in height to be removed by grinding and/or rubbing.

#### **3.4 CURING**

- A. Curing: Curing shall begin immediately following the initial set of concrete or after slab surface finishing has been completed and shall continue after form removal. All concrete shall be cured to attain strength and durability by one of the following methods for a minimum of seven days after placement regardless of the ambient air temperature:
  - 1. Ponding or continuous sprinkling. Intermittent wetting and drying is not an acceptable curing method.
  - 2. Application of absorptive mats of fabric kept continuously wet.
  - 3. Continuous application of steam or fog spray.
  - 4. Application of waterproof sheet materials.
- B. Moisture loss from surfaces placed against wooden or metal forms exposed to heating by the sun shall be minimized by keeping the forms wet until they can be safely removed. After form removal, the concrete shall be cured by one of the methods described above, for the balance of time remaining as specified above.
- C. Cold Weather:
  - 1. Maintain concrete temperature between 50°F and 70°F for a minimum of seven days after placement, enclose and heat, insulate as required.
  - 2. Protect concrete from damage due to concentrated heat sources.
  - 3. Reapply curing compounds every two days during heating period.

4. The maximum allowable temperature drop of the concrete surfaces during the first 24 hours after the end of the curing period shall not exceed 5°F in any 1 hour.
- D. Hot Weather: Concrete temperature shall not be greater than 90°F. Protect from loss of slump, flash set, plastic cracking and rapid evaporation of water.
- E. Place concrete quickly, shade from direct sun and protect from wind. Concrete shall be cured by one of the methods described in paragraph 3.4.A for seven days after placement.

### 3.5 SURFACE DEFECTS

- A. As soon as the forms have been stripped and the concrete surfaces exposed, repair all surface defects. Surface defects include all form tie holes, honeycombed areas and surface blemishes including air voids and bug holes with a nominal diameter or depth greater than ¼ inch, visible construction joints, fins, burs and other defects. All concrete repair work shall result in a concrete surface of uniform color and texture, and shall be free of all irregularities. Honeycombed and/or rat holes larger than 50 cubic inches are considered a structural defect.
- B. Cut out and remove honeycombed areas and rock pockets down to solid concrete, but in no case to a depth less than 1 inch, by means of hand chisels or pneumatic chipping hammers. Saw cut the edges perpendicular to the surface. No feathered edges shall be allowed.
- C. Remove all loose aggregate paste and debris and scrub clean; thoroughly wet area to be repaired; brush and scrub grout paint into the substrate of the area to be repaired.
- D. Apply a stiff consistency of patching mortar to the area with a trowel; apply prior to the set of grout paint (but after it has cast its water sheen): leave patched surface slightly higher than surrounding surface; do not finish for 1 hour minimum. Cure in same manner as adjacent concrete.
- E. Mix patching mortar using as little water as possible; allow to stand with frequent manipulation of trowel to achieve stiffest consistency; blend white and gray Portland cement to achieve color match with surrounding concrete.
- F. Form Tie Holes: After cleaned and thoroughly dampened, apply grout paint and fill tie holes solid with patching mortar.
- G. Finished Flatwork exceeding specified tolerances:
  1. High areas shall be repaired by grinding after the concrete has cured 14 days.
  2. Low areas shall be repaired by cutting out low areas and replaced with concrete. Finish repair area to match adjacent concrete.

### 3.6 STRUCTURAL DEFECTS

- A. Remove and replace or repair all structural defects. Structural defects include honeycombed areas and/or rat holes greater than 50 cubic inches, areas which cracking, spalling or other signs of deterioration are present or develop during the initial curing or thereafter until accepted by the Owner. The Contractor shall propose a specific repair method, suitable for the situation, and the Engineer will review the method prior to the repair.
- B. Cut out and remove defective concrete, honeycombed areas and rock pockets to sound concrete by means of hand chisels or pneumatic chipping hammers. Saw cut 1-inch minimum the edges perpendicular to the surfaces. If honeycomb exists around reinforcement, chip to provide a clear space at least 1 inch wide all around the reinforcement. Moisten surfaces and allow to dry until damp. Apply bonding



agent. Apply a polymer-modified cement with 3/8-inch coarse aggregate. Cure as required by manufacturer.

C. Random Cracks:

1. Random shrinkage or structural cracks shall be repaired utilizing a low viscosity, 100% solids, two (2) component epoxy resin system. Remove all dust, debris or disintegrated material from crack or void by use of oil-free compressed air or vacuuming.
2. Crack or void must be dry at time of application. Cracks saturated with oil or grease must be chipped out to unsaturated concrete. "Vee" out cracks in horizontal surfaces slightly.
3. Where cracks extend through members and are accessible, seal bottom of crack, which is to receive the epoxy. Apply epoxy in strict accordance with manufacturer's recommendations.
4. Epoxy resin system shall be Sika chemical Corporation "Sikadur Hi-Mod LV", or equal.
5. Patching of vertical wall or overhead cracks shall be accomplished in the same manner using a similar epoxy material of higher viscosity as recommended by the manufacturer.

D. Excessive Cracking:

1. Floor slabs containing an excessive amount of cracks as defined herein, and which will remain exposed, shall receive an epoxy mortar topping after sealing of cracks in accordance with the above paragraph.
2. Excessive cracking shall be defined as areas containing cracks averaging 1/64<sup>th</sup>-inch wide or greater, and in excess of 15 linear feet of cracks per 100 square feet of slab. In the event that excessive cracking occurs in isolated areas of a given floor, topping will only be required in the area of the cracks bounded by construction, expansion, or control joints.
3. Topping shall be Sika Chemical Corporation "Sikadur Lo-Mod LV Mortar" or equal.

E. Spalls:

1. All weakened, damaged or disintegrated concrete shall be removed to sound concrete. For defective areas involving only the surface and/or the finish of the concrete, reference Section 03350, Concrete Finishes, for surface defects.
2. For spalled areas involving depths generally less than three (3) inches, utilize epoxy mortar for repair, Sika Chemical Corporation "Sikadur Lo-Mod LV Mortar" or equal.
3. For spalled areas involving depths generally in excess of three (3) inches, utilize an epoxy bonding compound and concrete grout. Bonding compound shall be Sika Chemical Corporation "Sikadur Hi Mod" bonding agent or equal.

3.7 PROTECTION

- A. Protect concrete from high and low temperatures for seven days.
- B. Protect against vibration until concrete has attained 33% of its 28-day strength.
- C. Protect against premature loads until the 28-day strength has been attained.

END OF SECTION

**SECTION 03600**

**EPOXY BONDING COMPOUND/GROUT**

**PART 1 - GENERAL**

**1.01 SUMMARY**

**A. Section Includes**

1. Requirements for a two-component, solvent-free moisture insensitive epoxy resin bonding adhesive used to bond fresh, plastic concrete to clean sound hardened concrete and for grouting bolts and the bonding of mating materials.

**B. Alternatives**

1. Should the Contractor wish to use any brand or type of material other than as specified herein, he shall so state in writing to the Engineer naming the proposed substitution and manufacturer. This letter shall be accompanied by:
  - a. A current test report and notarized certificate of compliance from an approved independent testing laboratory that the proposed substitute meets or exceeds the specified requirements and has been tested within the past 12 months in accordance with the specified test standards.
  - b. Documented proof, to the Engineer's satisfaction, that the proposed brand or type of material has proven record of performance when used in the intended application.

**1.02 REFERENCES**

**A. American Society for Testing and Materials (ASTM)**

1. C-882, Test Method for Bond Strength of Epoxy Resin Systems used with Concrete by Slant Shear.
2. D-570, Test Method for Water Absorption of Plastics.
3. D-638, Test Method for Tensile Properties of Plastics.
4. D-695, Test Method for Compressive Properties of Rigid Plastics.
5. D-732, Test Method for Shear Strength of Plastics by Punch Tool.
6. D-790, Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials.

**1.03 SUBMITTALS**

**A. Shop Drawings.**

1. In accordance with SECTION 01300.

**B. Certificates of Conformance.**

1. Prior to delivery, submit manufacturer's notarized certification attesting to compliance with the requirements of this specification.

**PART 2 - PRODUCTS**

## 2.01 ACCEPTABLE MANUFACTURERS AND PRODUCTS

- A. Sikadur 32 Hi-Mod, as manufactured by Sika Corp., Lyndhurst, NJ, or acceptable equivalent product manufactured by H.B. Fuller Co., Palatine, IL, or Protex Industries, Inc., Denver, CO.
- B. Sure-Klean Degreaser and Etch, as manufactured by ProSoCo, Inc., Kansas City, KS, or acceptable equivalent product manufactured by Drew Chemical Co., Tampa, FL or Goldblatt Tool Co., Kansas City, KS.

## 2.02 MATERIAL

- A. The epoxy material shall conform to the following requirements:
  - 1. Component A shall be a modified epoxy resin of the Epichlorohydrin Bisphenol A type containing suitable viscosity control agents. It shall not contain butyl glycidyl ether.
  - 2. Component B shall be primarily a reaction product of a selected amine blended with an epoxy resin of the Epichlorohydrin Bisphenol A type containing suitable viscosity control agents, pigments and accelerators.
  - 3. The ratio of Component A:B shall be 1:1 by volume.
  - 4. The materials shall not contain asbestos.
- B. Properties of the mixed material:
  - 1. Pot Life: 25 to 35 minutes.
  - 2. Tack-Free Time to Touch (20 mil thickness): 3 to 5 hours.
  - 3. Initial Viscosity (Brookfield Viscometer Spindle No. 3, Speed 100): 1,900 to 3,700 cps.
  - 4. Color: Gray
- C. Properties of the cured material. Note: All test data is based upon material and curing conditions of 73± degrees F, 50± 5% relative humidity.
  - 1. Compressive Properties (ASTM D-695) at 28 days:
    - a. Compressive Strength: 8,500 psi minimum.
    - b. Modulus of Elasticity:  $3.75 \times 10^5$  psi minimum.
  - 2. Tensile Properties (ASTM D-638) at 14 days:
    - a. Tensile Strength: 4,000 psi minimum.
    - b. Elongation at Break: 1.5 - 2.25%.
    - c. Modulus of Elasticity:  $2.75 \times 10^5$  psi minimum.
  - 3. Flexural Properties (ASTM D-790) at 14 days:
    - a. Flexural Strength (Modulus of Rupture): 6,300 psi minimum.
    - b. Tangent Modulus of Elasticity in Bending:  $4.0 \times 10^5$  psi minimum.
  - 4. Shear Strength (ASTM D-732) at 14 days:
    - a. Shear Strength: 5,000 psi minimum.
  - 5. Water Absorption (ASTM D-570: Section 6.5) at 14 days:
    - a. Water Absorption: 1% maximum.

6. Bond Strength (ASTM C-882) Hardened to Plastic:
  - a. Bond Strength (14 days moisture cure): 1,500 psi minimum.
- D. Aggregate: As recommended by the manufacturer.
- E. Degreasing and etching chemical:
  1. Composition and materials: A blend of organic and inorganic acids with a special solvent system incorporating wetting agents for emulsification.
  2. Color: Water White.
  3. Flash Point: Above 150 degrees F.
  4. Weight/Gallon: 9.0 lbs.

### **PART 3 - EXECUTION**

#### **3.01 GENERAL**

- A. Mix and apply the epoxy compound in accordance with the manufacturer's instructions.

#### **3.02 PREPARATION OF CONCRETE SURFACES**

- A. All work involving epoxy, cement base coating and protective coating to adhere strictly to the manufacturer's current printed recommendations as to temperatures at time of application. No use of epoxy materials allowed when either the temperature of the concrete to be repaired or the ambient temperature is below 50 degrees F, 24 hours before, during, or for a period of 48 hours after the completion of the repair. Temporary heat may be used to meet the specified requirements.
- B. All epoxy, cement base coating, and protective coating materials to be new and used within the shelf life limitations set forth by the manufacturer. The shelf life limitations to be clearly marked on each container.
- C. All existing reinforcement and concrete to be sound and clean before receiving new materials.
- D. Surfaces shall be clean and sound. Surfaces may be dry, damp or wet, but free of standing water. Remove dust, laitance, grease, curing compounds, impregnations, waxes, foreign particles and disintegrated materials by mechanical abrasion methods such as sandblasting. Sandblast steel to appropriate finish.
- E. If the concrete surfaces are sound and it is only necessary to remove laitance, grease or dust, the Contractor may, with the prior written approval of the Engineer, forego sandblasting and wash the concrete with a degreasing and etching chemical applied in accordance with the manufacturer's written instructions and as specified herein.

- F. Application of degreaser and etching compound: Pre-wet concrete surfaces with clean water. Brush concentrated cleaner onto concrete surface. Let stand three to four minutes and reapply, brushing stained areas vigorously. Rinse off with fresh water applied at a minimum pressure of 800 psi and a minimum volume of 5 to 10 gallons per minute.

### 3.03 PROPORTIONING, MIXING AND APPLYING EPOXY COMPOUND

- A. Volumetric ratio of bonding compound shall be 1:1 (B:A) to mix, proportion one part B and one part A into clean pail. Mix thoroughly for three minutes with a steel mixing paddle on a low speed (400 to 600 rpm) drill until blend is a uniform gray color. Mix only that amount of epoxy that can be used in 30 minutes at 73 degrees F.
- B. Application for Bonding: Cover the area to be overlaid with one coat of the epoxy compound applied with long-nap paint rollers, brushes, brooms or by spray. Apply at the rate of 80 square feet/gallon maximum on smooth concrete.
- C. As the concrete increases in roughness, decrease the rate of coverage proportionately. While the epoxy compound is still tacky (three to five hours at 73 degrees F), place the concrete. If the bonding compound should harden before the concrete is placed, reprepare surface. Then recoat with additional epoxy bonding compound and proceed.
- D. Application for Grouting: To prepare a grout for anchor bolts, mix the epoxy compound with aggregate recommended by the epoxy manufacturer. The amount of aggregate used shall be the maximum amount possible while still maintaining a pourable consistency. The ratio shall be approximately 1:1, 1/2 by loose volume of aggregate. Apply grout in accordance with the manufacturer's instructions.
- E. Limitations:
  - 1. Do not thin the epoxy bonding compound, as solvents will prevent proper cure.
  - 2. Use only oven-dry aggregate to avoid encapsulation of moisture.

**END OF SECTION**

**SECTION 03604**

**NON-SHRINK GROUT**

**PART 1 - GENERAL**

- 1.1 SECTION INCLUDES
  - A. Non-shrink grouting.
- 1.2 PRODUCTS INSTALLED BUT NOT FURNISHED
  - A. Dowels - Section 03300, Cast-in-Place Concrete
  - B. Anchor Bolts - Section 05010, Miscellaneous Metals.
  - C. Rail Posts - Section 05500, Metal Fabrications.
- 1.3 RELATED SECTIONS
  - A. Section 01340 - Submittals
  - B. Section 03300 - Cast-in-Place Concrete
  - C. Section 03346 - Concrete Curing, Finishing and Repairs
- 1.4 REFERENCES
  - A. ASTM C33-93 - Specification For Concrete Aggregates
  - B. ASTM C109-92 - Test Method For Compressive Strength of Hydraulic Cement Mortars
  - C. ASTM C827-87 - Test Method For Changes In Height at Early Ages of Cylindrical Specimens From Cementitious Mixtures
  - D. CRD-C611-80 - Test Method for Flow of Grout Mixtures
  - E. CRD-C621-81 - Specification for Non-Shrink Grout
- 1.5 SUBMITTALS
  - A. Submit product data and material safety data sheets for products to be used.
  - B. Submit test data when required.
  - C. Submit manufacturers installation instructions for products used.
- 1.6 QUALITY ASSURANCE
  - A. Conform to Army Corps of Engineers Specification CRD-C621-81
  - B. Grouts shall exhibit non-shrink characteristics when tested according to ASTM C827.
- 1.7 DELIVERY, STORAGE AND HANDLING
  - A. Deliver in sealed, labeled containers.
  - B. Store in dry conditions above freezing and below 90°F.
  - C. Keep unused portions of opened containers dry and warm.
  - D. Store aggregate covered and protected from the elements.
- 1.8 ENVIRONMENTAL CONDITIONS

- A. Do not place grout when exposed to precipitation.
- B. Place grout when temperature of substrate and ambient air are above 40°F and below 90°F.
- C. Place grout outside these limits when approved by heating substrates, enclosing work, shading, cooling or other measure to mitigate adverse weather conditions.

## **PART 2 - PRODUCTS**

### **2.1 MATERIALS**

- A. Aggregates: ASTM C33 fine aggregate, washed
- B. Pea Stone: ASTM C33 coarse aggregate, size number 8 (max. size 0.375 inches), washed
- C. Water: Potable, from municipal water supply.

### **2.2 GROUT FOR INSTALLING DOWELS AND ANCHOR BOLTS**

- A. Super Por-Rok by Minwax Construction Products
- B. Crystex by L&M Construction Chemicals
- C. Masterflow 713 by Master Builders
- D. Or equal.

### **2.3 GROUT FOR BEAM BEARING PLATES AND COLUMN BASE PLATES**

- A. Crystex by L&M Construction Chemicals
- B. Masterflow 713 by Master Builders
- C. Sikagrout 212 by Sika Corporation
- D. Or equal.

### **2.4 GROUT FOR INSTALLING RAILING POSTS**

- A. Super Por-Rok by Minwax Construction Products
- B. Crystex by L&M Construction Chemicals
- C. Masterflow 713 by Master Builders
- D. Or equal.

### **2.5 TESTS**

- A. All grouts shall achieve a minimum 28 day strength of 6,000 psi according to ASTM C109.
- B. Grouts when tested by flow cone according to CRD-C 611-80 shall take more than 20 seconds to flow as a maximum limit on fluidity.
- C. Test grout when requested.

## **PART 3 - EXECUTION**

### **3.1 PREPARATION**

- A. Clean substrates of loose aggregate, dust, laitance, dirt, oil, grease by bush-hammering, chipping or brushing.
- B. Thoroughly dampen the concrete substrate.
- C. Follow manufacturers instructions.
- D. Heat the substrate, enclose the area or make other necessary preparations.

- E. Install forms, leak proof, to retain grout in shapes shown on Drawings.

3.2 MIXING

- A. Mix only as much grout as can be placed in 20 minutes.
- B. Mix according to manufacturer's instructions.
- C. Minimize water for the application.
- D. Add no more water after mixing.
- E. For applications greater than 2 inches thick may add up to 50 lbs of pea stone per 100 lbs of grout, dry measure, to extend the grout. Test according to ASTM C109 and C827.
- F. Do not exceed maximum flowability.

3.3 PLACING

- A. Place quickly and continuously; pouring, pumping or by gravity pressure.
- B. Obtain approval for dry pack placement.
- C. Install horizontal anchor bolts or dowels using a trowel consistency grout.
- D. Place so as to avoid entrapping air.
- E. Trim grout shoulders.

3.4 CURING

- A. Moist cure for 3 days.
- B. Cover with moist cloths, curing blankets or curing compound.

3.5 PROTECTION

- A. Protect from vibration due to adjacent operations until the grout is well set up.
- B. Protect bolts and dowels from force or impact until grout has achieved 50% of its 28 day strength.

**END OF SECTION**



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**SECTION 03900**

**CLEAN & REPAIR CONCRETE  
WALL IN PARK**

**PART 1 GENERAL**

**1.01 RELATED DOCUMENTS**

- A. The Drawings and General provisions of the Contract, including all General and Supplementary Conditions
- B. Related Work
  - 1. 02200 Earthwork

**1.02 SUMMARY**

- A. Work in this Section includes cleaning and repair to the existing concrete park wall, including portions of the wall exposed to view due to re-grading of the site.

**1.03 REFERENCES**

- A. American Society for Testing and Materials (ASTM)
  - 1. C144, Specification for Aggregate for Masonry Mortar.
  - 2. C150, Specification for Portland Cement.
  - 3. C207, Specification for Hydrated Lime for Masonry Purposes.
  - 4. C270, Specification for Mortar for Unit Masonry.
  - 5. C404, Specification for Aggregates for Masonry Grout.
  - 6. C476, Specification for Grout for Masonry.

**1.04 SUBMITTALS**

- A. In accordance with Section 01300.
- B. Product Data:
  - 1. Submit manufacturer's product data and installation instructions for each material and product proposed for use, including certification that each product complies with the specified requirements.

- C. Samples: Furnish Color Samples for each type of product and material specified. Identify coordinated color selection for review.
- D. Mock-Up: Upon product approval, and utilizing the proposed materials and techniques, clean, prepare and repair a portion of the wall to completion. Sample area shall be no less than 6 feet in length and include fully both the horizontal and vertical surfaces. Include an expansion joint. Complete Joint and finish wall. The sample area shall be reviewed for acceptance and approval by the Engineer. If determined un-acceptable the Contractor shall prepare a new mock-up, incorporating adjustments to improve the desired result. It is the Contractor's responsibility to prepare a mock-up that is approved by the Engineer.

#### 1.05 DELIVERY, STORAGE AND HANDLING

- A. Store cementitious materials off the ground, under cover and in dry location. Store in their original containers, plainly marked with identification of material and maker. Materials in broken containers, or in packages showing water marks or other evidence of damage, shall not be used and shall be removed from the site.
- B. All perishable materials included in this Section shall be delivered, stored and handled so as to prevent deterioration, intrusion of foreign matter or moisture, or damage of any nature.

### PART 2 PRODUCTS

#### 2.01 PATCHING AND FINISHING COMPOUND FOR CONCRETE.

- A. Portland cement-based, polymer modified, finishing compound for interior or exterior concrete, including vertical applications such as tilt-up walls, pre-cast or poured in place concrete panels, or other concrete or masonry surfaces, for use prior to sealing or painting.
- B. Performance and Physical Properties: Meet or exceed the following values for materials proposed for use:
  - 1. No Sand fillers.
  - 2. Cured at 73° F (23° C) and 50 percent relative humidity:
  - 3. Application: Trowel
  - 4. Pot Life: 15 to 20 minutes
  - 5. Time to Seal or Paint: 15 to 60 minutes, depending on jobsite conditions.
  - 6. VOC: 0 g/L, calculated SCAQMD 1168
  - 7. Color: Gray

- C. Finishing Compound for vertical and horizontal applications: Ardex TWPTM or an approved equal.

## 2.02 POLYURETHANE FOAM JOINT

- A. Pre-compressed, Backer rod (round) or Backer Strip (rectangular) self-expanding joint system designed to be field applied to existing joints. Designed as a backer system, as a secondary joint filler over which flexible joint sealant is applied. Coordinate with size of joint and range of movement required.
- B. Backerseal as manufactured by Emseal or an approved equal.

## 2.03 JOINT SEALANT

- A. Premium grade, high movement, fast-curing, one component, non-sag elastomeric, hybrid sealant, for use on expansion joints, conforming to ASTM C-920, Type S, Grade NS, Class 50, use, NT, M, A, G, O. Pliable, paintable, non-staining with an approximate skin time of 60 minutes.
- B. SIKA -Hyflex-150 or an approved equal.

## 2.04 WALL FINISHING PRODUCTS

- A. Premium grade, fast drying waterborne acrylic concrete stain designed for horizontal and vertical exterior masonry and concrete surfaces, with compatible bonding primer. Stain shall have 25% +/-1% volume solids. Select color from Manufacturer's standard colors.
- B. Water-proofing sealer for horizontal and vertical surfaces, compatible with approved primer and stain products. INSUL-X TUFFCRETE , CST 5100 Clear Sealer or an approved equal.

## 2.05 MANUFACTURERS

- A. A concrete patching and finishing compound product that meets these criteria is ARDEX TWPTM; as manufactured by ARDEX Engineered Cements, Ardex 400 Ardex Park Drive, Aliquippa, Pa 15001 USA 724-203-5000. Or an approved equal.
- B. A backer rod product that meets this specification is Backerseal as manufactured by Emseal. Emseal Joint Systems Ltd., 25 Bridle Lane, Westborough, MA. 01581 Tel. 508.836.0280. Or an approved equal.

- C. A sealant product that meets these specifications is Sika Hyflex-150 as manufactured by Sika Corporation 201 Polito Avenue, Lyndhurst New Jersey 07071. Tel. 201.933.8800. Or an approved equal.
- D. Wall finishing products that meet the concrete wall preparation, staining and waterproofing requirements are products in the INSL-X TUFFCRETE line, and CST 5100 Clear Sealer as manufactured by Benjamin Moore & Co. 101 Paragon Drive, Montvale, NJ 07645. Tel 1866.708.9181. www.benjaminmoore.com. Or approved equal.

### **PART 3 EXECUTION**

#### **3.01 POWER WASHING /CLEANING**

- A. Provide adequate protection to exclude the public the public from entering the work area. Provide water supply sufficient to address the area to be cleaned.
- B. Utilizing pressure washer or similar equipment, begin cleaning the wall by establishing a 'sample' level of cleaning for the Engineer's approval. Use care and avoid using excess pressure that may mar or otherwise damage the surfaces of the existing wall. Utilize long even strokes. Wash clean the wall and any loose surface scale or mortar. Avoid cutting into the surface or creating a 'release' of parged areas or work that further damage the wall.
- C. Control, contain and manage all wash-water generated, including solids generated. Legally dispose of all material generated from the washing operations.

#### **3.02 PREPARING AREAS OF WALL FOR REPAIRS**

- A. In the location where the former bus shelter was integral with the wall, cut back rebar, steel, block, concrete, etc. to a minimum of 1' below the finished surface.
- B. Inspect to insure all remaining concrete surfaces are structurally sound, solid and free of any contaminant that might limit adhesion of mortar or otherwise act as a bond breaker, including, but not limited to, sealers or paints, patching compounds, weak or loose concrete, dust, dirt or oils. Mechanically clean the surface down to sound, solid concrete by sandblasting or grinding. Acid etching, adhesive removers, solvents and sweeping compounds are not acceptable means of cleaning the substrate. Sanding equipment is not an effective method for removing curing and sealing compounds.
- C. The finishing compound shall be utilized to repair fissures, honeycombs, voids and holes in the walls. Cut damaged concrete areas and surface back to ensure a 'keying' in of the patching compound. Cut in square edges to maximize edge

cohesion when possible. The mortar shall be densely packed, well adhered and placed as shown on the plans to produce a solid, uniform, watertight patch, resistant to the weather. When necessary the material may be troweled to a feather edge and blended to meet abutting, intact surfaces.

- D. Surfaces must be dry for a successful installation. Surface and air temperatures must be a minimum of 50°F (10°C) .
- E. For further information, please refer to the approved patching and finishing compound substrate manufacturer's data for surface preparation.

### 3.03 APPLICATION

- A. A. Examine substrates and conditions under which materials will be installed. Do not proceed with installation until unsatisfactory conditions are corrected.
- B. Coordinate installation with adjacent work to ensure proper sequence of construction. Protect adjacent areas and landscaping from contact due to mixing and handling of materials.
- C. Mixing: Comply with manufacturer's printed instructions and the following.
- D. For best results, mix using a 1/2" (12 mm) heavy-duty mixing drill (min. 650 rpm) with an
- E. Do not overwater. Mix thoroughly to obtain a lump-free consistency.
- F. Follow the manufacturer's guidance on workability. The pot life of ARDEX TWP or similar materials is approximately 15-20 minutes at 70°F (21°C). If the product begins to set in the bucket, remix before using. Do not add additional water. Cementitious materials and aggregate may be mixed between 3 and 5 minutes in a mechanical batch mixer with the maximum amount of water to produce a workable consistency.
- G. Do not apply in freezing conditions or when the installation area is being subjected to precipitation. Comply with manufacturer's guidelines for hot and cold weather application.
- H. Apply the compound to the prepared surface with a steel trowel. Apply sufficient pressure to fill in all surface defects. Where necessary, minor touch-up work can be accomplished using a rubber float or slightly dampened sponge once the surface has started to harden.

- I. If the material has already fully set, the surface can be smoothed with fine sandpaper or re- skimmed. Drying time and the hardening of the surface will vary with jobsite conditions, the type of substrate and the thickness of installation. Thinner applications will require less drying time, while thicker applications, as well as those performed at cooler temperatures, will require more time to cure.

### 3.04 REPAIR JOINTS

- A. Insert foam backer material in only open and clean joints. Position at depth coordinated with approved sealant adhesion range.
- B. Apply sealant uniformly without excess with an even radius, smooth from the face planes of the adjacent surfaces.
- C. Wipe off and finish and clean. Clean off all excess material to prohibit staining. Clean tools etc. per manf. Instructions.

### 3.03 CONCRETE STAIN

- A. Follow Manufacturer's instructions for final surface preparation and primer application
- B. Protect or otherwise mask-off surfaces shown to remain un-treated. Apply products per manufacturer's instructions. In general apply primer and two (2) coats of stain to obtain a solid, opaque finish. Coordinate products such that applications may be performed to obtain a uniform appearance. Sprayer/Brush/Roller applied. Finished appearance must match approved mock-up.
- C. Apply evenly in thin coats to avoid lap marks. Wet application shall be 4.0-5.4 mil. To result in a dry thickness of not less than 1.0 mil.
- D. Protect the finished work. Clean off all excess material to prohibit staining. Clean tools etc. per manufacturer's Instructions.

END OF SECTION

**SECTION 04100**  
**MORTAR AND MASONRY GROUT**

**PART 1 GENERAL**

**1.01 RELATED DOCUMENTS**

- A. The Drawings and General provisions of the Contract, including all General and Supplementary Conditions
- B. Related Work
  - 1. Section 02870 Pavers
  - 2. Section 03000 Marine Concrete
  - 3. Section 04850 Granite Cut Stone

**1.02 SUMMARY**

- A. Section Includes
  - 1. Requirements to furnish, prepare, and protect as a perishable material, mortar and grout, complete with specified admixtures for use in the installation of masonry structures.
  - 2. The work of this Section shall be included in Section 04850 Granite Cut Stone and the application thereof is indicated in plans, details and any and all Drawings referenced thereon.

**1.03 REFERENCES**

- A. American Society for Testing and Materials (ASTM)
  - 1. C144, Specification for Aggregate for Masonry Mortar.
  - 2. C150, Specification for Portland Cement.
  - 3. C207, Specification for Hydrated Lime for Masonry Purposes.
  - 4. C270, Specification for Mortar for Unit Masonry.
  - 5. C404, Specification for Aggregates for Masonry Grout.
  - 6. C476, Specification for Grout for Masonry.



#### 1.04 SUBMITTALS

- A. In accordance with Section 01300.
- B. Product Data:
  - 1. Submit manufacturer's product data for each product, including certification that each product complies with the specified requirements.
- C. Samples:
  - 1. For work exposed to view, provide a range of mortar samples for review and final color and texture selection.
  - 2. Before the start of work the final mortar samples shall be submitted to the Engineer for approval.
  - 3. Mock-up of joint work for review and approval

#### 1.05 DELIVERY, STORAGE AND HANDLING

- A. Store cementitious materials off the ground, under cover and in dry location. Store in their original containers, plainly marked with identification of material and maker. Materials in broken containers, or in packages showing water marks or other evidence of damage, shall not be used and shall be removed from the site.
- B. All perishable materials included in this Section shall be delivered, stored and handled so as to prevent deterioration, intrusion of foreign matter or moisture, or damage of any nature.

### **PART 2 PRODUCTS**

#### 2.01 MANUFACTURERS

- A. Obtain mortar ingredients of uniform quality, including color for exposed masonry, from one manufacturer for each cementitious component and from one source and producer for each aggregate.

#### 2.02 COMPONENTS

- A. Portland Cement
  - 1) ASTM C150, Type II. The same brand and color of cement shall be used throughout the job to ensure uniformity of color.
- B. Hydrated Lime

- 1) ASTM Designation C207, Type S.

C. Aggregate for Mortar

- 1) ASTM Designation C144
- 2) Clean, durable particles, free from injurious amounts of organic matter.

D. Aggregate for Grout

- 1) ASTM Designation C404

E. Water

- 1) Clean and Potable

F. Mortar Color

- 1) Chemically inert, non-fading color, manufactured from alkali fast mineral oxides, finely ground and specifically prepared for use in cement and lime mortars. They shall be added to the mixture where so specified and used in accordance with the manufacturer's recommendations. Colored mortar shall be by Davis Colors, 7011 Muirkirk Rd., Beltsville, MD 20705 or "Chromix" L.M. Schofield Company, 6533 Bandini Blvd., Los Angeles, CA 90040 or Solomon Grind-Chem Service, Springfield, Ill. 62705, or equal. Color shall match the Granite Cut stone, as approved by the Engineer.

## 2.03 MORTAR AND GROUT MIXES

A. General

1. No air-entraining admixtures or cementitious materials containing air-entraining admixtures shall be used in the mortar. No anti-freeze liquids, salts, or other substances shall be used in the mortar or grout to lower the freezing point. Calcium chloride or admixtures containing calcium chloride shall not be used in mortar or grout. Integral water-proofing compounds, accelerators, or other admixtures shall not be used in mortar or grout without approval in writing by the Engineer.

B. Grout

Grout shall be non-shrink. Make in accordance with ASTM Designation C476, for grout for use in marine construction, adding only enough water to make a flowable consistency. Neat grout shall be composed of cement and water only. Non-staining cement shall be used for non-staining grout.

1. Use grout of the appropriate consistency (fine or course) as follows:
  - a. Fine grout in spaces less than 4 inches in any horizontal dimension.
  - b. Course grout in spaces greater than 4 inches in any horizontal dimension.

C. Mortar

1. In accordance with ASTM C270. (Proportional Specification)
2. The mortar mixtures hereinafter tabulated are standard mixtures for which measurement shall be by volume. For the purposes of these Specifications, the weight of one cubic foot of the respective materials used as ingredients in the mortar shall be as follows:

<u>Materials</u>	<u>Weight, lb per cu ft (kg/m<sup>3</sup>)</u>
Portland Cement	94(1504)
Hydrated Lime	40(640)
Sand, damp and loose	80(1280) dry sand

3. The Contractor shall use mortar Type S1 for all masonry work. Quantities of materials in parts by volume are given below:

<u>Mortar Type</u>	<u>Portland Cement</u>	<u>Hydrated Lime</u>	<u>Sand, Measured in a Damp, Loose Condition</u>
S1	1	½	No less than 2 1/4 and not more than 3 times the sum of volumes of cement and lime used.

4. Mortar ingredients shall be accurately measured by volume in boxes especially constructed for the purpose by the Contractor, or by other method approved in writing by the Engineer. Measurement by shovel will not be allowed.
5. Mortar shall be machine mixed in an approved type of mixer in which the quantity of water can be accurately and uniformly controlled. The mixing time shall not be less than 5 minutes, approximately two minutes of which shall be for mixing the dry materials and not less than three minutes for continuing the mixing after the water has been added. Where hydrated lime is used for mortar requiring a lime content, the Contractor will have the option of using the dry-mix method or first converting the hydrated lime into a lime putty as specified below. Where the dry-mix method is employed, the materials for each batch shall be well turned over together until the even color of the mixed, dry materials indicates that cementitious material has been thoroughly distributed throughout the mass, after which the water shall be gradually added until a thoroughly mixed mortar of the required plasticity is obtained.
6. All mortar shall be freshly mixed and the quantity of each batch shall not be in excess of the amount that will be used before the same has started to set. Mortar that has begun to set shall not be used. Re-tempering will not be

permitted. Mixer drums shall be entirely emptied of a batch before charging with a succeeding batch. Mortar boxes shall be cleaned out at the end of each day's work, and all tools shall be kept clean.

### **PART 3 EXECUTION**

#### **3.01 MIXING**

- A. Cementitious materials and aggregate may be mixed between 3 and 5 minutes in a mechanical batch mixer with the maximum amount of water to produce a workable consistency

#### **3.02 PLACING MORTAR & GROUT**

- A. Mortar and Grout shall be utilized in the installation of the Granite Cut Stone pieces as shown on the drawings. The mortar shall be densely packed, well adhered and placed as shown on the plans to produce a solid, watertight joint resistant to the weather. Mortar joints between stones shall be 1/2" inch in width, between stone surfaces with an even radius, smooth from the face planes of the adjacent stones.
- B. Injection grouting may be utilized to supply mortar to joints and void spaces and fully bed and secure the granite capstones in place and protect from water infiltration. Fill any voids until mortar is expelled at the base. Wipe off and finish and clean. Clean off all excess material to prohibit mortar staining. Protect all adjacent work, clean off any excess.

#### **3.03 TESTING**

- A. Construction-site-prepared mortar shall be tested in accordance with ASTM C780
- B. Grout shall meet or exceed ASTM C-1107, resulting in a compressive strength of 2,500 psi at 3 days and 5,000 p.s.i. at 28 days.
- C. Samples tested during the progress of the work may be accepted on the basis of the 7 day test. The right is reserved to rescind such acceptance if the mortar fails on the 28 day test.

END OF SECTION

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**SECTION 04850**

**GRANITE CUT STONE**

**PART 1 – GENERAL**

**1.01 SUMMARY**

A The work included in this Section includes the fabrication and furnishing of granite dimensional cut stone components and the installation of certain specified stone furnished under this specification.

B. The installation of CS-1 stone types shall be as per Section 02700 Modifications to Existing Memorial. Other C

C. This specification includes the fabrication of all of the following Cut Stones:

1. **CS1** –Granite Step 1 (Area 1)
2. **CS2** – Granite Edging (Area 2 & 3)
3. **CS3**– Granite Curb Transition (R/L) (Area 1)
4. **CS4** – Bike Rack Base (Area 1&2)
5. **CS5** – Bench Base (Area 1&2)

**1.02 REFERENCES**

- A. For Cut Stone: ASTM Standards: C-97, C-99, C-170, C-241, C-615, C-880
- B. National Building Granite Quarries Association, Inc. (NBGQA)  
Specifications for Architectural Granite.
- C. For Anchorage: ASTM Standards C-882, D-570, D-638,D-695,D-732, D-790.

**1.03 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, requirements, apply to this Section.
- B. Related Sections: The following sections contain requirements that relate to this section.
  1. Section 02300 Earthwork
  2. Section 02870 Pavers
  3. Section 03300 Cast-in-Place Concrete
  4. Section 03600 Epoxy Grout
  5. Section 03604 Non-Shrink Grout

#### 1.04 DEFINITIONS

- A. The definition of trade terms used in these specifications shall be those published by the National Building Granite Quarries Association, Inc. (NBQGA).
1. Arris: Sharp edge or exterior corner formed by the intersection of two surfaces.
  2. Face: The exposed major surface of a piece with its specified finish.
  3. Joint: The end or side surface of a piece that which is covered when a piece is set in place. Also refers to the open space or filled space that Extends the full width of the top surface then vertically or angled down ward between the adjacent pieces set in place.
  4. Start: The beginning of a crack, caused by quarrying techniques, piece fabrication or handling.
  5. Seam: Crack or Fissure.
  6. Finishes: Refer to this specification Section 2.01

#### 1.05 SUBMITTALS

- A. The Contractor shall provide qualifications for the following:
1. Stone Quarry/ Stone Fabrication Facility. Provide the Company Name, location, years in business (minimum of ten (10) years of related experience) with photographic samples or other proof of a minimum of five (5) projects featuring similar types of projects or related work with regard to scale, size, shape fit and finish. Provide a minimum of five (5) references, with full contact information. The Manufacturer must be certified according to the National Building Granite Quarries Association.
  2. Mason/Stone Installer: Provide Company Name, location, years in business (minimum of 10 years of related experience) with photographic samples or other proof of projects featuring similar types of projects or related work with regard to scale, size, shape fit and finish. Provide a minimum of five (5) references, with full contact information.
  3. Foreman: Provide the name and credentials of the person assigned to oversee the implementation process, including the on-site activities. The foreman shall be an experienced installer who has completed Stone Work, fabrication and installations similar in material, design, and extent to that indicated for this Project and whose work has resulted in constructions with a record of successful in-service performance. Provide a minimum of five (5) previous projects for which the Foreman was directly responsible.

- B. The granite proposed for use on stone CS1 shall physically and visually match the existing monument stone. Furnish a minimum of three (3) samples (Minimum of 6"x6") of the proposed granite proposed. Samples shall include stone type /name and manufacturer. site and shall be submitted to the Engineer to show the texture, finish, and anticipated range of color.
- C. The granite supplier shall submit copies of all full shop drawings to the Engineer for approval where applicable. These drawings shall show all sizes, dimensions, layout, finishes, bedding, bonding, stone jointing and anchoring details, and identifying names and numbers of each piece of granite in non-staining paint. Coordinate layout for cutting and drilling of dowels/drift pins and miscellaneous conduit penetrations and anchor bolt locations.
- D. Submit Product Data Sheets and Material Test Reports on material proposed for use. Submit reports from a qualified testing agency indicating and interpreting test results for compliance based on comprehensive testing of materials.

#### 1.06 QUALITY CONTROL

- A. The General Contractor shall submit all Supplier, Fabricator, Mason or Installer, Foreman, and all Contractor qualifications required upon the presentation of the initial Schedule of Values for the Project. The General Contractor shall provide tests from a qualified independent testing entity and submit test reports for review and approval prior to the granite fabrication.
- B. Granite shall conform to ASTM C-615, Architectural Grade Granite. All granite shall meet the following structural standards ASTM C97, ASTM C99, ASTM C170, ASTM C241, and ASTM C880.
- C. All Granite shall be free from flaws, reeds, rifts, laminations, cracks, seams, starts or other such defects. Sample must be approved prior to proceeding with the work.
- D. Exposed surfaces shall be free from spots, spalls, chips, stains, discoloration and other defects including variations that would affect the appearance outside the approved sample range.
- E. The Owner reserves the right to perform independent testing by a qualified testing laboratory. Impact hammer, sonoscope, or other nondestructive device may be permitted but will not be used as sole basis for approval or rejection of Granite.
- F. Fabricator and Mason shall coordinate for the Engineer to review three (3) capstone templates installed and fit in place for to final approval prior to completing fabrication and installation of capstones. Templates shall be made of  $\frac{3}{4}$ " thick plywood, fabricated full scale, cut to lengths indicated on the plans.



## 1.07 DELIVERY, STORAGE, AND HANDLING

### A. Packing and Loading

1. Finished granite shall be carefully packed and loaded for shipment by the fabricator using all reasonable and customary precautions against damage in transit. No material which may cause staining or discoloration shall be used for blocking or packing.

### B. Delivery

1. Written Notice shall be provided to the Owner and Engineer 48 hours prior to intended delivery to the site. Upon arrival to the site all pieces shall be uncovered, inventoried, and inspected for shipping damage prior to preparing for off loading. No unloading shall occur if damage is found. All damaged Stone shall be immediately identified and reviewed with the Owner and Engineer.
2. Upon final receipt at the Job Site or storage yard, and authorization to unload, the granite shall be off loaded using extreme care and with appropriately sized equipment. All granite shall be handled with wide belt nylon straps. The use of chains is not permitted. All off loaded stone shall be stacked on timber cribbing or platforms beginning at a minimum of 6" above the ground, with 4" cribbing spaces between, and care shall be taken to prevent staining from soil, plastic, tarps, strapping, ropes or other incidentals during storage. If storage is to be for a prolonged period, polyethylene or other suitable plastic film may be placed over all stones if used with spaces and configured for even air circulation and as an overall protective covering. Holes in the stones shall be plugged during freezing weather to prevent the accumulation of water. Salt shall not be used for melting of ice in on or adjacent to granite.

- C. Granite shall be carefully handled to prevent chipping, breakage soiling or other damage. Steel 'Pinch' or wrecking bars shall not be used without protecting the edges of the granite with wood or other rigid materials. All lifting shall be conducted with wide belt nylon slings. Use of chains in contact with the granite cut stones is prohibited. Lifting straps containing tar, grease or any other substances which might mar or cause staining to damage to the granite finishes shall not be used.

- D. If material is damaged in the unloading process, immediately notify the Engineer for a determination on responsibility, suitability for reuse or rejection. If rejected the Contractor shall take charge and replace the stone pieces iden-

tified at no charge. Back charges to the supplier shall be if made only with prior notification.

1.08 SOURCE OF SUPPLY

- A. Supplier: All granite shall be obtained from quarries in the United States or Canada with adequate capacity and facilities to meet the specified requirements. Cutting and finishing shall be done by a firm equipped to process the material promptly on order and in strict accord with specifications. The supplier shall provide written, photographic or otherwise documented evidence to this effect to the Owner and Engineer.
- B. Quarries shall show evidence by way of written or otherwise documented environmentally responsible practices and shall have a method for the diversion of stone scrap or cuttings from the waste stream thru recycling or re-purposing and shall have a system that minimizes the use of potable water in cutting through the recycling and reuse of water.
- C. Suitable Suppliers and Fabricators Include:
  - 1. Plymouth Quarries  
410 Whiting Street  
Hingham, MA 02043  
781.335.3686  
[www.plymouthquarries.com](http://www.plymouthquarries.com)
  - 2. Granites of America  
15 Branch Avenue  
Smithfield RI 02917  
401.232.2040  
[www.granitesofamerica.com](http://www.granitesofamerica.com)
  - 3. Swenson Granite  
10 Main Street  
Medway, MA 02053  
508.533.2882  
[www.swensongranite.com](http://www.swensongranite.com)

## **PART 2 - PRODUCT**

### **2.01 GRANITE CUT STONE:**

- A. Granite Cut Stone Type 1 shall be "Chelmsford" or approved equal. Granite shall match the existing memorial granite cut stones.
- B. Granite Cut Stone Type 2 shall be "Chelmsford" or approved equal. Stone type shall appear as a visual match to the new City curb edging installed at Slater Mill, located at 67 Roosevelt Avenue, Pawtucket, RI.
- C. Proposed Granite Cut Stone elements shall be fabricated from new granite. All granite shall be of good quality as graded by the National Building Granite Quarries Association, Inc., free of cracks, seams, fissures or starts which may impair its structural integrity or function.
- D. The Granite provided for all capstone shall architectural grade, naturally occurring, fine to medium grain textured, light to medium gray in color without pronounced or detracting veining flecking, quartz pockets, or discoloration.
- E. The granite selected for use shall physically and visually match the existing granite monument pieces designated to be salvaged and re-set.
- F. **GRANITE FINISHES:** The National Building Granite Quarries Association, Inc shall define Finishes used in bold in the schedule below. Finishes are defined as follows:
  - 1. Polished: Mirror gloss, with sharp reflections.
  - 2. Honed: Dull sheen, without reflections.
  - 3. Fine rubbed: Smooth and free from scratches; no sheen.
  - 4. Rubbed: Plane surface with occasional slight "trails" or scratches.
  - 5. Shot ground: Plane surface with pronounced circular markings or trails having no regular pattern.
  - 6. Thermal: Finish produced by application of high temperature flame to the surface. Large surfaces may have shadow lines caused by overlapping of the torch.

### **2.02 FABRICATION**

- A. Granite shall be of the sizes and dimensions indicated in the final approved shop drawings.
- B. Face variation from a true plane shall be as follows:
  - 1. Honed: 3/64 inch.
  - 2. Thermal: 3/16 inch.
- C. Back variation: 1/4 inch on any piece under 12" thick, 1/2" above 12" thick.
- D. Back sides may be roughly dressed when not exposed to view.
- E. Arris lines shall be cut sharp and square or to the angle specified, shown and approved in the shop drawings. Where exposed, all corners shall be eased.

## 2.03 FLATNESS TOLERANCES

- A. A 4' dimension in any direction on the surface shall determine variation from true plane, or flat surfaces. Such variations on polish, honed, and fine rubbed surfaces shall not exceed tolerances listed below or 1/3 of the specified joint width, whichever is greater. On surfaces having other finishes, the maximum variation from true plane shall not exceed the tolerance listed below or 1/2 of the specified joint width, whichever is greater.
1. Polished, honed or fine rubbed finishes.....3/64 inch
  2. Sawn, 4-cut, 6-cut, and 8-cut finishes..... 1/8 inch
  3. Thermal and coarse stippled finishes.....3/16 inch
  4. Split face, Rock Face or other rough-cut finishes..... 1 inch

## 2.04 INCIDENTAL CUTTING AND DRILLING

- A. Incidental field drilling shall be allowed if determined necessary to establish the anchorage where best suited.
- B. Incidental cutting is required to accomplish the necessary fit and angle points in the river wall. Cut stone with new blades specifically for cutting stone. Make all cuts plumb unless directed otherwise. Utilize water when cutting.
- C. All cutting and drilling of bore holes, and holes for dowels and anchors shall be considered incidental to the cost of fabricating and installing the stones, regardless of where work is performed. Fabricate and drill all holes to the greatest extent possible in controlled shop conditions off-site.

## 2.05 ANCHORS

- A. Anchoring System: Per Section 03600 and 03604 bonding adhesive used to bond specified 316 stainless steel metal threaded rods, dowels, bolts, etc. to sound granite cut stone components.

# PART 3 - EXECUTION

## 3.01 INSTALLATION: General

- A. General:
1. Lay out all stone pieces that intersect or connect to other elements, either in the shop or in the field, for review of fitment and composition. Maintain all desired relationships as shown on the plans. Plan and allow for 'flex' length cap stone pieces that may be required to be field-cut to fit.

2. Template stone sizes and shapes for factory fabrication and drilling of anchor bolt holes where conditions permit.
3. Careless handling of the granite will not be allowed. Damaged pieces will be rejected and shall not be installed.
4. Cut, grind, re-butt or otherwise field cut both ends of adjoining stones in the field as directed by the Engineer and as necessary to comply with the drawings.

3.02 INSTALLATION: Specific

- A. Granite Placement. Before placing granite, the Contractor shall verify that all conditions are ready for placement of granite. Verify that all lay-out and grade information is accurate and complete.
- B. Insure that during all granite installation and before placement of any vertical of any concrete, all reinforcement, and any embedded items is coordinated, complete and that required inspections have been performed.
- C. All setting shall be performed by competent granite setters under qualified supervision and in accordance with the approved shop drawings. Set stones level unless otherwise noted. Shim as necessary. Set granite pieces to obtain the reveals and angles and orientations shown in the plans.
- D. Stones with chips, cracks, stains or defects that might be visible shall not be installed. Granite to be set shall be clean and dry. Granite shall be set to the described line and grade. Joints shall be at the specified thickness as Indicated on the plans. Direct contact bearing between granite pieces shall be prohibited.
- E. Set granite stones as shown on drawings.
- F. All work involving epoxy, cement base coating and protective coating to adhere strictly to the manufacturer's current printed recommendations as to temperatures at time of application. No use of epoxy materials allowed when either the temperature of the Granite stone or the ambient temperature is below 50 degrees F, 24 hours before, during, or for a period of 48 hours after the completion of the installation. Temporary heat may be used to meet the specified requirements. All epoxy, shall be new and used within the shelf life limitations set forth by the manufacturer.
- G. Surfaces shall be clean and sound. Surfaces may be dry, damp or wet, but free of standing water. Remove dust, laitance, grease, curing compounds, impregnations, waxes, foreign particles and disintegrated materials by abrasion methods such as sandblasting. Correctly size, drill and clean holes as per approved anchor bolt system Manufacturer's recommendations.
- H. Utilize anchor bolts, threaded dowels and pins as per plans.

- I. Mortar joints between capstones as noted on plans. All exposed surfaces shall be kept free from mortar at all times. Injection holes, slots, and sites for anchors and dowels shall be neatly filled completely during the setting of the granite. After pointing the joints, carefully clean all joints and stone faces. Pointed joints shall have a smooth, shallow concave surfaces.
- J. Relieve all exterior corners and ease edges of permanently exposed Granite.

### 3.03 PROTECTION OF THE WORK

- A. All installed granite cut-stone work shall be properly installed and adequately protected under the responsibility of the Contractor until Final Acceptance of the Project by the Owner.

**END OF SECTION**

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**SECTION 05010**

**MISCELLANEOUS METALS**

**PART 1 – GENERAL**

**1.1 RELATED DOCUMENTS**

- A. Drawings and general provisions of the contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this section.
- B. Section 02300 Earthwork
- C. Section 03300 Cast-in-Place Concrete
- D. Section 03600 Epoxy Grout
- E. Section 03600 Non-Shrink Grout
- F. Section 04850 Granite Cut Stone

**1.2 SUMMARY**

- A. Work includes the purchase, fabrication and installation of miscellaneous steel reinforcing and anchorage components, steel plates, ornamental steel railings, handrails and related work including cutting modifying welding the existing railing system. All work shall include any and all necessary components including miscellaneous steel plates, angles, pins, plates, dowels and reinforcing as indicated in the plans. Components of this work include but are not limited to:
  - 1. Modifications to existing guardrail
  - 2. Modifications to existing handrail
  - 3. Fabrication and installation of Guardrail Type 1
  - 4. Stainless Steel Pins/ smooth round dowels
- B. Related Sections:
  - 1. Section 03300 "Cast in Place Concrete"
  - 2. See Handrail details.
  - 3. Refer to Site Improvement Plans and Site Details for correct orientation, layout and installation of the components.

**MISCELLANEOUS METALS**



### 1.3 REFERENCES

- A. Welding Qualifications: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code - Steel."
- B. Welding Qualifications: AWS D1.1/D1.1M, "Structural Welding Code - Steel." And AWS D1.6, "Structural Welding Code - Stainless Steel."
- C. American Welding Society Code

### 1.4 SUBMITTALS

- A. Product Data and / or material samples for verification of the following:
  - 1. Base Plates, Railing posts, plates, angles, channels and tube sections
  - 2. Anchor bolts and fasteners
  - 3. Stainless Steel drift pins/Dowels/Threaded Rods
- B. Shop Drawings:
  - 1. Modifications to existing guardrail and handrail: Provide plans, elevations, sections, and attachment details for the modifications to existing guardrail and handrail based on Field Conditions. The contractor shall verify all measurements in the field prior to start of work.
  - 2. Guardrail – Type 1: Provide plans, elevations, sections, and attachment details for the modifications to existing guardrail and handrail based on Field Conditions. The contractor shall verify all measurements in the field prior to start of work.
- C. Templates and Sample: Fabricate templates as required for proper finish fit.
- D. Structural Design Submittal: Include an engineering analysis and assessment signed and sealed by the qualified professional engineer responsible for their preparation.
- E. Qualification Data: All shop drawings shall be sealed by a registered Professional Engineer.
- F. Mill Certificates: Signed by manufacturers of steel products certifying that products furnished comply with requirements.
- G. Experience: Fabricators shall provide proof of five (5) years of engagement in similar types of work in regard to overall site context, product form, fit and finish.
- H. Welding certificates qualifying the fabricator.

### MISCELLANEOUS METALS

## 1.5 DELIVERY, STORAGE, AND HANDLING

- A. Store all steel components out of the weather and in a location secure from theft.
- B. Field fit all base plates as required. Cut, grind, or otherwise modify the existing steel pins as required to ensure a proper fit.

## PART 2 - PRODUCTS

### 2.1 MATERIALS

#### A. METALS, GENERAL

- 1. Metal Surfaces, General: Provide materials with smooth surfaces, without seam marks, roller marks, rolled trade names, stains, discolorations, or blemishes.
- 2. Brackets, Flanges, and Anchors: Cast or formed metal of same type of material and finish as guardrail unless otherwise indicated.

#### B. STEEL AND IRON

- 1. Recycled Content of Steel Products: Provide products with average recycled content of steel products so post-consumer recycled content plus one-half of pre-consumer recycled content is not less than 20 percent.
- 2. Metal ornamental railing shall conform to the requirements shown on the plans.
- 3. Steel Shapes & Steel Tubing: ASTM A36, ASTM A 513, ASTM A500
- 4. Steel Channel: ASTM A 788
- 5. Stainless Steel Pipe ASTM A666, ASI TYPE 316 per ASTM A 53/A 53M, Type F or Type S, Grade A, Schedule 40, for all horizontal railings, 1-1/2" diameter, Schedule 80 for all posts unless another grade and weight are required by structural loads
- 6. Provide a galvanized finish if not otherwise indicated.
- 7. Plates, Shapes, and Bars: ASTM A 276,

## MISCELLANEOUS METALS

### C. FASTENERS

1. Fasteners for use in securing Guardrail Post Bracket to the new concrete pavement as indicated and in a manner capable of withstanding loads determined.

### E. MISCELLANEOUS MATERIALS AND ITEMS

1. Welding Rods and Bare Electrodes: Select according to AWS specifications for metal alloy welded.
2. Galvanizing Repair Paint: High-zinc-dust-content paint complying with SSPC-Paint 20 and compatible with paints specified to be used over it.
3. Non-shrink, Nonmetallic Grout: Factory-packaged, non-staining, noncorrosive, nongaseous grout complying with ASTM C 1107. Provide CE CRD-C588 type D grout or equal specifically recommended by manufacturer for exterior applications.
4. Anchoring Cement: Factory-packaged, non-shrink, non-staining, hydraulic-controlled expansion cement formulation for mixing with water at Project site to create pourable anchoring, patching, and grouting compound.
5. Water-Resistant Product: Where indicated provide formulation that is resistant to erosion from water exposure without needing protection by a sealer or waterproof coating and that is recommended by manufacturer for exterior use.

## PART 3 - EXECUTION

### 3.1 GENERAL

- A. The Contractor shall provide final design and fabrication of the Base Plates as shown on the plans and per approved shop drawings.
- B. Structural Performance: Base Plates and Railing components shall withstand the effects of the various gravity loads and the following loads and stresses within limits and under conditions indicated by the building codes.
- C. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes acting on exterior metal fabrications by preventing buckling, opening of joints, overstressing of components, failure of connections, and other detrimental effects.
  1. Temperature Change: 120 deg F, ambient; 180 deg F, material surfaces.
- D. Control of Corrosion: Prevent galvanic action and other forms of corrosion by insulating metals and other materials from direct contact with incompatible materials.

### MISCELLANEOUS METALS

### 3.2 PRE- INSTALLATION

- A. Coordinate installation of anchorages for the Base Plates and all other components to be secured to the concrete and granite capstone. Furnish setting drawings, templates, and directions for installing anchorages, including, anchor bolts, and items with integral anchors that are to be embedded concrete or masonry, as shown on the plans. Deliver such items to Project site in time for installation.
- B. Schedule installation so all attachments are made and protected from damage if not immediately installed. Do not allow public use or access until installation is substantially complete.

Examine embedded anchors and formwork for the cast in place concrete to verify that all structural components are secure and sound and aligned to properly receive the components. Examine locations identified for bracing and reinforcing.

### 3.3 FABRICATION

- A. General: Fabricate base plates, tube shaft extensions railings, to comply with requirements indicated for design, dimensions, member sizes and spacing, details, finish, and anchorage, but not less than that required to support structural loads.
- B. Assemble and weld in the shop to greatest extent possible to minimize field work. and assembly. Clearly mark units for coordinated installation.
- C. Cut, drill, and punch metals cleanly and accurately. Remove burrs and ease edges to a radius of approximately 1/32 inch unless otherwise indicated. Join by welding all joints continuously. Remove sharp or rough areas on exposed surfaces.
- D. Form work true to line and level with accurate angles and surfaces.
- E. Fabricate connections that will be exposed to weather in a manner to exclude water. Provide weep holes in the bottom of all posts, horizontal rails and where water may accumulate.
- F. Cut, reinforce, drill, and tap as indicated or as necessary to receive finish hardware, screws, and similar items.
- G. Connections: Wire brush, grind and otherwise clean all surfaces of the existing metal pins. That project from the existing concrete foundations. Fabricate all Thimble base plates with adequate space for alignment over the existing pins in the field, and with clearances for field welding of the base plate to pin connections.
- H. Welded Connections: Cope components at connections to provide close fit, or use fittings designed for this purpose. Weld all around at connections, including at fittings.
  - 1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.

### MISCELLANEOUS METALS

2. Obtain fusion without undercut or overlap.
  3. Remove flux immediately.
  4. At exposed connections, finish exposed surfaces smooth and blended so no roughness shows after finishing and welded surface matches contours of adjoining surfaces.
- I. Non-welded Connections: Connect members with concealed mechanical fasteners and fittings. Tighten completely. Fabricate members and fittings to produce flush, smooth, rigid, hairline joints when properly installed..
- J. Provide, fabricate and install dowels , anchors and fittings, and anchors as necessary to affect depicted bracing and reinforcing at required locations. Provide miscellaneous fittings, and anchors to interconnect Granite Cut Stone components.

### 3.4 FINISHES, GENERAL

- A. All steel shall be HD Galvanized unless Stainless Steel or otherwise noted.

### 3.5 STEEL AND IRON FINISHES

- A. Galvanized Components:
1. Hot-dip galvanized exterior steel, including hardware, after fabrication.
  2. Hot-dip galvanized indicated steel and iron, including hardware, after fabrication.
  3. Comply with ASTM A 123/A 123M for hot-dip galvanized items.
  4. Comply with ASTM A 153/A 153M for hot-dip galvanized hardware.
- B. Remove all sharp projections, burrs, fins or other slag material that can cause injury.
- C. Preparing Galvanized components for Shop Priming: After galvanizing, thoroughly clean railings of grease, dirt, oil, flux, and other foreign matter, and treat with etching cleaner. Utilize field applied galvanized paint to touch up all cuts and welds. Repaint with approved epoxy primer and paint to blend work to match existing.

### 3.6 INSTALLATION - GENERAL

- A. Submit shop drawings stamped by an engineer licensed to practice in the State of Rhode Island. Railings must meet current building code in regard to design and structural strength.
- B. Create templates of the components.
- C. Fit railing connections together to form tight, hairline joints.
- D. Perform cutting, drilling, and fitting required for the fabrication of Guardrail – Type 1 in a shop setting. Advance all work to the greatest degree practicable to minimize field welding.

### MISCELLANEOUS METALS

- E. Place plates in location accurately with regards to alignment, and elevation; measured from established lines and levels and free of rack unless otherwise specified. Set all components to the angles specified.
- F. Coordinate with the Masonry work to shim with metal plates or washers if required to maintain alignments. Adjustments shall not compromise the structural integrity of the components.
- G. Fastening to In-Place Construction: Use anchorage devices and fasteners where shown. Size through hole connections to accept the selected fasteners necessary for securing elements and for properly transferring loads to in-place construction.
- H. Welded Connections: Use fully welded joints for permanently connecting steel components. Comply with requirements for welded connections in "Fabrication" Article whether welding is performed in the shop or in the field.

### 3.7 AJUSTING AND CLEANING

- A. Clean by washing thoroughly with clean water and soap and rinsing with clean water.
- B. Galvanized Surfaces: Clean field welds, bolted connections, and abraded areas and areas of repair galvanizing to comply with ASTM A 780.
- C. Prime and Paint all field welds with two (2) coats of zinc rich galvanic paint.

### 3.8 PROTECTION OF THE WORK

- A. Protect the steel components from damage during construction period with temporary protective coverings.
- B. Protect the General Public from potential falls through-out the installation.

## END OF SECTION

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**SECTION 16560**  
**EXTERIOR LIGHTING**

**PART 1 – GENERAL**

**1.1 SUMMARY**

- A. The work in this Section includes the furnishing, fabrication and installation of all site conduit, wiring and bollard lighting and controls as indicated in the Contract Drawings and these specifications.

**A. RELATED SECTIONS**

- A. Section 02200- Earth Excavation, Backfill and Grading
- B. Section 05000 – Miscellaneous Metals

**B. REFERENCES**

ASTM Testing Standards:

- A. ASTM B 117 – Standard Practice for Operating Salt Spray (Fog) Apparatus.
- B. ASTM D 522 – Standard Test Methods for Mandrel Bend Test of Attached Organic Coatings.
- C. ASTM D 523 – Standard Test Method for Specular Gloss.
- D. ASTM D 2247 – Standard Practice for Testing Water Resistance of Coatings in 100% Relative Humidity.
- E. ASTM D 2794 – Standard Test Method for Resistance of Organic Coatings to the Effects of Rapid Deformation (Impact).
- F. ASTM D 3359 – Standard Test Methods for Measuring Adhesion by Tape Test.
- G. ASTM D 3363 – Standard Test Method for Film Hardness by Pencil Test.
- H. ASTM G 155 – Standard Practice for Operating Xenon Arc Light Apparatus for Exposure of Non-Metallic Materials.

ISO Testing Standards:

- I. ISO 1520 – Paints and Varnishes – Cupping Test.
- J. ISO 2815 – Paints and Varnishes – Buchholz Indentation Test.

Underwriters Laboratories (UL):

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- K. UL listed  
IESNA LM-79 Testing Standard:
- L. Type 3 IES file available

C. QUALITY ASSURANCE

- A. Utilize Manufacturer regularly engaged in the manufacture of site lighting.
- B. All products shall be supported by manufacturer's shop drawings with full dimensions shown.
- C. All work shall be performed by certified welders and machine operators.
- D. Provide all components with the Manufacturer's stated warranty.
- E. All products shall be installed by a single installer with a minimum of five (5) years of demonstrated experience installing products of the same size, scope and nature as specified for use in this project.

D. DELIVERY, STORAGE, PROTECTION & PROJECT CONDITIONS

- A. Section 01400- Quality Control
- B. Section 01560 -Temporary Controls

1.2 ACTION SUBMITTALS

- A. Product Data: For each type of luminaire.
- B. Shop Drawings: For nonstandard or custom luminaires.
  - 1. Include plans, elevations, sections, and mounting and attachment details.
  - 2. Include details of luminaire assemblies. Indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.
  - 3. Include diagrams for power, signal, and control wiring.

1.3 FIELD CONDITIONS

- A. Mark locations of exterior luminaires for approval by Architect prior to the start of luminaire installation.

#### 1.4 WARRANTY

- A. Warranty: Manufacturer and Installer agree to repair or replace components of luminaires that fail in materials or workmanship within specified warranty period.
  - 1. Warranty Period: [2] years from date of Substantial Completion.

### PART 2 - PRODUCTS

#### 2.1 LIGHT BOLLARD (BL)

- a. Light Bollard shall be Cat. No. DOSB1 20W16LED4K 208 VPA BKTx by Lumec.
- b. Light Bollard shall be Ashbery Path Light from Landscape Forms Phone: 800.430.6209. 7800 E. Michigan Ave. Kalamazoo, MI 49048. comments@landscapeforms.com. Or approved equal.
- c. Light Bollard shall be made of cast aluminum and be 36 ¾" in height, 7 ¼" in diameter, and shall be square. The light bollard shall have a type 4 lamp.
- d. The coating shall be a polyester powder coat and be the color black.

##### 2.1.1 UPLIGHT (UL-1 – 4)

- a. Uplight shall be SL43-BK-C-ADA-N-N-SP1 by Philips Hadco Lighting. 100 Craftway Drive, Littlestown, PA, 17340-1651.
- b. Or approved equal.

#### 2.2 WIRE AND CABLE.

- A. General. Wire and cables shall be single conductor except where otherwise specified or indicated on the Plans. Conductors of sizes No. 10 AWG and larger shall be stranded. Wires of sizes smaller than 10 AWG shall be solid.
- B. The conductors shall be factory identified by printing the size and type of insulation. Each conductor shall be colored in accordance with the National Electric Code. Insulation color shall be constant throughout the length of the conductor and shall not otherwise need to be taped or tagged for identification. The color of the insulation of the neutral conductor shall be white. The remaining conductors shall not be white but shall be of dissimilar colors for identification.

#### EXTERIOR LIGHTING

- C. Conductors. Wire conductors shall be annealed copper conforming to the following specifications as applicable.
- D. American Society for Testing Materials
- E. ASTM B3 - specification for annealed copper wire.
- F. ASTM B8 - specification for concentric-lay-standard, copper conductor, hard, medium hard or soft.
- G. ASTM B33 - specification for tinned soft or annealed copper wire for electrical purposes.
- H. Insulation. Insulation shall be indicated and shall conform to the following specifications as applicable.
- I. American Society for Testing Materials  
ASTM D1351 - (THW and THWN) specification for polyethylene insulated wire and cable  
ASTM
- J. D2655 - (XHHW-2) specification for crosslink, thermosetting polyethylene insulation for wire and cable 0 to 600 volts.
- K. Cable Jacket. Insulation shall be jacketed and have an outer covering as specified in the National Electric Code, Table 310-13, "Conductor Applications and Insulations." When specified by the National Electric Code, the neoprene jacket shall conform to ASTM D752.
- L. All wire below finish grade shall be XHHW-2. THW or THWN may be used between the handhole and fixture if the percent of wire above ground is greater than the percent below ground.

## 2.3 GROUND WIRE

- A. Ground Wire. Ground wire shall be sized as noted on plans, soft drawn copper and shall conform to the requirements of the latest edition of the National Electrical Code.
- B. Service Conductors. Service conductors shall be as noted on plans, National Electrical Code Type "THHN" or "THW" and shall meet the requirements of the latest edition of the National Electrical Code.

## EXTERIOR LIGHTING

## 2.4 SPLICE KITS

### A. Two-Way Splice.

2.1.1.1 Copper Compression Lugs and Connectors. Lugs and connectors shall be copper compressed with industry tooling. The lugs and connectors must have a current carrying capacity equal to the conductors for which they are rated and must also meet the requirement as listed in UL 486.

2.1.1.2 Heat Shrinkable Tubing. This material shall be suitable for URD, submersible or direct buried installation. The tubing shall be UL approved and suitable for application on systems up to 600 volts, 90OC rating, and shall be precoated with thermoplastic adhesive sealant. When heated, the internal coating shall melt and seal the connection from moisture and dirt and adhere to the insulation material on the cable.

2.1.1.3 For Semi-Permanent 3-Way Splice Kits. Splice material shall consist of compressed feeder lugs and compressed tap lug enclosed in a feeder housing and shall be "Y" type with electrical rating of 600V, 150 AMP, copper.

2.1.1.4 All housings shall be made of water-resistant synthetic rubber suitable for burial in ground or exposure to sunlight. Each housing shall form a watertight seal around the cable and between the insert body and enveloping Y housing.

## 2.5 CONDUITS AND FITTINGS

A. Rigid Steel Conduit and Fittings. This conduit shall conform to Federal Specification WW-C-581. The latest revision of the Underwriters' Laboratories, Inc. Publication UL-6-Standard for Rigid Metallic Conduit also forms a part of this Specification. In addition to the above requirements, the exterior surface conduit including fittings shall be zinc-coated and the interior coated with zinc, enamel, or other corrosion resisting coating. The conduit shall be metalized galvanized, hot-dip galvanized or electro-galvanized.

B. Threads and couplings shall conform to the provisions of Appendix III of ASTM A53; "Basic Threading Data for Pipe.

C. PVC Plastic Conduit. Plastic conduit and plastic fittings shall conform to the requirements of Federal Specification W-C-1094 (GSA-FSS); Conduit and Conduit Fittings, Plastic, Rigid, and the latest amendments.

D. Expansion Couplings. The fittings shall be designed to compensate for expansion in a horizontal line of conduit at expansion joints in a structure and shall be as detailed.

E. Expansion fittings shall provide for a maximum of 4 inches longitudinal conduit movement, 2 inches in either direction. Expansion fittings shall provide for transverse conduit movement as

## EXTERIOR LIGHTING

indicated where required by structural conditions. Expansion fittings shall be bonded with heavy duty, two bolt, ground fittings. Strap type clamps will not be acceptable.

- F. Conduit sweeps
  - a. For lighting wiring: 2" RGS set 2'-6" below top of base
  - b. For ground wire: ¾" RGS set 10" below top of base

## 2.6 HANDHOLES

- A. Type "A" handhole, RIDOT standard 18.2.0.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Examine areas to receive Ornamental Lights. Do not begin installation until substrates have been properly prepared.
- B. Notify Engineer of conditions that would adversely affect installation or subsequent use.
- C. Do not begin installation until unacceptable conditions are corrected.

### 3.2 INSTALLATION

- A. Sequence installation to ensure utility connections are achieved in an orderly manner.
- B. Light Fixture
  - 1. Install light in accordance with manufacturer's instructions.
  - 2. Install light plumb.
  - 3. Anchor light securely in place.

### 3.3 ADJUSTING

- A. Finish Damage: Repair minor damages to finish in accordance with manufacturer's instructions and as approved by Architect.
- B. Component Damage: Remove and replace damaged components that cannot be successfully repaired as determined by the Engineer.

### 3.4 ERECTION TOLERANCES

- A. Set all posts plumb.
- B. Maximum Variation from True Position: 1/16 inch (1.5 mm)

## EXTERIOR LIGHTING

### 3.5 CLEANING

- A. Clean light promptly after installation in accordance with manufacturer's instructions.
- B. Do not use harsh cleaning materials or methods that could damage finish.

### 3.6 PROTECTION

- A. Protect installed light to ensure that, except for normal weathering, light will be without damage or deterioration at time of Substantial Completion.

### 3.7 INSTALLATION OF UNDERGROUND CONDUIT

#### A. Direct-Buried Conduit:

1. Excavate trench bottom to provide firm and uniform support for conduit. Prepare trench bottom as specified in Section 02200 Earth Excavation for pipe less than 6 inches in nominal diameter.
2. Install backfill as specified with Section 02200 and Section 02530 Restoration of Curb and Sidewalk.
3. After installing conduit, backfill and compact. Start at tie-in point, and work toward end of conduit run, leaving conduit at end of run free to move with expansion and contraction as temperature changes during this process. Firmly hand tamp backfill around conduit to provide maximum supporting strength. After placing controlled backfill to within 12 inches of finished grade, make final conduit connection at end of run and complete backfilling with normal compaction as specified in Section 02200 "Earth Moving."
4. Install manufactured duct elbows for stub-up at poles and equipment and at building entrances through floor unless otherwise indicated. Encase elbows for stub-up ducts throughout length of elbow.
5. Install manufactured rigid steel conduit elbows for stub-ups at poles and equipment and at building entrances through floor.
  - a. Couple steel conduits to ducts with adapters designed for this purpose and encase coupling with 3 inches of concrete for a minimum of 12 inches on each side of the coupling.
  - b. For stub-ups at equipment mounted on outdoor concrete bases and where conduits penetrate building foundations, extend steel conduit horizontally a minimum of 60 inches from edge of foundation or equipment base. Install insulated grounding bushings on terminations at equipment.
6. Underground Warning Tape per drawings.

### 3.8 INSTALLATION OF UNDERGROUND HANDHOLES AND BOXES

- A. Install handholes and boxes level and plumb and with orientation and depth coordinated with connecting conduits to minimize bends and deflections required for proper entrances.
- B. Unless otherwise indicated, support units on a level bed of crushed stone or gravel, graded from 1/2-inch sieve to No. 4 sieve and compacted to same density as adjacent undisturbed earth.
- C. Elevation: In paved areas, set so cover surface will be flush with finished grade. Set covers of other enclosures 1 inch above finished grade.

### EXTERIOR LIGHTING

D. Install handholes with bottom below frost line.

E. Field-cut openings for conduits according to enclosure manufacturer's written instructions. Cut wall of enclosure with a tool designed for material to be cut. Size holes for terminating fittings to be used, and seal around penetrations after fittings are installed.

**END OF SECTION**

**SECTION 16900**  
**MODIFY EXISTING PEDESTRIAN PUSHBUTTON**

**PART 1 – GENERAL**

**1.1 SUMMARY**

- A. This work shall consist of removing an existing pedestrian pushbutton/sign and replacing it with a new pedestrian pushbutton with sign including a modular station and an extension bracket. All work including button/sign removal, pole repairs, wiring, new mounting and testing to provide a fully functional pedestrian pushbutton in accordance with the plans and details, complete in place and accepted by the Engineer.

**A. RELATED SECTIONS**

- A. N/A

**B. QUALITY ASSURANCE**

- A. All products shall be supported by manufacturer's shop drawings with full dimensions shown.
- B. Provide all components with the Manufacturer's stated warranty.
- C. All products shall be installed by a single installer with a minimum of five (5) years of demonstrated experience installing products of the same size, scope and nature as specified for use in this project.

**C. DELIVERY, STORAGE, PROTECTION & PROJECT CONDITIONS**

- A. Section 01400- Quality Control
- B. Section 01560 -Temporary Controls

**1.2 SUBMITTALS**

- A. Product Data

MODIFY EXISTING PEDESTRIAN PUSHBUTTON

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B. Shop Drawing

1. Include plans, elevations, sections, and mounting and attachment details. Include details of pedestrian actuator assemblies. Indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.

**PART 2 – PRODUCTS**

2.1 PEDESTRIAN PUSHBUTTON EXTENSION BRACKET

1. The Pedestrian Pushbutton shall be the PedSafety 4 EVR MOAB (Product No. 5022001-Y), the sign shall be PedSafety R10-2 sign (Product No. 5041105), the pedestrian pushbutton and sign station shall be PedSafety Modular Pedestrian Station (Product No. 5030114)
2. Or approved equal.

2.2 PEDESTRIAN PUSHBUTTON EXTENSION BRACKET

1. The Pedestrian Pushbutton Extension Bracket shall be PedSafety Telescoping Extension Bracket (Product No. 5030240L) and banded on the mast arm pole using tamper-proof clamps. The pedestrian pushbutton, modular station, and extension bracket shall be “Federal Yellow” in color.
2. Or approved equal.

**PART 3 - EXECUTION**

3.1 EXAMINATION

- A. Examine areas to receive Ornamental Lights. Do not begin installation until substrates have been properly prepared.
- B. Notify Engineer of conditions that would adversely affect installation or subsequent use.
- C. Do not begin installation until unacceptable conditions are corrected.

### 3.2 REMOVE EXISTING PEDESTRIAN PUSHBUTTON

A. The Contractor shall carefully remove the existing pedestrian pushbutton from the mast arm pole, disconnect the wiring, and legally dispose of the existing pedestrian pushbutton. The hole on the mast arm pole shall be closed using an epoxy patch.

### 3.3 INSTALLATION

A. Contractor shall drill a new hole at the position depicted on the plans or as directed by the Engineer to extend the existing wire to the new pedestrian pushbutton with extension bracket and shall be rewired.

B. The extension bracket with pushbutton shall be mounted at a height of 3 feet 6 inches measured from the center of the pushbutton to the finished sidewalk elevation. In addition, the extension bracket with pushbutton shall be located at a maximum 10 inches from the curb ramp level landing measured from the edge of the curb ramp level landing to the face of the pushbutton.

C. The pushbutton shall be tested in the field after initial installation in accordance with the manufacturer's recommendations.

D. The extension bracket shall be banded to the mast arm pole and installed per manufacturer's recommendation. The banding shall be tamper-proof clamps. The length of the extension shall be field verified and adjusted as necessary. If the final installed location of pushbutton is located outside of the specified range, the Contractor shall be responsible for reinstalling the extension bracket with pushbutton at the specified location at no additional cost to the City. The final location shall be approved by the Engineer.

**END OF SECTION**

MODIFY EXISTING PEDESTRIAN PUSHBUTTON

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MODIFY EXISTING PEDESTRIAN PUSHBUTTON

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## **SECTION 32840**

### **IRRIGATION**

#### **PART 1 – GENERAL**

##### **1.1 SUMMARY OF WORK**

- A. Provide all materials, labor, installation equipment, and technical service to complete construction of automatic irrigation system at-grade, as well as the testing and warranty of the system as defined in this Specification and Construction Drawings. Items of work specifically included are:
  - 1. Procurement of all applicable licenses, permits, and fees.
  - 2. Coordination of all utilities.
  - 3. Verification of site conditions.
  - 4. Maintenance during guarantee period.
  - 5. Connection of existing electrical power supply to the new irrigation controller and connecting the irrigation control system to earth ground.
  - 6. Reuse existing building penetrations to adjacent landscape, where practical and as directed by Plumbing, for new electric zone valves, irrigation laterals and valve wire. Refer to Plumbing for penetration locations.
  - 7. Remove existing PEX irrigation pipe within Building and replace with copper plumbing supply to feed irrigation system within the landscape.
  - 8. Replace existing indoor controller for new exterior controller, reuse seven (7) existing valve wires for landscape irrigation to remain, capped in existing valve box at building. Add new conventional wire for new irrigation zones.
  - 9. Coordinate trade work of indoor Plumbing and Electrical work for existing and new irrigation system components.

##### **1.2 QUALIFICATIONS**

- A. Qualified irrigation system installers must have minimum experience of five (5) years with work and products specified herein, including:
  - 1. Two-Wire Controller and Valve Installation
  - 2. Soil-Moisture Based and Weather-Based Smart Controllers
  - 3. Solvent Weld and/or Gasket Joint PVC Pipe 1.5-inches and Greater
  - 4. Commercial/Municipal Irrigation Systems
- B. Attest qualifications by providing three (3) recent projects and contact references in previous five (5) years:
  - 1. Qualifications: Submit qualification package as requested by Owner's Representative. Qualifications package must include:
    - i. Contact Name
    - ii. Company Name

- iii. Contact Phone Number
- iv. Project Name and Location
- v. Brief Project Description

### 1.3 IRRIGATION UTILITIES (PROVIDE LICENSED TRADESPERSONS)

#### A. Water Service Points of Connections

1. Replace existing PEX building domestic irrigation water service with copper by Plumbing. Approximate exterior point of connection location is noted on Drawings.
  - i. Verify existing equipment meets local codes and provide adequate service flow as specified below. Existing equipment is located in gym room of Pawtucket Fire Station 2. Required equipment for reuse includes at minimum:
    - a. Backflow Preventer
      - 1) Remove existing irrigation backflow preventer and replace with new in outdoor irrigation enclosure.
    - b. Water Meter
      - 1) Remove existing irrigation meter and replace with new in outdoor irrigation enclosure.
    - c. Domestic Water Connection for Irrigation System
      - 1) Remove irrigation PEX mainline portions and replace with copper to and through irrigation enclosure to start of irrigation system.
  - ii. Flow and pressure requirements at outdoor points of connection:
    - a. Flow: Maximum 12 gallons per minute
    - b. Pressure (dynamic): 60 pounds per square inch at each at-grade irrigation point of connection.
  - iii. Refer to the Irrigation Details on the Drawings for the connection requirements and components between the existing and new irrigation.

#### B. Electrical Power Source to Irrigation Controller

1. Reuse Electrical circuits and conduits to be provided by Electrical (Refer to DIVISION 26 - ELECTRICAL).
  - a. Power Requirements for Irrigation Controller (Provide new outdoor circuit)
    - 1) 120-Volt, 1-Phase, 60-Hz, 20-Amp
  - b. Coordinate with Electrical to ground irrigation controller to earth.

#### C. Communications to Indoor Controller

1. Purchase and install Cellular Data Card provided by Irrigation Controller Manufacturer

#### 1.4 RELATED REQUIREMENTS

- A. Coordinate with other project trades and refer to overall project Specifications and Drawings, including:
  1. DIVISION 01 – GENERAL REQUIREMENTS
  2. DIVISION 02 – EXISTING CONDITIONS
  3. DIVISION 03 – CONCRETE
  4. DIVISION 26 – ELECTRICAL
  5. DIVISION 31 – EARTHWORK
  6. DIVISION 32 – EXTERIOR IMPROVEMENTS
  7. DIVISION 33 – UTILITIES
  8. Construction Drawings:
    - i. Drawings IR-1.00 through IR-2.01
    - ii. Review other Project Construction Documents for coordination.

#### 1.5 APPLICABLE STANDARDS AND CODES

- A. At minimum, comply with the following standards and codes:
  1. American Society for Testing and Materials (ASTM)
  2. National Standard Plumbing Code (NSPC)
  3. National Electric Code (NEC)
  4. National Sanitary Foundation (NSF)
  5. Underwriters Laboratories, Inc. (UL)
  6. Occupational Safety and Health Administration (OSHA)
- B. Comply with applicable laws, standards, and regulations of local governing authority. Local laws more stringent than those referenced above take precedent.

#### 1.6 SUBMITTALS

- A. Submit the following under provisions of SECTION 01 33 00 - SUBMITTAL PROCEDURES:
  1. Literature: Manufacturer's product data sheets, specifications and installation instructions for materials listed in this Specification (PART 2 – PRODUCTS).
    - i. Product submittals shall be concise (no extraneous pages or sections) and clearly marked to show submitted product model, type, size, etc.
    - ii. Substitute Product Submittal:
      - a. Provide specified product submittals for “an approved equal” to Owner’s Representative for approval.

- b. Alternate products are acceptable when products of equal or better quality and performance are submitted and approved by the Owner's Representative.
  - c. Substitute Product Submittals constitute representation that:
    - 1) Substitute products have been thoroughly investigated and have been determined to be equal or superior in all respects to that specified.
    - 2) Substitute products shall provide the same warranties as specified products.
    - 3) Substitute products are compatible with interfacing items.
    - 4) Assume responsibility of and guarantee system performance as a result of product substitution, including making all subsequent changes to meet design specifications.
  - iii. Work shall not commence until all products specified are submitted and approved in a written notification by Owner's Representative.
  - iv. All product installed shall be new, without defects, and of quality and performance as specified.
- 2. Schedule: Submit Schedule of all products to be furnished hereunder, indicating manufacturer, size, and model.
  - i. Ensure that all of the types/styles of products and installation equipment specified herein can be furnished by the manufacturer submitted.
  - ii. Provide all spare irrigation parts as noted (see Spare Irrigation Parts)
  - iii. Prior to submitting schedule, confirm current site conditions are as provided in the Construction Drawings.

#### 1.7 DELIVERY, STORAGE AND HANDLING

- A. Do not deliver materials to Site until specified submittals have been submitted to, and approved by, Owner's Representative.
- B. Coordinate temporary storage and staging areas.
- C. Protect materials from damage from construction traffic, weather, corrosion, and other causes while stored at Site.
- D. Minimize on-site storage as much as possible.
- E. Store and handle products and materials in compliance with manufacturer instructions and recommendations.

#### 1.8 GUARANTEE AND REPLACEMENT

- A. Guarantee entire irrigation system, parts and labor, for one (1) year from official written date of acceptance by Owner's Representative. Provide written warranty showing date of completion and period of warranty prior to request for final payment.

- B. System malfunctions occurring during the guarantee period due to defective materials, poor workmanship, or improper adjustment shall be corrected to satisfaction of Owner's Representative at no additional cost.
  - 1. Repair defects within 10 days of notification from Owner's Representative.
  - 2. Repair defects with approved products.
- C. First-year spring system start-up and winterization shall be included in system guarantee.
- D. Manufacturer warranties shall be provided for all products and materials where such warranties are offered in published product data. Copies of manufacturer warranties are to be included in the Operations & Maintenance Manual (See Operation and Maintenance).

## **PART 2 – PRODUCTS**

### **2.1 AUTOMATIC IRRIGATION CONTROLLER**

- A. Remove existing Irrigation Controller and Replace with New Controller Outdoors
  - 1. Existing: Gym Room of Pawtucket Fire Station 2
  - 2. New: Irrigation Enclosure (Outdoors)
  - 3. Manufacturer/Model: Rain Bird ESP-LXME 2 PRO Modular, or Approved Equal
    - i. Reuse seven (7) extra valve wires capped and pulled to existing valve box within landscape
- B. External Devices (Matching Manufacturer and Compatible with Controller)
  - 1. Flow Sensor
    - i. Location: Irrigation Enclosure
    - ii. Size: 1-inch
      - a. Provide Isolation Valves and Unions on Each Side for Winterization
    - iii. Flow Range = 2 – 40 gpm
      - a. Surge Suppression and Grounding (at Controller)
  - 2. Rain Sensor
    - i. Located Near Irrigation Controller, Mounted Clear of Overhead Obstructions and Sprinkler Irrigation Spray Arcs



- ii. Manufacturer/Model: Rain Bird CPRSDBEX Wired Rain Sensor, or Approved Equal

C. Grounding

- 1. Ground to approved Earth Ground location, coordinate with Electrical.

2.2 WIRE

A. Conventional Wire

- 1. Size: 14AWG Minimum
- 2. Construction: Single Strand Solid Copper Conductor with PVC Insulation
- 3. Ratings: UL-Listed, NEC (Class II Circuit), Direct Burial UF/TWU, up to 600-Volt Potential
- 4. Standards: ASTM B-3, ASTM B-8
- 5. Markings: Manufacturer, Rating, Size, and Type
- 6. Manufacturer/Model: Paige Electric Model P7001D; Service Wire Company UF14, UF12; Regency Wire & Cable 14AWG, 12AWG; or Approved Equal.

B. Wire Splices

- 1. Type: Direct Burial Wire Splice Kit (All Components Intact)
- 2. Construction: Lockable Plastic Tube, Pre-Filled with Insulation Gel
- 3. Ratings: UL-Listed, NEC, Direct Burial and Submersion, up to 600-Volt Potential
- 4. Manufacturer/Model: 3M DBY-6; Rain Bird DB Series; or Approved Equal.

C. Wire Conduit

- 1. Size: 1-Inch Minimum
- 2. Construction: PVC, Solvent Weld
- 3. Ratings: Schedule 80
- 4. Fittings: Long Sweep Elbows
- 5. Manufacturer: Cresline; Certainteed, JM Eagle; or Approved Equal.

2.3 PIPE AND FITTINGS

A. Existing Irrigation Service

- 1. Plumbing to replace existing PEX mainline with copper pipe from within the building into the landscape.
  - i. New copper irrigation mainline to be brought through building into landscape planters. Refer to the Irrigation Details on the Drawings for the connection requirements and components between the existing and new irrigation.

B. Irrigation Mainline Connections to Existing Irrigation System and Laterals

1. Size: 1-Inch Maximum
2. Construction: Polyvinyl Chloride (PVC), Solvent Weld
3. Ratings: Schedule 40 Pressure Pipe
4. Standards: ASTM D-1785
5. Markings: Manufacturer, Nominal Size, Class or Schedule, Pressure, Extrusion Date, Pipe Insertion Mark.
6. Manufacturer: Cresline; Certainteed; JM Eagle; or Approved Equal.

C. Fittings

1. Size:
  - i. For Valves Toe Nipples: Schedule 80 PVC
  - ii. Other Fittings: Schedule 40 PVC
2. Markings: NSF Designation, Size, Class, or Schedule
3. Manufacturer: Lasco; Spears; Dura; or Approved Equal

D. Solvent

1. Type: NSF Type I or Type II PVC
2. Standards: ASTM D-2564
3. Manufacturer: IPS Weld-On 711; Oatey HD Cement; Rectorseal Gold; or Approved Equal

E. Primer

1. Type: NSF for PVC
2. Standards: ASTM F-656
3. Manufacturer: IPS Weld-On P-68; Oatey Clear Primer; Rectorseal Jim PR-2; or Approved Equal

2.4 ELECTRIC ZONE VALVES

A. Drip Zone Valve (Kit)

1. Size: 1-Inch
2. Construction: Plastic Diaphragm with Reinforced Nylon or Fiberglass Body
3. Ratings: 200 psi, Minimum Flow of 0.2 gpm
4. Features: Manual Bleed Screw, Flow Control, Pressure Regulation (to 40-45psi), and Stainless Steel Screen Filtration to 100 micron (150 mesh)
5. Manufacturer/Model: Hunter ICZ; Rain Bird X CZ; or Approved Equal

B. Master Valve (Normally Closed)

1. Location: Irrigation Enclosure
2. Size: 1-Inch (0 to 20 gpm)
3. Construction: Brass Globe Valve

4. Ratings: 220 psi
5. Features: Manual Bleed Screw, Flow Control, Pressure Regulation, and Filter
6. Manufacturer/Model: Hunter IBV-G-FS; or Approved Equal

## 2.5 ISOLATION VALVES

### A. Lateral Isolation Valves

1. Size: 1-Inch
2. Construction: Bronze, Gate Valve
3. Ratings: 200 psi
4. Features: Steel Cross Handle, Non-Rising Stem
5. Manufacturer/Model: Nibco T-113K; Apollo 102T-K; or Approved Equal.

### B. Winterization Port Ball Valve (Indoor Within Enclosure)

1. Size: 1-Inch, Normally Closed
2. Construction: Brass, Steel Tee Handle, Standard Port
3. Ratings: 600 psi
4. Features: Blow-Out-Proof Stem, Plated Brass Ball
5. Manufacturer/Model: Apollo 70-105-01; or Approved Equal

## 2.6 QUICK COUPLING VALVES

### A. Mainline Quick Coupling Valve

1. Size: 1-Inch, Normally Closed
2. Construction: Brass, Spring-Loaded Valve Seat, Key Engaged
3. Ratings: 125 psi
4. Features: 1-Inch NPT Inlet, ACME Key, Locking Vinyl Cover, Anti-Rotation Stabilization Wings
5. Manufacturer/Model: Hunter HQ-44RC-AW; or Approved Equal.

### B. Swing Joint Assembly

1. Size: 1-Inch
2. Construction: PVC, with O-Ring Seals and Brass Threaded Outlet
3. Manufacturer: Hunter HSJ-1 with SnapLok; or Approved Equal

## 2.7 ROTARY SPRINKLERS

### A. Body

1. Size: 6-Inch Pop-Up
2. Construction: Plastic, Ratcheting Riser, Removable Nozzle, Internal Check Valve
3. Ratings: Pressure Regulated to 40 psi
4. Manufacturer/Model: Hunter PROS-06-PRS40-CV; Rain Bird 1806-SAM-PRS-P45, or Approved Equal

B. Nozzles

1. 12' – 30' Radius (see Contract Drawings)
2. Features: Full and Part-Circle Fixed-Arc and Strip Patterns
3. Manufacturer/Model: Hunter MP Rotator, Toro Precision Rotating, or Approved Equal

2.8 DRIP IRRIGATION

A. Integral Emitter Drip Tubing

1. Type

i. Planter Beds

- a. Tubing: 17mm
- b. Emitters:
  - 1) Rate: 0.6 gph
  - 2) Spacing: 12-Inches
- c. Installation Spacing: Rows at 12-Inches

2. Construction: Polyethylene (PE) with Embedded Pressure Compensating Emitters
3. Ratings: Minimum Bending Radius = 7-inches
4. Fittings: 17mm PVC Barbed Fittings with Stainless Steel Clamps
5. Features: Check Valve
6. Manufacturer/Model: Netafim TLCV6-12 and TLCV0; or Approved Equal

B. Manual Flushing Valve

1. Size: 1-Gallon Flush
2. Construction: Plastic
3. Fittings: 17mm PVC Barbed Fittings
4. Manufacturer/Model: Netafim TLFV-1; or Approved Equal

2.9 VALVE BOXES

A. Plastic Valve Boxes in Planter Beds only. Coordinate final field placement with Landscape Architect.

B. General

1. Size:

i. 12-Inch Standard Valve Box

- a. Double 1-Inch Electric Zone Valves

ii. 6-Inch Round

- a. Wire Splice

- b. Check Valve
    - c. Flush Valve
  - iii. 10-Inch Round
    - a. Single 1-Inch Electric Zone Valve
    - b. Isolation Valve
    - c. Quick Coupling Valve
- 2. Construction: Resin
- 3. Ratings: Tensile Strength 3,000-5,000 psi
- 4. Color: Green or Black (per Owner's Representative)
- 5. Features: Lockable, Bolt-Down Covers, Brick Supported
- 6. Manufacturer/Model: Carson, Model Specification Grade NDS Pro; Rain Bird VB; or Approved Equal

## 2.10 COPPER PIPE

- A. Size: 1-inch
- B. Construction: Type K Copper
- C. Standards: ASTM B-88
- D. Fittings: Wrought Copper, Silver Solder Joint (per ASTM B-828), Non-Corrosive Flux

## 2.11 IRRIGATION ENCLOSURE AND EQUIPMENT

- A. Reduced Pressure Zone Backflow Preventer Assembly
  - 1. Size: 1-Inch
  - 2. Construction: Bronze with Quarter Turn Ball Valves
  - 3. Ratings: 175psi Maximum
  - 4. Manufacture: Watts, Model 009M2-QT-S, or Approved Equal
- B. Meter
  - 1. Size: ¾-Inch
  - 2. Construction: Bronze
  - 3. Features: Magnetic Drive with Automatic Meter Register (AMR), Oval Flanges
  - 4. Manufacture: Badger, Model Recordall 1-Inch, or Approved Equal
- C. Irrigation Enclosure
  - 1. Size: 60" Long x 39" High x 38" Wide
    - i. Concrete Pad: 64" Long x 42" Wide x 6" Thick, 1" Chamfer on Top Edge
  - 2. Construction: Marine-Grade Aluminum
  - 3. Ratings: Insulated
  - 4. Features: Lockable, Black Exterior Color (to be Confirmed by Owner's

- Representative)  
5. Manufacturer: Strong Box, Model PE-60AL, or Approved Equal

## 2.12 EARTH MATERIALS

- A. Stone
  - 1. Type:  $\frac{3}{4}$ -Inch (minimum) Crushed Stone
- B. Clean Sand
  - 1. Gradation: (passing by weight)
    - i. No. 4 Sieve= 80% Minimum
    - ii. No. 200 Sieve = 5% Maximum
- C. Concrete for Irrigation Enclosure Pad
  - 1. Ratings: 4,000 psi 28-day Compressive Strength
  - 2. Standards: ASTM C-33, ASTM C-94, ASTM-C150
  - 3. Welded Wire Fabric Steel Reinforcement

## 2.13 SPARE PARTS

- A. Wrenches, Keys, and Tools for Servicing and Adjusting Sprinkler Heads (2)
- B. Quick Coupler Valve Keys (1)
- C. Electric Zone Valve (1)
- D. Assorted Valves and Fittings
- E. Integral Emitter Drip Tubing (100' Roll)
- F. Gate Valve (1 of each size on Drawings)
- G. Electric Zone Valve (1 of each size on Drawings)
- H. Sprinkler Heads and Nozzles (3 of Each)
- I. Assorted Drip Valves and Fittings

## PART 3 – EXECUTION

### 3.1 GENERAL

- A. Competent superintendents and assistants shall be on-site at all times during product delivery, installation, testing, and system adjustments.
  - 1. Field communication by Owner's Representative to superintendent shall be binding.
- B. System features shall be laid out as indicated on Drawings, making minor adjustments for variations in planting arrangements or field conditions. Major changes shall be reviewed with Owner's Representative before acceptance.

1. Irrigation lines shown on Drawings are diagrammatic only. Location of irrigation equipment is contingent upon and subject to integration with all other underground utilities, tree roots, and hardscape design elements.

### 3.2 EXAMINATION

- A. Review and verify project conditions are as indicated on Construction Drawings prior to starting work, including but not limited to:
  1. Utilities provided by Others
  2. Site grades and dimensions
  3. Landscaping and features
  4. Structures
  5. Pipe sleeves
- B. Report any irregularities of site conditions to the Owner's Representative prior to beginning work.
- C. Beginning of installation connotes acceptance of existing project conditions.

### 3.3 PROJECT COORDINATION

- A. Coordinate with Owner's Representative to expeditiously install irrigation system.
- B. Provide written notifications (electronic is acceptable) to Owner's Representative prior to work commencement, weekly for progress report, for any proposed changes to system design, and upon installation completion.
- C. All questions of design intent, proposed design changes, field notifications, and product substitution after installation commences shall be in writing to Owner's Representative as a Request for Information (RFI).
- D. Utility Coordination:
  1. Maintain 6-inch minimum clearance between irrigation lines and any utility line. Do not install sprinkler lines directly above another utility of any kind.
  2. Exercise care when excavating, trenching, and working near existing utilities.

### 3.4 SITE PROTECTION

- A. Protect landscaping, paving, structures, walls, footings, etc. from damage caused during work. Damage to work of another trade shall be reported at once.
- B. Replace or repair any damage with same product or material, to the satisfaction of Owner's Representative at no additional cost.
- C. Route pipe as necessary to prevent damage to tree roots. Where trenching must occur near trees, provide proper root pruning and sealing methods to all roots 1-inch and larger.

### 3.5 EXCAVATION, TRENCHING, AND BACKFILLING

- A. Notify and request approval from Owner's Representative if pipe pulling is the intended installation method. Pipe pulling is an accepted installation practice only under the following conditions:

1. Maximum pipe size 2 inches, and
2. Suitable soils (i.e. naturally rounded loamy soils without sharp rocks), and
3. Specified pipe burial depth can be maintained.

B. Pipe Trenches

1. Excavate trenches straight and true, minimizing site disturbance as possible.
2. Final trench bottom shall be undisturbed soil and shall be free of rocks and debris larger than 1 inch or with sharp edges. If trench base is unsuitable for laying pipe, over excavate 2 inches below pipe invert, and place Clean Sand or Stone.

C. Clean Backfill

1. Material: Clean Sand (See Earth Materials)
  - i. Clean backfill must be free of foreign material, debris, frozen material and rocks larger than 1-inch.
2. Carefully place clean backfill a minimum depth of 10-inches over pipe and wire, tamp in place.
3. Carefully place material around pipe and wire, tamp in place.

D. Trench Backfill

1. Material: Re-use excavated material
  - i. Clean backfill must be free of foreign material, debris, frozen material, and rocks larger than 1-inch.
2. Place and compact in maximum 6-inch lifts to dry density equal to undisturbed soil. Compaction by truck or equipment tires is prohibited.
3. Avoid backfilling in hot weather.
4. Match adjacent subsurface grades without hills or depressions. Repair settling (as required by Guarantee).

3.6 PIPE INSTALLATION

A. Copper Pipe Installation

1. All copper work within the building shall be installed by licensed Plumber.

B. PVC Pipe Installation:

1. Cut plastic pipe with handsaw or pipe cutter, removing all burrs at cut ends. All pipe cuts shall be square and true. Bevel cut end as required to conform to manufacturer instructions.
2. Make all solvent-weld joints as per manufacturer's instructions and avoid applying excess primer or solvent. Do not wipe off excess solvent from each connection.



- i. Allow welded joints minimum 5 minutes set-up/curing time before moving or handling.
    - a. Above 80°F: Allow connections to set 24 hours.
    - b. Below 80°F: Follow manufacturer instructions.
    - c. Below 40°F: Prohibited.
- 3. Maximum deflection per joint shall not exceed manufacturer limits.
- 4. Maintain 1-inch minimum between lines which cross at angles of 45 to 90 degrees
- C. Pipe and wire shall run in same trench as mainline/lateral, at the elevation of the pipe invert (See Wire Installation).
- D. Pipe Protection:
  - 1. Prevent foreign material from entering pipe during installation.
  - 2. Open ends of pipe shall be closed by watertight plug or seal when not in use.
  - 3. Securely store pipe when not scheduled for installation.
  - 4. Pipe shall not be installed when water is in trench, during rainstorms, or when temperature is below 40 °F.
    - i. No additional pipe may be installed or backfilled if water enters trench during pipe installation. Remove all water from trench before resuming installation.
    - ii. Pipe installed at temperatures below 40 °F shall be removed and replaced at no cost to Owner.
- 5. Trenched PVC pipe shall be snaked to accommodate for expansion and contraction due to changes in temperature.

### 3.7 PIPE SLEEVE INSTALLATION

- A. Coordinate with Owner's Representative for provided pipe sleeves and locations installed by Site/Civil.
- B. New Pipe Sleeves:
  - 1. Pipe Sleeve Cover: Minimum 24 inches
  - 2. Install pipe sleeves where irrigation pipe runs under hardscape (see Construction Drawings).
  - 3. Extend pipe sleeves minimum 18 inches beyond edges of hardscapes.
  - 4. Prior to installation of pipe, pipe sleeve ends shall be field marked with vertical wood stakes extending above grade to allow field location during irrigation system installation.
- C. Cutting through or jacking under new pavement shall be strictly prohibited. Failure to provide sleeves shall require notification to Owner's Representative for resolution.

### 3.8 ELECTRICAL CONDUIT INSTALLATION

- A. Outdoor Electrical conduit shall be installed:
  - 1. Under and through all hardscape areas
  - 2. For all above ground wiring
- B. Electrical conduit shall extend 18 inches beyond edges of hardscape.

### 3.9 ELECTRIC ZONE VALVE INSTALLATION

- A. Install electric zone valves on level crushed stone base generally where shown on Construction Drawings. Do not pour stone around valves that are already installed.
- B. Install all Schedule 80 PVC threaded nipples with Teflon tape, isolation valves, and/or union couplings in and out of electric zone valves as shown on details on Construction Drawings.
- C. Set valves plumb with adjusting handle and all bolts, screws, and wiring accessible through valve box opening.
- D. Install at sufficient depth to provide between 4-6 inches of cover from top of valve to finish grade.
- E. Install specified valve box over all electric zone valves. Ensure lid is flush with final proposed grade (coordinate with Site/Civil).
- F. Adjust zone valve operation after installation using flow control device on valve.

### 3.10 ISOLATION VALVE INSTALLATION

- A. Install isolation valves per detail where indicated on Drawings.
- B. Install all isolation valves on level crushed stone base for operation ease with appropriate valve wrench. Do not pour stone around valves that are already installed.
- C. Check and tighten valve bonnet packing before installation.
- D. Install all work so that parts requiring periodic inspection, operation, maintenance, and repair are readily accessible. Install isolation valves, in locations freely accessible from below in the garage.

### 3.11 QUICK COUPLING VALVE INSTALLATION

- A. Install quick coupling valves where indicated on Construction Drawings; generally, at ends of mainline branches and immediately downstream of enclosure.
- B. Mount mainline quick coupling valves on 1-inch diameter, 12-inch long brass swing joint assemblies and stabilizers.

### 3.12 WIRE INSTALLATION

- A. Install wiring per local codes for less than 30-Volt service.
- B. Install valve wire in trench alongside mainline at invert elevation. Backfill carefully to avoid any damage to wire insulation on conductors.
  - 1. In areas of unsuitable material, use clean sand in bottom of trench before placing wire (see Excavation, Trenching, and Backfilling)
  - 2. Minimum cover: 12-inches

- C. Maintain sufficient slack for expansion, contraction and servicing. Do not install wiring tightly.
  - 1. Provide 30 inches slack between for valve wire in valve boxes.
  - 2. Provide sufficient length of wire in valve boxes to allow valve solenoid, splice, wire, and all connections to be brought above grade for servicing.
  - 3. Coil slack for neatness in valve box.
- D. Provide waterproof splices at all in-ground wire connections using approved splice kits. All splices shall be made in valve boxes and recorded on Record Drawings.
- E. Provide complete wiring diagram showing wire routing for connections between controller and valves as specified in Record Documents.
- F. Securely store wire when not scheduled for installation.

### 3.13 DRIP IRRIGATION INSTALLATION

#### A. Integral Drip Emitter Tubing

- 1. Install in areas as shown on Drawings by hand under mulch with average depth of 2 inches. Maximum 3-inch burial.
- 2. Install all tubing below surface, no tubing visible.
- 3. Install tubing on high side of plants to ensure vertical and lateral water distribution.
- 4. Install emitter tubing 4-inches from all planter bed edges, curbs, walls, and hardscape features.
- 5. Level Ground Installation
  - i. Install emitter tubing in rows spaced at design spacing for level ground.
- 6. Slope Installation
  - i. Install emitter tubing in rows spaced at design spacing for top 2/3 of slope.
  - ii. Install emitter tubing in rows spaced at 1.5 times design spacing for bottom 1/3 of slope.
  - iii. Orient rows parallel to slope.
- 7. For every 4 feet of elevation difference within a drip zone, install check valve on supply header.
- 8. Provide pressure regulation as designed.
- 9. Secure emitter tubing with stakes every 5 feet to prevent shifting from compaction, slopes, and general operation.
- 10. Install Automatic Flush Valves on ends of PVC exhaust headers at farthest points and lowest elevation; generally where shown on Contract Drawings.

#### B. Electric Zone Valves (Drip Zone Kits)

- 1. Electric Zone Valves shall be installed as shown on details within appropriately sized valve boxes (see below).

2. Wire and program valves to Irrigation Controller.

### 3.14 AUTOMATIC IRRIGATION CONTROLLER APPURTENANCE INSTALLATION

#### A. Flow Sensor

1. Install Flow Sensor where shown on Construction Drawings.
2. Provide straight pipe for Flow Sensor to reduce turbulence:
  - i. Upstream: 10 inches (10 times pipe diameter)
  - ii. Downstream: 5 inches (5 times pipe diameter)
3. Wire Flow Sensor to Automatic Irrigation Controller as specified with waterproof connectors. Do not use splices between Controller and Flow Sensor.

#### B. Controller in Enclosure Grounding

1. Coordinate with Electrical to confirm irrigation controller is grounded to earth ground.

#### C. Rain Sensors

1. Install wireless Rain Sensor on eave of stage roof, minimizing distance to receiver in vault.
2. Rain Sensor shall have direct overhead exposure to atmospheric conditions and not in contact with overhead irrigation.

### 3.15 SPRINKLER INSTALLATION

- A. Sprinklers shall not exceed maximum spacing as indicated on Construction Drawings.
- B. Install sprinklers flush with grade on PVC swing joints as specified.
- C. Flush system before installing internals, flush caps, and nozzles (see Testing and Adjustments)
- D. Adjust all sprinklers after installation using flow control device on valve. Do not exceed radius reduction recommendations from manufacturer.

### 3.16 LANDSCAPE VALVE BOX INSTALLATION

- A. Furnish and install valve boxes as per valve schedule above for each valve, splice, or sensor.
- B. Install valve boxes on minimum 4-inches crushed stone base. Pouring stone into valve box after installation is not acceptable.
- C. Finish elevation of all boxes shall be at grade, unless otherwise noted in Drawings.
- D. Provide level brick supports beneath valve boxes.
  1. For square/rectangular boxes, provide four (4) supports - one at each corner.
  2. For round boxes, provide three (3) supports equally spaced.

### 3.17 TESTING AND ADJUSTMENTS

- A. Include all testing and adjustments in submitted bid price.
- B. System Flushing:
  - 1. Open electric zone valves and flush out irrigation system under full head of water before installing flush caps and nozzles.
  - 2. Flush entire irrigation system after complete installation.
  - 3. Clogged nozzles shall be remedied after completion of irrigation system.
- C. Testing:
  - 1. Test all pipe and valves for leaks at operating pressure. Repair all leaks and retest until leaks are remedied.
  - 2. Perform coverage test with Owner's Representative present. Operate electric zone valves for five (5) minutes minimum during coverage test. Readjust sprinkler nozzles and head locations (as necessary) to attain proper coverage. Replace any equipment that does not meet specified standards.
  - 3. After testing, clean all equipment of debris during installation.
- D. Adjust sprinkler heads and valve boxes as necessary for mowing and landscaping.
- E. Throughout guarantee period, adjust sprinklers and ensure coverage due to settlement and landscaping operations.

### 3.18 PUNCHLIST AND REVIEW FOR SYSTEM ACCEPTANCE

- A. After 30 days of uninterrupted system function without fault or alarm, schedule for final punchlist review of irrigation system for acceptance.
- B. Punchlist procedure by Owner's Representative to review:
  - 1. Electric Zone Valves (drip irrigation) are connected to Irrigation Controller. Provide wire resistance readings to verify solenoids are within acceptable range of resistivity (turning off irrigation controller prior to reading):
    - i. 0 – 6 ohms = Short Circuit
    - ii. 6 – 20 ohms = Slow Burn (Check Number of Solenoids Tied Together)
    - iii. 20 – 60 ohms = Acceptable
    - iv. 60 – 200 ohms = Partially Open Circuit
    - v. 200+ ohms = Broken Wire
  - 2. Controllers, Sensors, and Decoders grounded to earth with resistance readings of less than 10 ohms.
  - 3. Electric Zone Valves assigned to watering program with set run-time for peak watering requirements.
  - 4. Programs assigned automatic water savings protocols, including:
    - i. Soil moisture sensors allowing for sufficient soil drying prior to next

- irrigation cycle.
  - ii. Weather sensors, on-site or through web-based application, to apply or suspend watering based on real-time climate conditions.
  - iii. Precipitation sensors to immediately suspend irrigation during and after rainstorms.
  - iv. Water budgeting for program priorities during drought.
5. Irrigation Master Valves installed and specified orientation
- i. Normally Open (NO) configuration
  - ii. Connected electrically to Decoder and to Irrigation Controller
  - iii. Irrigation Controller programmed to enable Master Valve closing upon abnormal flow range.
  - iv. Simulate unexpected leak or mainline by opening Drain Isolation Gate Valve at lowest elevation of Irrigation System for flow sensor to detect and close Master Valves.
6. Irrigation Flow Sensors installed with specified orientation
- i. Connected electrically directly to Irrigation Controller
  - ii. Irrigation Controller programmed to provide real-time feedback on flow sensing
  - iii. Irrigation Controller allowed to Learn Flow of each Electric Zone Valve and manual watering through Quick Coupling Valves.
  - iv. Irrigation Controller programmed to close Master Valves within 3 minutes on abnormal flow outside of learned flow (typically 10%-15% tolerance) as simulated by opening Drain Isolation Gate Valve at lowest elevation of Irrigation System.
7. Review Irrigation Wiring
- i. Verify Wire Splices in landscape are made with DBY-6 Submersible-Rated Wire Splice Kits.
  - ii. Within each valve box, review wire slack for servicing.
  - iii. Review decoders are not buried and operational through LED lights.
  - iv. Observe landscape grounding rod installations with exothermic welds to bare copper wire as specified.
8. Review Irrigation Pipe and Valve Installation
- i. Valve Boxes
    - a. Verify Valve Boxes are flush with grade with colors as specified.

- b. Verify Valve Boxes are bolted down. Remove lid with ratchet tool for observation.
  - c. Verify Valve Boxes are clean with level bases of stone and that no components are buried.
- 9. Electric Zone Valves (Drip Irrigation)
  - i. Verify Electric Zone Valves have Lateral Isolation Ball Valves for servicing.
  - ii. Verify Electric Zone Valves have Schedule 80 PVC unions on each side for servicing.
- 10. Isolation Gate Valves
  - i. Verify Mainline Isolation Valves are gate valves and not ball valves.
  - ii. Verify Lateral Isolation Ball Valves operate by wrench and not hand wheel.
- 11. Quick Coupling Valves
  - i. Verify stabilization wings are installed on Quick Coupling Valve swing joint.
  - ii. Observe Quick Coupling Valves are engaged with specified key.
  - iii. Verify supply of keys to engage Quick Coupling Valves.
- 12. Review Drip Irrigation Operation
  - i. Installation
    - a. Verify drip irrigation in planter beds are installed below grade at specified depth and row spacing by removing mulch or planting soil.
    - b. Verify flush valves are installed. Open flush valve to confirm operation.
    - c. Observe Drip Irrigation Operation under test irrigation cycle to:
      - 1) Verify coverage and watering rate
      - 2) Verify uniformity
      - 3) Observe response by soil moisture sensor (instantaneously or later during punchlist visit to allow for infiltration).
      - 4) Verify infiltration and report runoff conditions

### 3.19 RECORD DOCUMENTS

#### A. Record (As-Built) Drawings

1. Maintain and update Record Drawings with red-line markings as project progresses, including locations of:
  - i. Sprinklers and descriptions (nozzle, pop-up height, and type)
  - ii. Existing irrigation system and replacement.
  - iii. Valve Boxes and descriptions (valve type, zone numbers, splice, etc.)
  - iv. All equipment installed with distinct symbols.
  - v. Pipe routing and tees.
  - vi. Wire routing and splices.
2. Locations of installed equipment (valve, controller, sensors) shall be referenced by two permanent locations (swing ties) or GPS.
3. Make all notes legible as work progresses, any new equipment added shall use distinct symbols denoting location.
4. Document any changes from original Construction Drawings.
5. Prints of original Construction Drawings may be obtained from the Owner's Representative at cost (0% markup).
6. Record Drawings shall be used as basis of payment for work completed. Provide copies of red-lined set to Owner's Representative along with payment request.

#### B. Record Documents

1. Record Documents shall be on-site at all times. Maintain record of the following as the project progresses:
  - i. Plumbing and Electrical permits (state whether or not required)
  - ii. Materials Approved and approval date.
  - iii. Pressure Test results, testing personnel and testing date.
  - iv. Materials delivered, Accepted, and Installed by whom and date.
  - v. Field Communications and Requests for Information (RFI)

- C. Prior to final punchlist, provide complete electronic and hard copy files of Record Drawings and Documents to Owner's Representative as part of project completion. All information must be complete and shall be added to submitted documents prior to acceptance.

### 3.20 OPERATION AND MAINTENANCE

#### A. General



1. Bid price shall include up to four (4) hours of irrigation system overview and instruction with Owner's Representative.

B. Operation and Maintenance Manual

1. Provide three (3) hard cover binders titled "Operation and Maintenance for Blackstone River Bikeway Irrigation System" prior to application for acceptance and final payment.
2. Operation and Maintenance Manual shall include, but not be limited to:
  - i. Title Page and Table of Contents
  - ii. One-Paragraph Written Description of Irrigation System
  - iii. Manufacturers' Data and Cut Sheets of Equipment, including:
    - a. Copies of all approved submittals
    - b. Wire resistance readings to each electric valve at completion (for future troubleshooting)
    - c. Recommended operating settings
    - d. Recommended maintenance schedule
    - e. Name, address, and telephone number of installer (for repairs, spring startup, and winterization during 1-year guarantee period)
    - f. Irrigation program for periods without rain and recommended settings including, zone run time, days per week, cycle-soak, and rain sensor suspension.
  - iv. Winterization and Spring Startup Instructions (after 1-year guarantee period)
  - v. Guarantee Data
  - vi. Pockets with Folded Plans of:
    - a. Map of Pre-Construction Existing Irrigation System
    - b. Original Design Drawing
    - c. Final Record Drawing
    - d. Controller Valve and Wiring System Diagram Drawing

3.21 SITE CLEANUP

- A. Remove all unused materials and equipment from project site safely and efficiently. Dispose of all unused materials legally, including construction debris and trash.
- B. Adjust ground, compact, and re-plant around irrigation sprinkler heads and trenches as necessary for proper angle and elevation.
- C. Fill depressions and erosion rills with specified planting soil mix to ensure site drainage.

3.22 FINAL ACCEPTANCE

- A. Final Acceptance of Irrigation System is predicated on:
  - 1. Complete system installation, adjustment, testing, and instructional overview.
  - 2. Submission of Operation and Maintenance Manuals to Owner's Representative.
  - 3. Proper Programming of Automatic Irrigation Controller.
  - 4. Completed and approved all punchlist items.
- B. Owner's Representative shall provide written notice (hard copy and/or electronic) for Final Acceptance. Date of Final Acceptance notice shall serve as start of 1-year Guarantee period as described above.

**END OF SECTION**

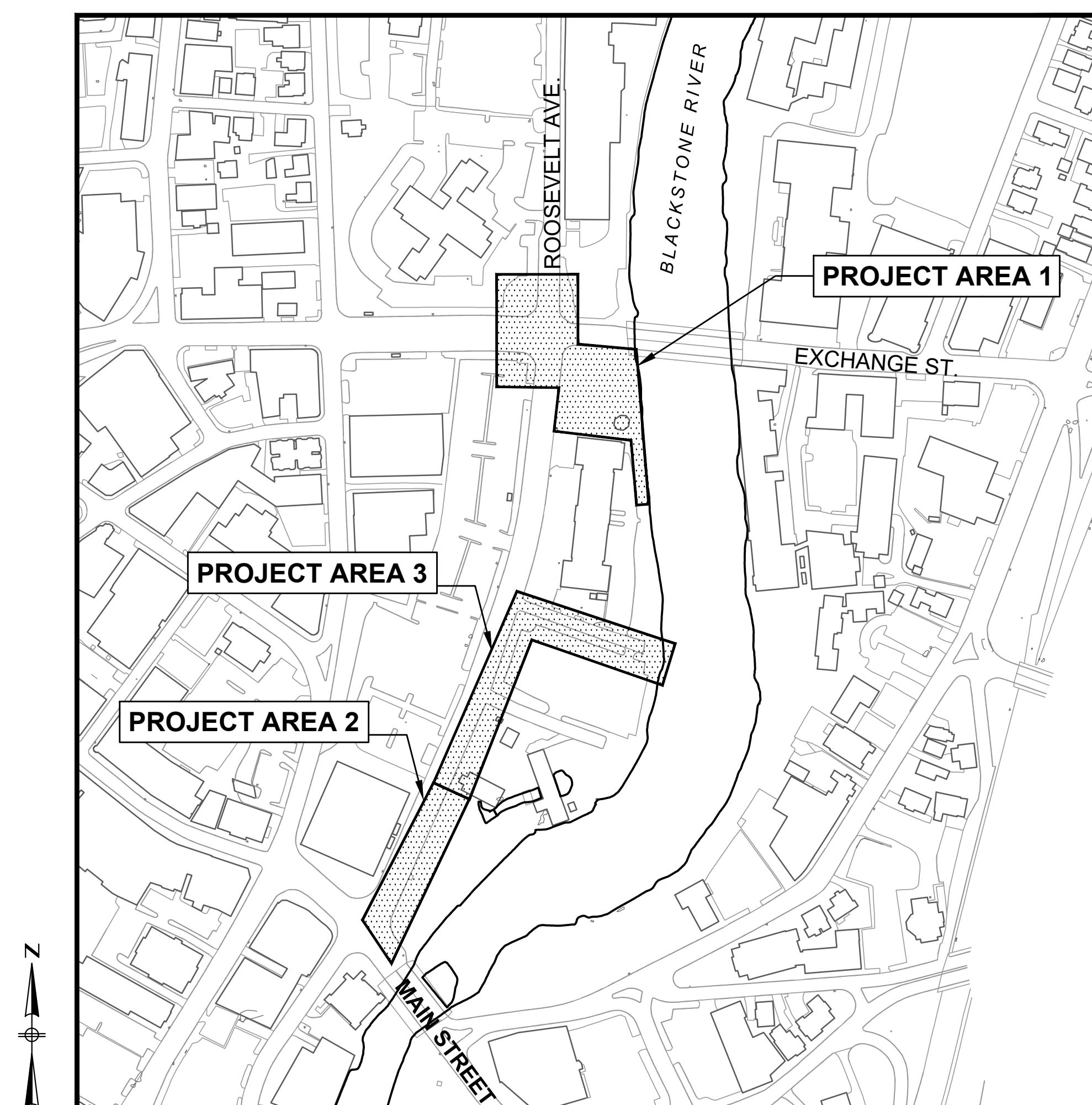
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CITY OF PAWTUCKET, RI  
BLACKSTONE RIVER BIKEWAY  
SEGMENT 3A-1 CONTRACT 1  
100% CONSTRUCTION DOCUMENTS  
NOVEMBER 2023



**OWNER:**  
CITY OF PAWTUCKET  
137 ROOSEVELT AVENUE,  
PAWTUCKET, RI 02860

**PROJECT ADDRESS:**  
EXCHANGE STREET, ROOSEVELT AVENUE  
PAWTUCKET, RI 02860

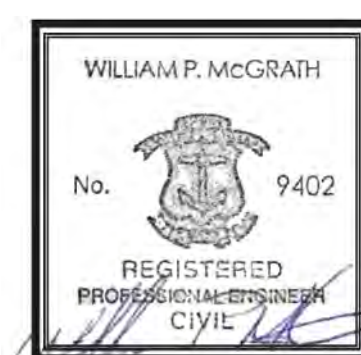


PROJECT LOCATION

**LOCATION MAP**  
1"=200'

**PLAN INDEX**

SHEET NO.	DESCRIPTION
1	COVER
2	GENERAL NOTES
3	LEGEND & ABBREVIATIONS
4	OVERALL PLAN
5	AREA 1 EXISTING CONDITIONS PLAN
6	AREA 1 SITE PREPARATION PLAN
7	AREA 1 GENERAL PLAN
8	AREA 1 GRADING & DRAINAGE PLAN
9	AREA 1 SIGNAGE AND STRIPING PLAN
10	AREA 1 MODIFICATIONS TO VETERANS MEMORIAL - 1
11	GRANITE CUT STONES
12-13	AREA 1 DETAILS - 1 & 2
14	AREA 1 RAMP EXTENSION ENLARGEMENT PLANS - 1
15	AREA 1 RAMP EXTENSION ENLARGEMENT PLANS - 2
16	AREA 2 EXISTING CONDITIONS PLAN
17	AREA 2 SITE PREPARATION PLAN
18	AREA 2 GENERAL PLAN
19	AREA 2 GRADING PLAN
20	AREA 2 PROFILE PLAN
21	AREA 2 UTILITY PLAN
22	AREA 2 SIGNAGE AND STRIPING PLAN
23 - 27	AREA 2 DETAIL SHEET - 1 - 5
28	AREA 3 GENERAL PLAN
29	AREA 3 SIGNAGE AND STRIPING PLAN
30 - 32	DETAILS - 1 - 3
33 - 35	OVERALL PLANTING PLAN - 1 - 3
36	PLANTING DETAILS
37	IRRIGATION PLAN
38 - 39	IRRIGATION DETAILS 1 - 2
40	SIGNAGE DETAILS - 1
41	CIVIL DETAILS
42	WCR DETAILS
43	TRAFFIC MANAGEMENT & SIDEWALK DETOUR PLAN
44	TRAFFIC MANAGEMENT PLAN
45	ELECTRICAL PLAN
46	ELECTRICAL DETAILS



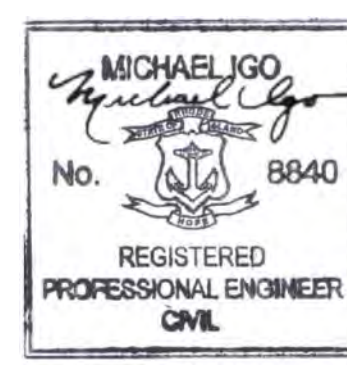
**CIVIL**  
WILLIAM P. McGRATH, PE  
BETA GROUP, INC.

**LIST OF SHEETS:**  
1 - 29, 41, 42, 43 & 44



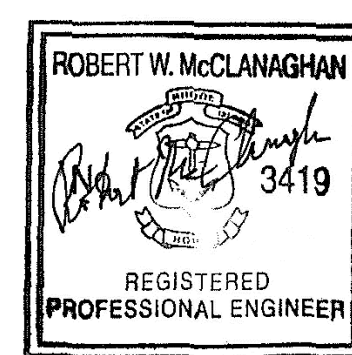
**LANDSCAPE ARCHITECT**  
AREK W. GALLE, RLA, AICP  
BETA GROUP, INC.

**LIST OF SHEETS:**  
31, 32, 33, 34, 35 & 36



**IRRIGATION**  
MICHAEL IGO, PE  
AQUEOUS IRRIGATION CONSULTING, LLC

**LIST OF SHEETS:**  
37, 38 & 39



**ELECTRICAL**  
ROBERT W. MCCLANAGHAN, PE  
MCCLANAGHAN ASSOCIATES

**LIST OF SHEETS:**  
45 & 46



**PREPARED BY:**

ISSUE DATE: 11/7/2023

**DISCLAIMER**

"Any contract or contracts awarded under the Advertisement for bids will be funded in part by a grant from the US Department of Commerce - Economic Development Administration (EDA). The total amount of federal funding included in the project financing will be \$4,812,600.00 which represents a portion of the total project costs to include design, construction, project inspection, and management of the project. Neither the United States nor any of its departments, agencies, or employees is or will be a party to this advertisement or any resulting contract."







## GENERAL SYMBOLS

**PROPOSED**

CURB (TYPE AS NOTED)  
BERM  
EDGE OF PAVEMENT  
CATCH BASIN (OR GUTTER INLET,  
DROP INLET, CATCH BASIN CURB INLET)  
ELECTRIC HANDHOLE (NUMBER AS NOTED)  
ELECTRIC MANHOLE  
TELEPHONE MANHOLE (TYPE NOTED)  
WATER MANHOLE (TYPE NOTED)  
SEWER MANHOLE (TYPE NOTED)  
DRAINAGE MANHOLE (TYPE NOTED)  
GAS GATE / GAS SHUT OFF  
WATER GATE / WATER SHUT OFF  
HYDRANT  
FIRE ALARM BOX  
STREET LIGHT POLE  
UTILITY POLE  
SIGN  
GUY POLE  
ABANDONED UTILITY LINE (TYPE AS NOTED)  
DRAIN PIPE (SIZE AND SLOPE AS NOTED)  
SEWER MAIN (SIZE AS NOTED)  
SEWER SERVICE LINE  
ELECTRIC DUCT  
OVERHEAD WIRES  
GAS MAIN (SIZE AS NOTED)  
GAS SERVICE LINE  
WATER MAIN (SIZE AS NOTED)  
WATER SERVICE LINE  
TELEPHONE DUCT (SIZE AS NOTED)  
MAIL BOX  
WOOD GUARD RAIL, STEEL BEAM GUARD,  
WOOD OR STEEL POSTS (TYPE AS NOTED)  
STEEL GUARD RAIL, STEEL POSTS (TYPE NOTED)  
STONE WALL  
RETAINING WALL (TYPE NOTED)  
HIGHWAY/PROPERTY BOUND (TYPE AS NOTED)  
STATE HIGHWAY LAYOUT LINE (S.H.L.)  
CITY, TOWN, COUNTY OR STATE BOUNDARY LINE  
PROPERTY LINE  
TEMPORARY EASEMENT LINE  
PERMANENT EASEMENT LINE  
CONSTRUCTION BASELINE  
SURVEY LINE  
RAILROAD OR STREET RAILWAY TRACKS WITH SIDELINES  
WHEELCHAIR RAMP  
TREE (SIZE AND TYPE AS NOTED)  
HEDGE  
FENCE (SIZE AND TYPE AS NOTED)  
EDGE OF WETLAND W/ FLAGGED NUMBER  
EDGE OF RIVER/STREAM LINE  
  
15' BUFFER LIMIT  
150' BUFFER ZONE  
200-FT. JURISDICTIONAL AREA  
WOODED AREA / LIMIT OF CLEARING  
SPOT GRADE  
SAW CUT LINE  
EROSION CONTROL BARRIER / COMPOST FILTER SOCK  
  
BUILDING  
  
CONTOUR MAJOR  
CONTOUR MINOR  
DRIVEWAY DIRT  
DRIVEWAY PAVED  
  
TEST PIT "QUALITY LEVEL A" DATA POINT




## GENERAL

ABAND.	ABANDON
ADJ.	ADJUST
ALT.	ALTERATION
APPROX.	APPROXIMATE
℄	BASELINE
B.B.	BITUMINOUS BERM
B.C.	BITUMINOUS CURB
BD OR BND	BOUND
BLDG.	BUILDING
B.O.	BY OTHERS
BOS	BOTTOM OF SLOPE
BOW	BOTTOM OF WALL
BSW	BACK OF SIDEWALK
C.C.	CONCRETE CURB
CEM.	CEMENT
℄	CENTER LINE
CLF	CHAIN LINK FENCE
CONC.	CONCRETE
CONST.	CONSTRUCTION
CONT.	CONTINUOUS
DWY	DRIVEWAY
E.P., EOP	EDGE OF PAVEMENT
EL., ELEV.	ELEVATION
ESMT.	EASEMENT
EXIST.	EXISTING
FDN.	FOUNDATION
GRAN.	GRANITE
GC	GRANITE CURB
HOR.	HORIZONTAL
IP	IRON PIPE
JCT	JUNCTION
L.O.W.	LIMIT OF WORK
LP	LOW POINT
MB	MAIL BOX
MH	MANHOLE
O.C.	ON CENTER
POB	POINT OF BEGINNING
PCC	POINT OF COMPOUND CURVATURE
PC	POINT OF CURVATURE
PRC	POINT OF REVERSE CURVATURE
PI	POINT OF INTERSECTION
PT	POINT OF TANGENCY
PVC	POINT OF VERTICAL CURVATURE
PVI	POINT OF VERTICAL INTERSECTION
PVT	POINT OF VERTICAL TANGENCY
PERM.	PERMANENT
PGL	PROFILE GRADE LINE
PROP.	PROPOSED
PVC	POINT OF VERTICAL CURVATURE
PVMT.	PAVEMENT
R	RADIUS OF CURVATURE
R&D	REMOVE AND DISCARD
R&R	REMOVE AND RESET
R&S	REMOVE AND STACK
REM.	REMOVE
REMOD.	REMODEL
RET.	RETAIN
RR	RAILROAD
RT.	RIGHT
SB	SOUTH BOUND OR STONE BOUND
SDWK	SIDEWALK
SHT.	SHEET
SHLD.	SHOULDER
STA.	STATION
TEMP.	TEMPORARY
TOC	TOP OF CURB
TOS	TOP OF SLOPE
TOW	TOP OF WALL
TYP.	TYPICAL
VAR.	VARIABLE
VERT.	VERTICAL
VGC	VERTICAL GRANITE CURB
WCR	WHEELCHAIR RAMP






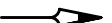











R	STEADY CIRCULAR RED
Y	STEADY CIRCULAR AMBER
G	STEADY CIRCULAR GREEN
FR	FLASHING CIRCULAR RED
FY	FLASHING CIRCULAR AMBER
+FY	FLASHING YELLOW LEFT ARROW
R→	STEADY RED RIGHT ARROW
Y→	STEADY AMBER RIGHT ARROW
G→	STEADY GREEN RIGHT ARROW
+R	STEADY RED LEFT ARROW
+Y	STEADY AMBER LEFT ARROW
+G	STEADY GREEN LEFT ARROW
W	STEADY WALK (PERSON WALKING) - LUNAR WHITE
DW	STEADY DON'T WALK (HAND) - PORTLAND ORANGE
FDW	FLASHING DON'T WALK (FLASHING HAND) - PORTLAND ORANGE

ACCOMP	ASPHALT COATED CORRUGATED METAL PIPE
CAP	CORRUGATED ALUMINUM PIPE
CB	CATCH BASIN
CBCI	CATCH BASIN WITH CURB INLET
CI	CURB INLET
CIP	CAST IRON PIPE
CIT	CHANGE IN TYPE
CMP	CORRUGATED METAL PIPE
C	CONDUIT
CPP	CORRUGATED PLASTIC PIPE
CSP	CORRUGATED STEEL PIPE
DI	DROP INLET
DIP	DUCTILE IRON PIPE
F&C	FRAME AND COVER
F&G	FRAME AND GRATE
FM	FORCE MAIN
GI	GUTTER INLET
GIP	GALVANIZED IRON PIPE
GG	GAS GATE
HDW	HEADWALL
HYD.	HYDRANT
INV.	INVERT ELEVATION
LP	LIGHT POLE
MH	MANHOLE
PVC	POLY-VINYL-CHLORIDE PIPE
PWW	PAVED WATER WAY
RCP	REINFORCED CONCRETE PIPE (CLASS III UNLESS NOTED)
SD	SUBDRAIN
SMH	SEWER MANHOLE
TS	TRAFFIC SIGNAL
TSV&B	TAPPING SLEEVE, VALVE AND BOX
UP	UTILITY POLE
UPL	UTILITY POLE w/ LIGHT
UPT	UTILITY POLE w/ TRANSFORMER
VCP	VITRIFIED CLAY PIPE
WIP	WROUGHT IRON PIPE
WG	WATER GATE
WM	WATER METER/WATER MAIN

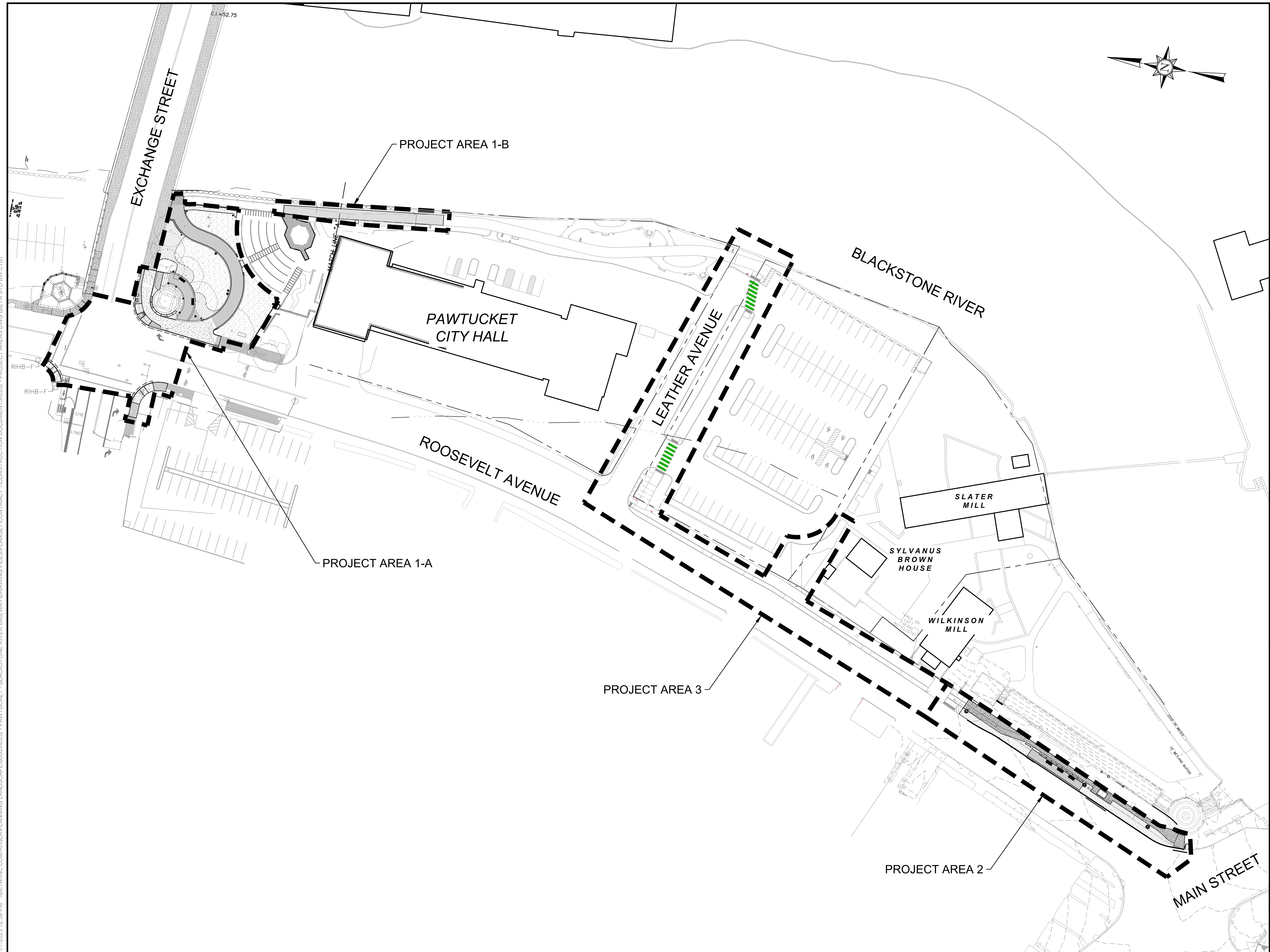
PROPOSED

CW	CROSSWALK, 2 - 12" WHITE LINES
SL	STOP LINE - 12" WHITE LINE 4" BEHIND CW (TYP.)
SWEL	SOLID WHITE EDGE LINE - 4"
SWCHL	SOLID WHITE CHANNELIZING LINES - 12" (SPACING NOTED)
SWGL	SOLID WHITE GORE LINE 12" @ 33°, (SPACING NOTED)
SWLL	SOLID WHITE LANE LINE - 4"
SWPL	SOLID WHITE PARKING LINE - 4"
BWLL	BROKEN WHITE LANE LINE - 4"
DWLEx	DOTTED WHITE LANE EXTENSION LINE - 4" (2' LINE & 6' GAP)
DYLEx	DOTTED YELLOW LANE EXTENSION LINE - 4" (2' LINE & 6' GAP)
BYCL	BROKEN YELLOW CENTERLINE - 4"
DYCL	DOUBLE YELLOW CENTERLINE - 2 - 4' LINES
SYEL	SOLID YELLOW EDGE LINE - 4"
SYGL	SOLID YELLOW GORE LINE 12" @ 33°, (SPACING NOTED)
SYLL	SOLID YELLOW LANE LINE - 4"
SYCTEL	SOLID YELLOW CYCLE TRACK EDGE LINE - 4"
DYCTCL	DOTTED YELLOW CYCLE TRACK CENTERLINE - 4" (3' LINE & 9' GAP)
	SCHOOL ZONE - WHITE
	ACCESIBLE SYMBOL - WHITE
	PAVEMENT ARROW - WHITE
ONLY	LEGEND "ONLY" - WHITE

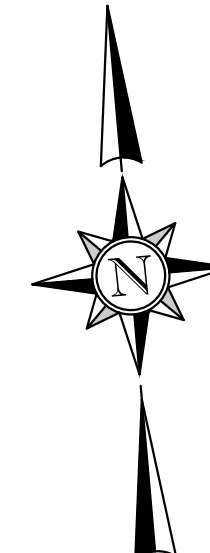
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	FOUNDATION
	CONTROL CABINET POLE MOUNTED
$\varnothing 2$	CONTROLLER PHASE
 MA-1	MAST ARM, SHAFT & BASE (ARM LENGTH AS NOTED)
	VEHICULAR SIGNAL HEAD (ALPHA-NUMERIC DESIGNATION AS NOTED)
	VEHICULAR SIGNAL HEAD, OPTICALLY PROGRAMMED
	VEHICULAR SIGNAL HEAD (REMOVED & RESET)
	FLASHING BEACON
	PEDESTRIAN SIGNAL HEAD
	PEDESTRIAN SIGNAL HEAD, OPTICALLY PROGRAMMED
	PULL BOX 12"x12" OR HANDHOLE
	LOOP DETECTOR
	PEDESTRIAN PUSH BUTTON, SIGN (DIRECTIONAL ARROW AS SHOWN) AND SADDLE
	PRE-EMPTION DETECTOR
	PRE-EMPTION CONFIRMATION STROBE
	SIGNAL CONDUIT (SINGLE RUN)
	SIGNAL CONDUIT (DOUBLE RUN)
	SIGNAL POST & BASE









[www.BETA-Inc.com](http://www.BETA-Inc.com)

REGISTERED PROFESSIONAL

SUBCONSULTANT

PROJECT

**BLACKSTONE  
RIVER BIKEWAY  
SEGMENT 3A-1  
CONTRACT 1**

Pawtucket, Rhode Island

TITLE
-------

## AREA 1 EXISTING CONDITIONS PLAN

[illegible]

NO.	REVISIONS	DATE
DRAWN BY:	AKP/BB/ALG	
DESIGNED BY:	AWG	
CHECKED BY:	AWG	
ISSUE DATE: 11/8/2023		
BETA JOB NO.: 6352		

SCALE

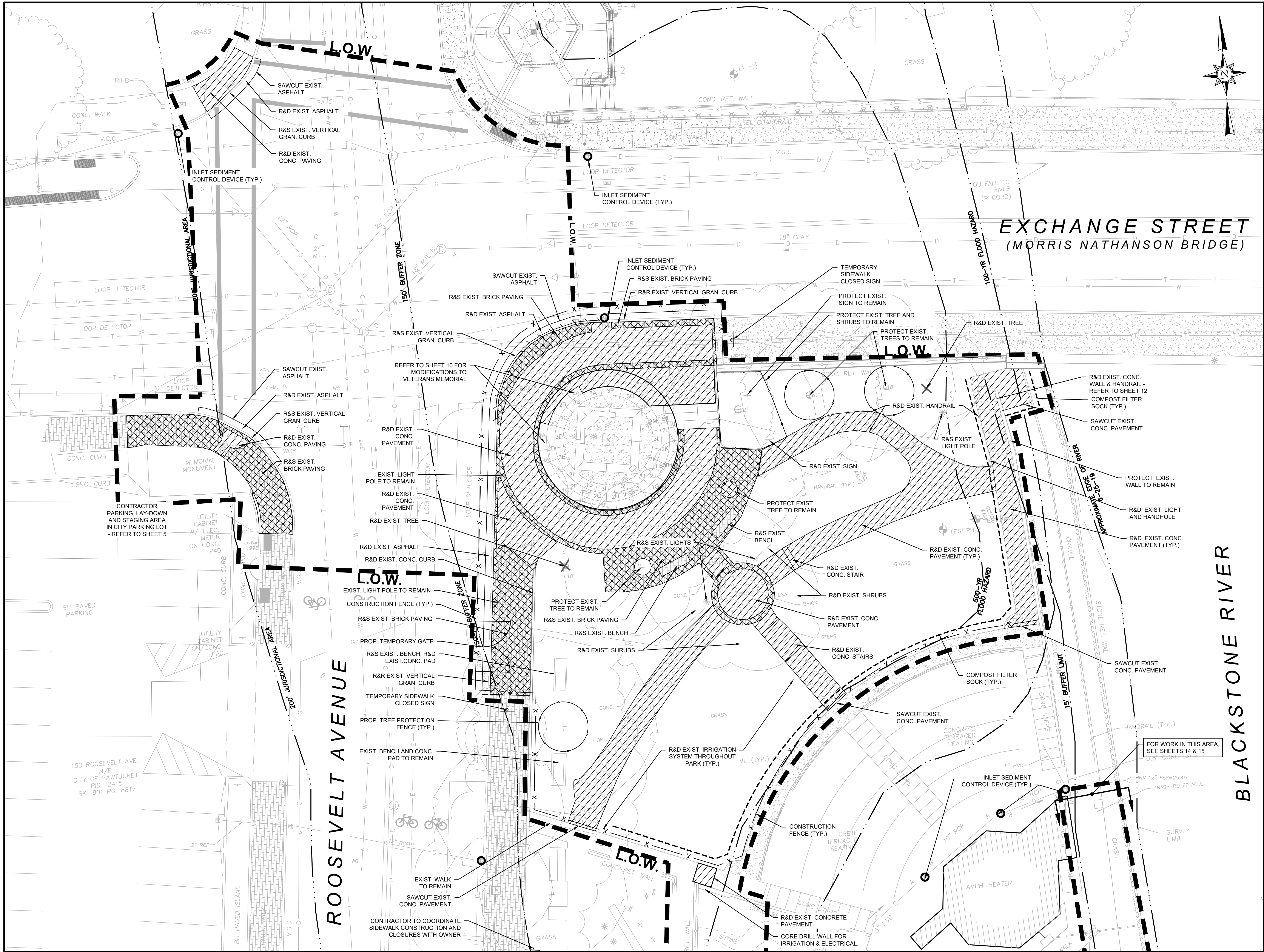


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SHEET NO



1/17/2023 1:00 PM \\BETA\INC\COM\RI\PLANNING\LANDSCAPE\6005\0352 - PAWTUCKET - BLACKSTONE RIVER BIKEWAY\DRAWING FILES\PLANS\SET\CONTRACT 1\CONSTRUCTION DOCUMENTS\6352 - A1 SITE PREP.DWG (BETA STD BW.CTE)



PREPARED BY

  
www.BETA-Inc.com

REGISTERED PROFESSIONAL

SUBCONSULTANT

PROJECT

BLACKSTONE RIVER BIKEWAY  
SEGMENT 3A-1  
CONTRACT 1

Pawtucket, Rhode Island

TITLE

AREA 1 SITE  
PREPARATION PLAN

NO.	REVISIONS	DATE

DRAWN BY:

AKP/BB/ALG

DESIGNED BY:

AWG

CHECKED BY:

AWG


ISSUE DATE:

11/8/2023

BETA JOB NO.:

6352

SCALE

  
SCALE IN FEET: 1"=10'

UNLESS OTHERWISE NOTED OR CHANGED BY REPRODUCTION

CONSTRUCTION DOCUMENTS

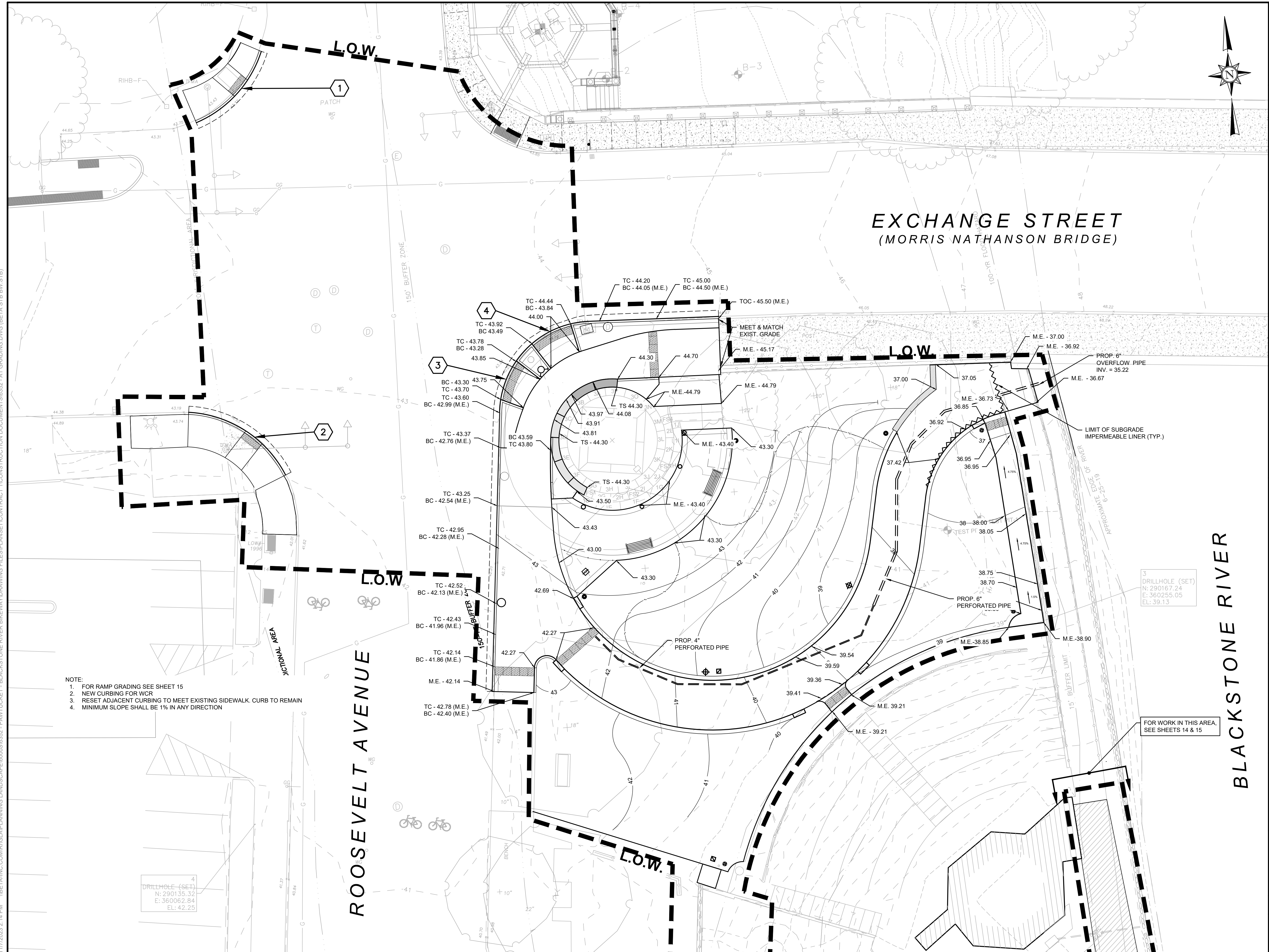
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6



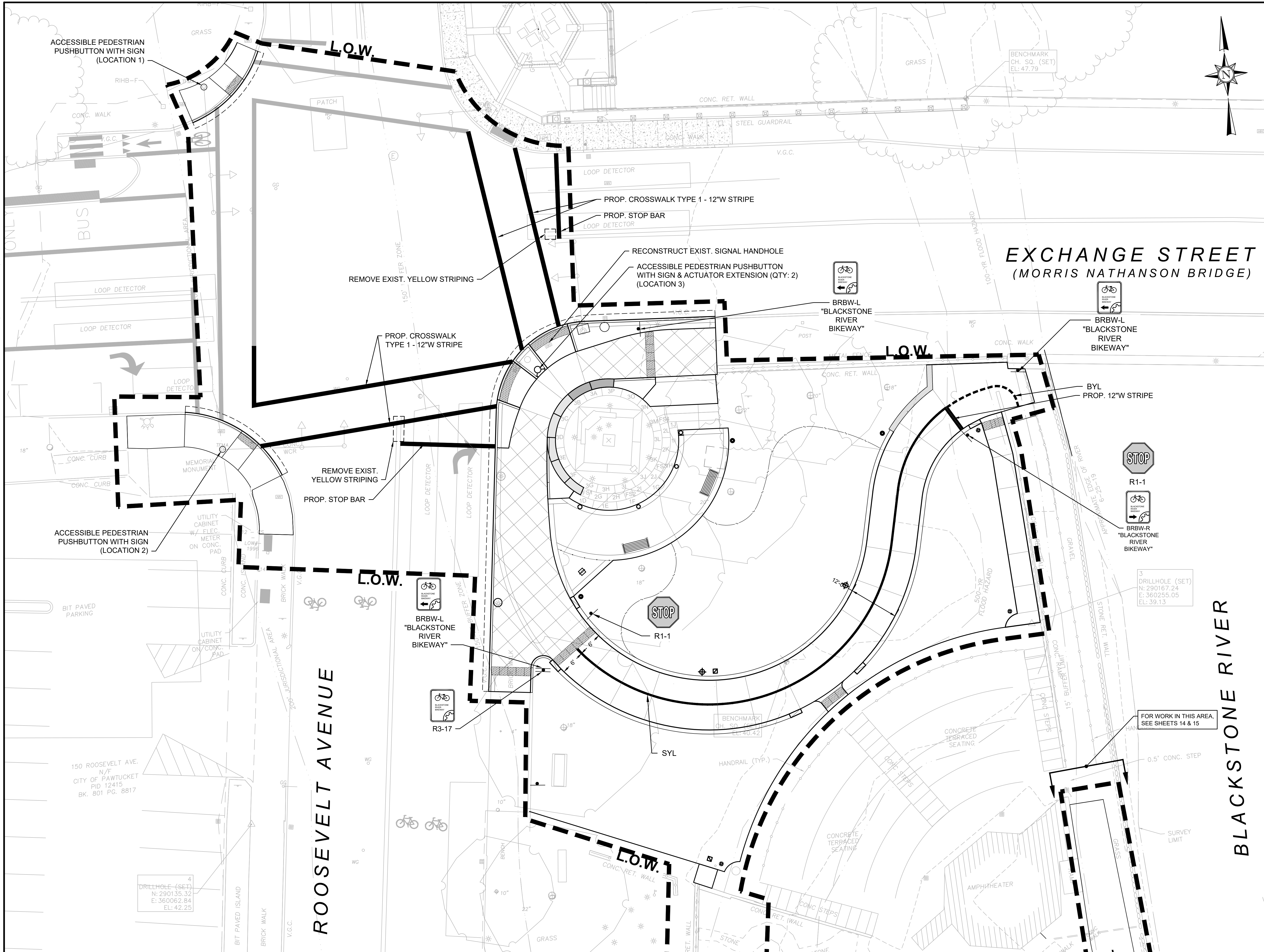









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PREPARED BY

  
www.BETA-Inc.com

REGISTERED PROFESSIONAL

SUBCONSULTANT

PROJECT

**BLACKSTONE RIVER BIKEWAY  
SEGMENT 3A-1  
CONTRACT 1**

Pawtucket, Rhode Island

TITLE

**AREA 1  
SIGNAGE AND  
STRIPING PLAN**

NO.	REVISIONS	DATE

DRAWN BY:

AKP/BB/ALG

DESIGNED BY:

AWG

CHECKED BY:

AWG


ISSUE DATE:

11/8/2023

BETA JOB NO.:

6352

SCALE

  
SCALE IN FEET: 1"=10'

UNLESS OTHERWISE NOTED OR CHANGED BY REPRODUCTION

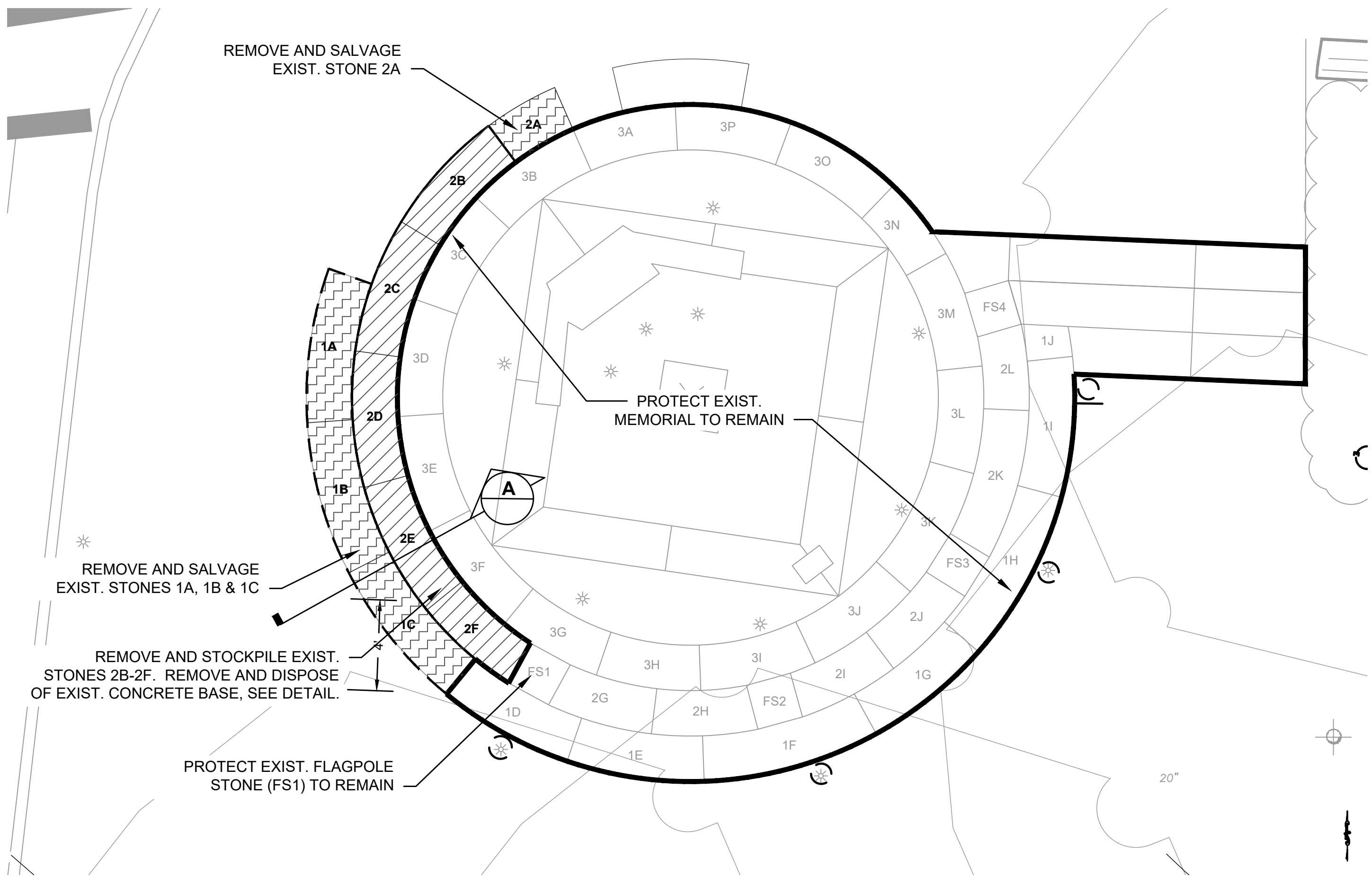
**CONSTRUCTION DOCUMENTS**

SHEET NO.

**9**



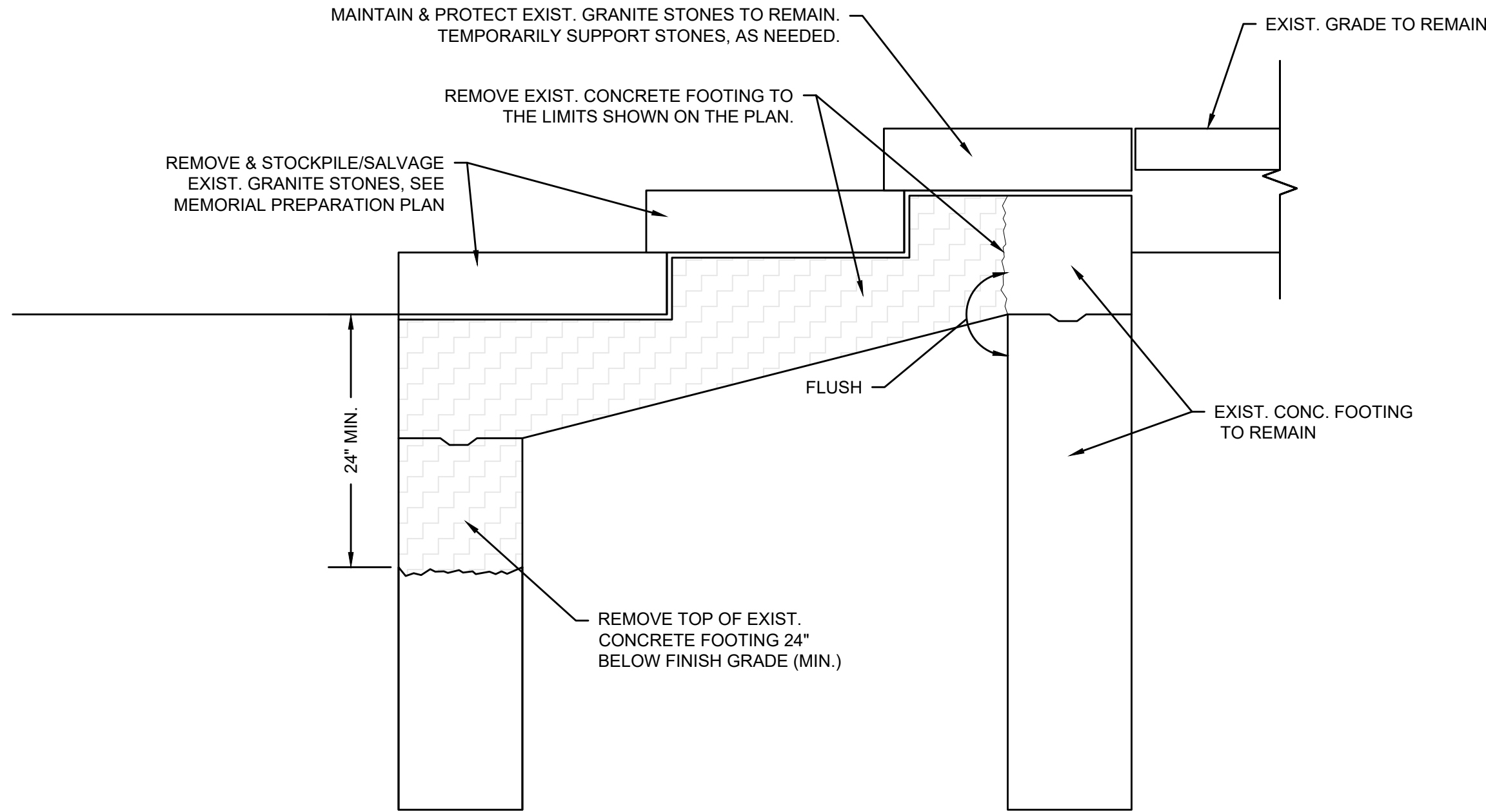
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MEMORIAL PREPARATION PLAN

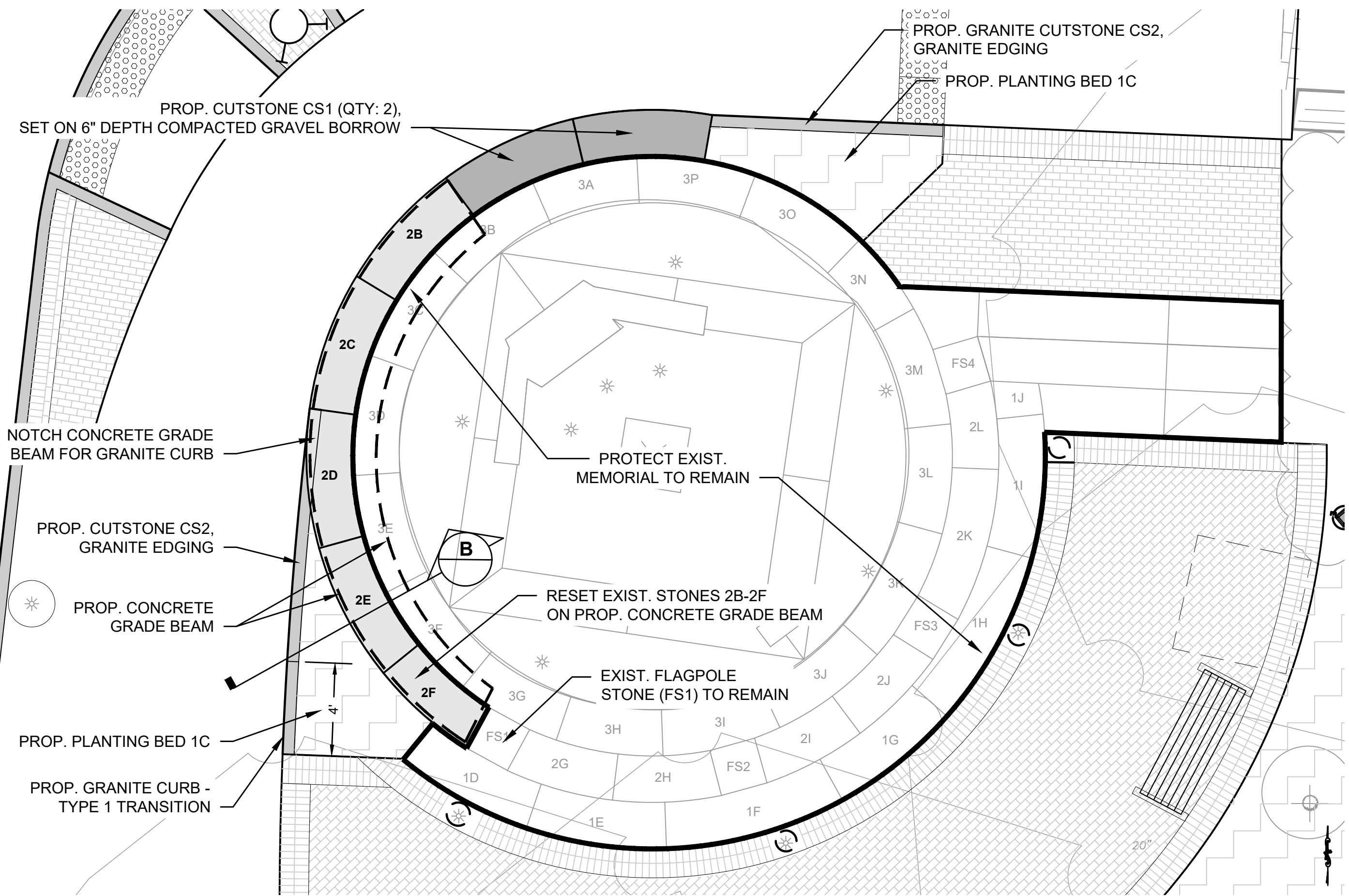
SCALE:  $\frac{1}{4}" = 1'-0"$

- NOTE:
1. STONES TO BE REMOVED AND SALVAGED SHALL BE DELIVERED TO A LOCATION DETERMINED BY THE OWNER OR OWNER'S REPRESENTATIVE.



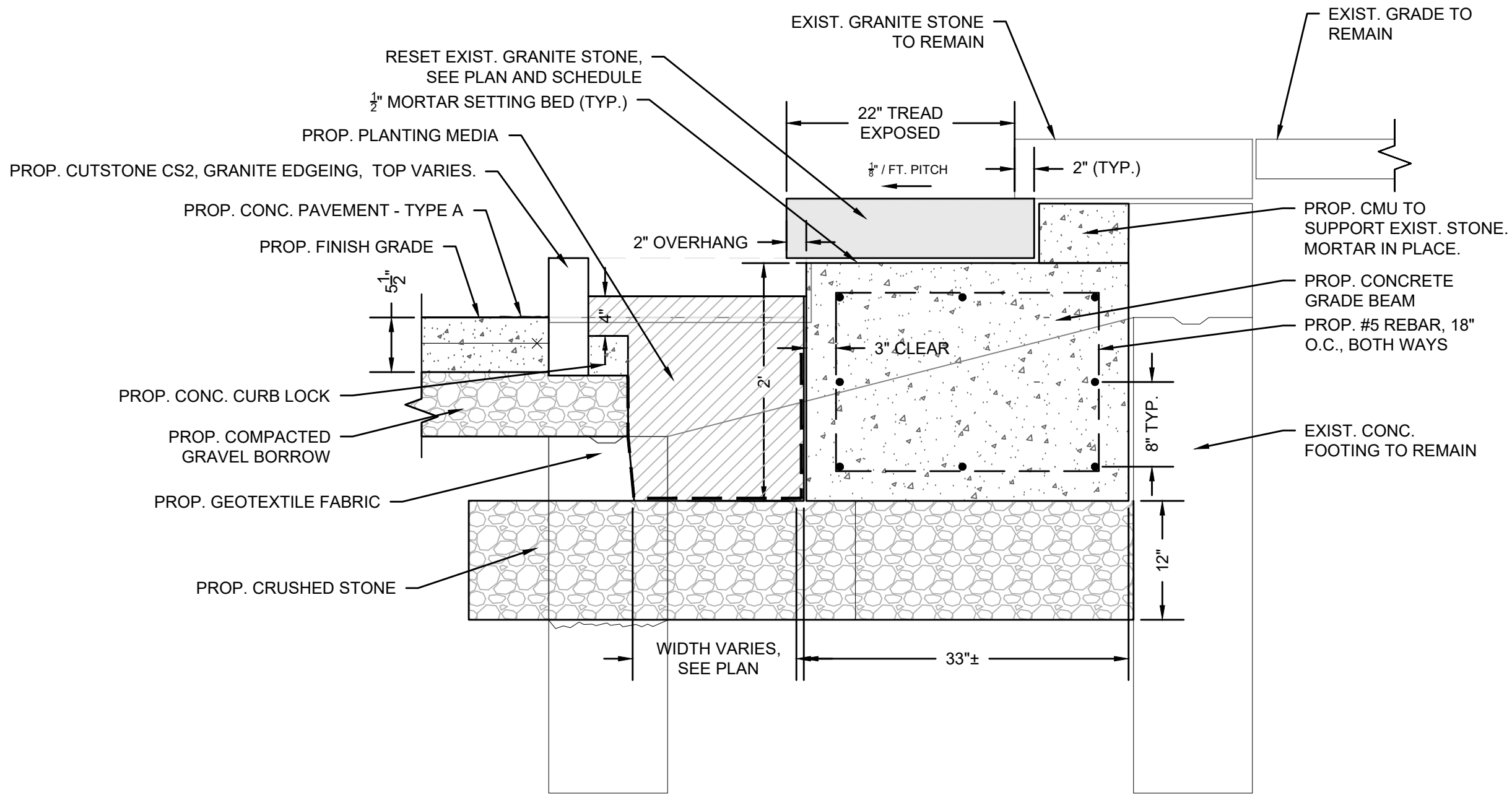
SECTION A - MEMORIAL PREPARATION

SCALE:  $1" = 1'-0"$



LAYOUT PLAN

SCALE:  $\frac{1}{4}" = 1'-0"$



SECTION B - MEMORIAL

SCALE:  $1" = 1'-0"$

GRANITE ID	ACTION	NOTES
1A, 1B & 1C	REMOVE & SALVAGE	COORDINATE LOCATION WITH OWNER
1D - 1J	EXIST. TO REMAIN	-
2A	REMOVE & SALVAGE	COORDINATE LOCATION WITH OWNER
2B - 2F	REMOVE, STOCKPILE & RESET	SEE SECTION B
2G - 2L	EXIST. TO REMAIN	-
3A - 3P	EXIST. TO REMAIN	-

EXISTING GRANITE STONE SCHEDULE

SCALE: NTS

PREPARED BY



REGISTERED PROFESSIONAL

SUBCONSULTANT

PROJECT

BLACKSTONE  
RIVER BIKEWAY  
SEGMENT 3A-1  
CONTRACT 1

Pawtucket, Rhode Island

TITLE

AREA 1  
MODIFICATIONS  
TO VETERANS  
MEMORIAL - 1

NO. REVISIONS DATE

DRAWN BY: AKP/BB/ALG

DESIGNED BY: AWG

CHECKED BY: AWG

ISSUE DATE: 11/8/2023

BETA JOB NO.: 6352

SCALE

AS SHOWN

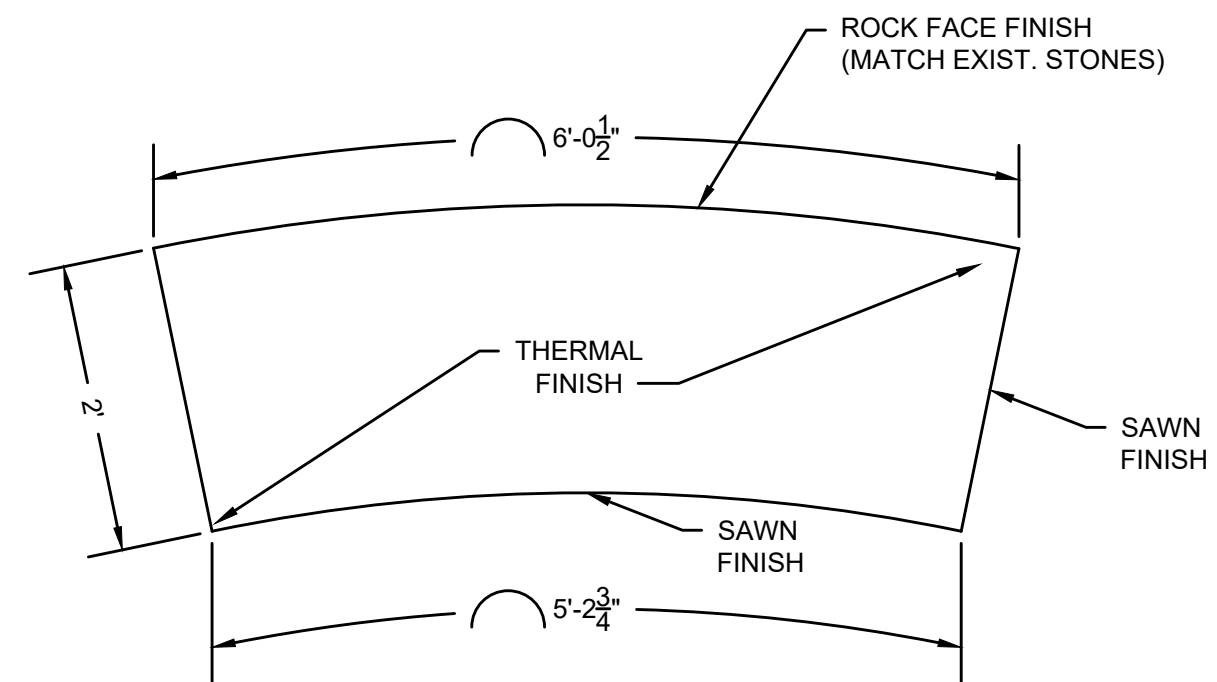
UNLESS OTHERWISE NOTED OR CHANGED BY REPRODUCTION

CONSTRUCTION DOCUMENTS

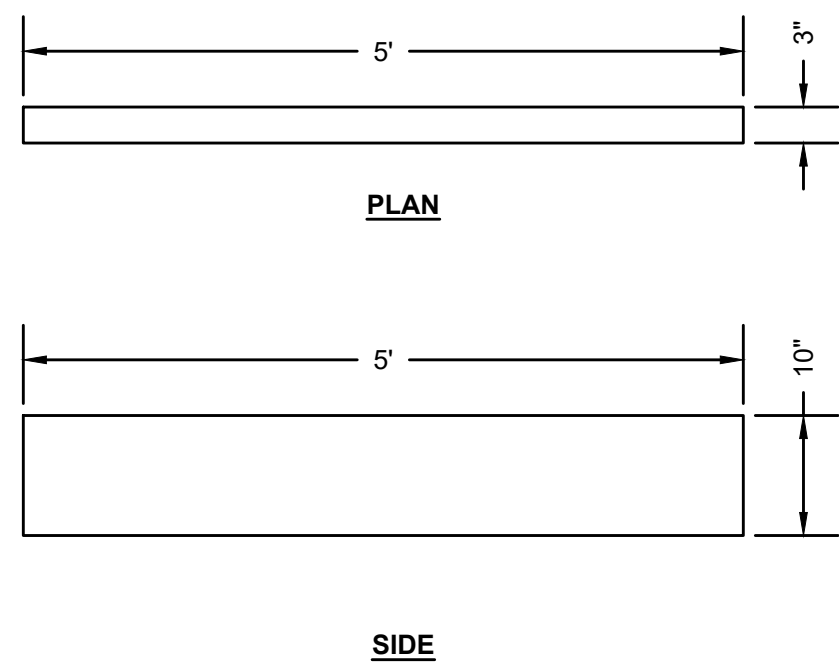
SHEET NO.

10

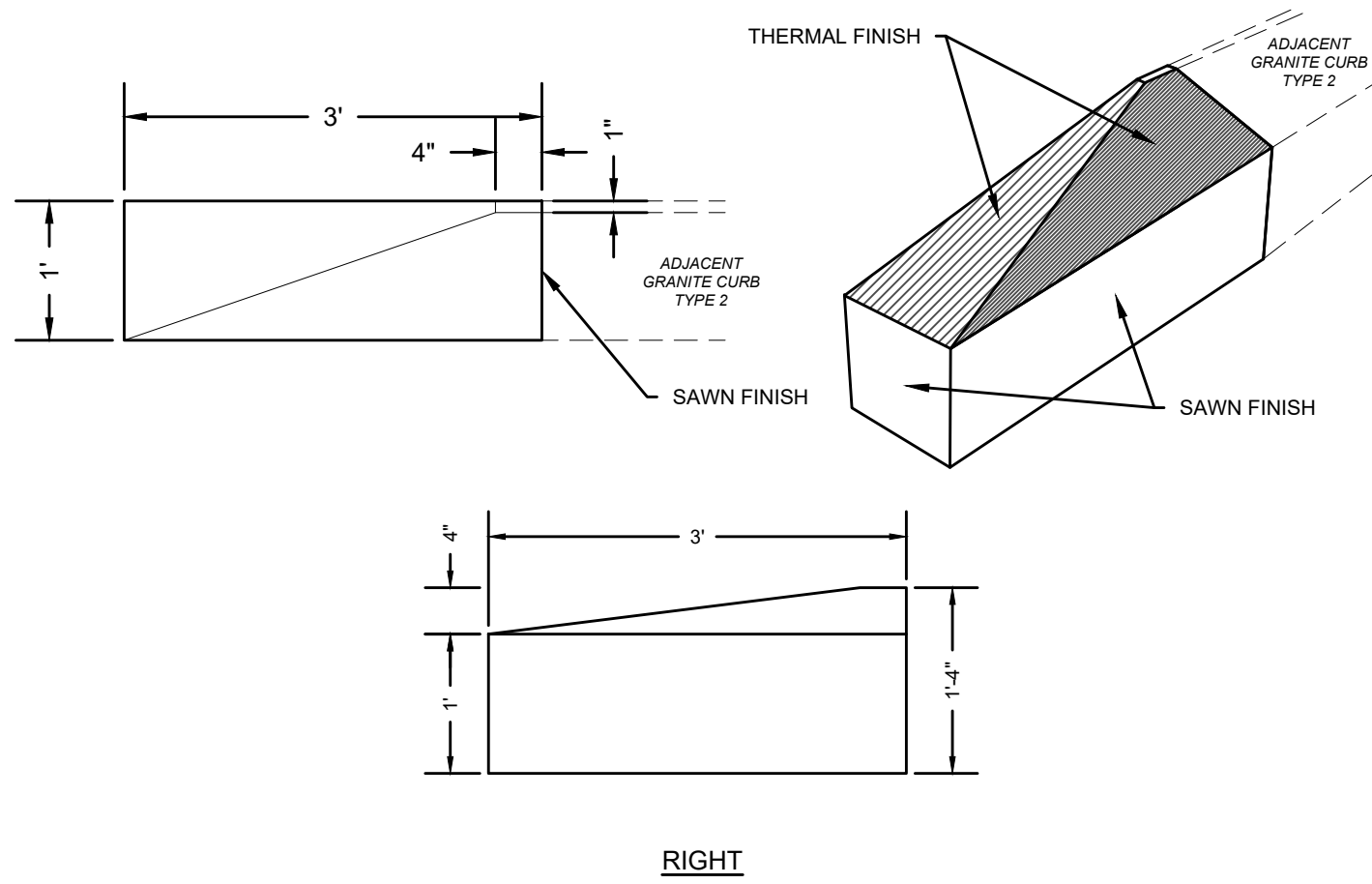




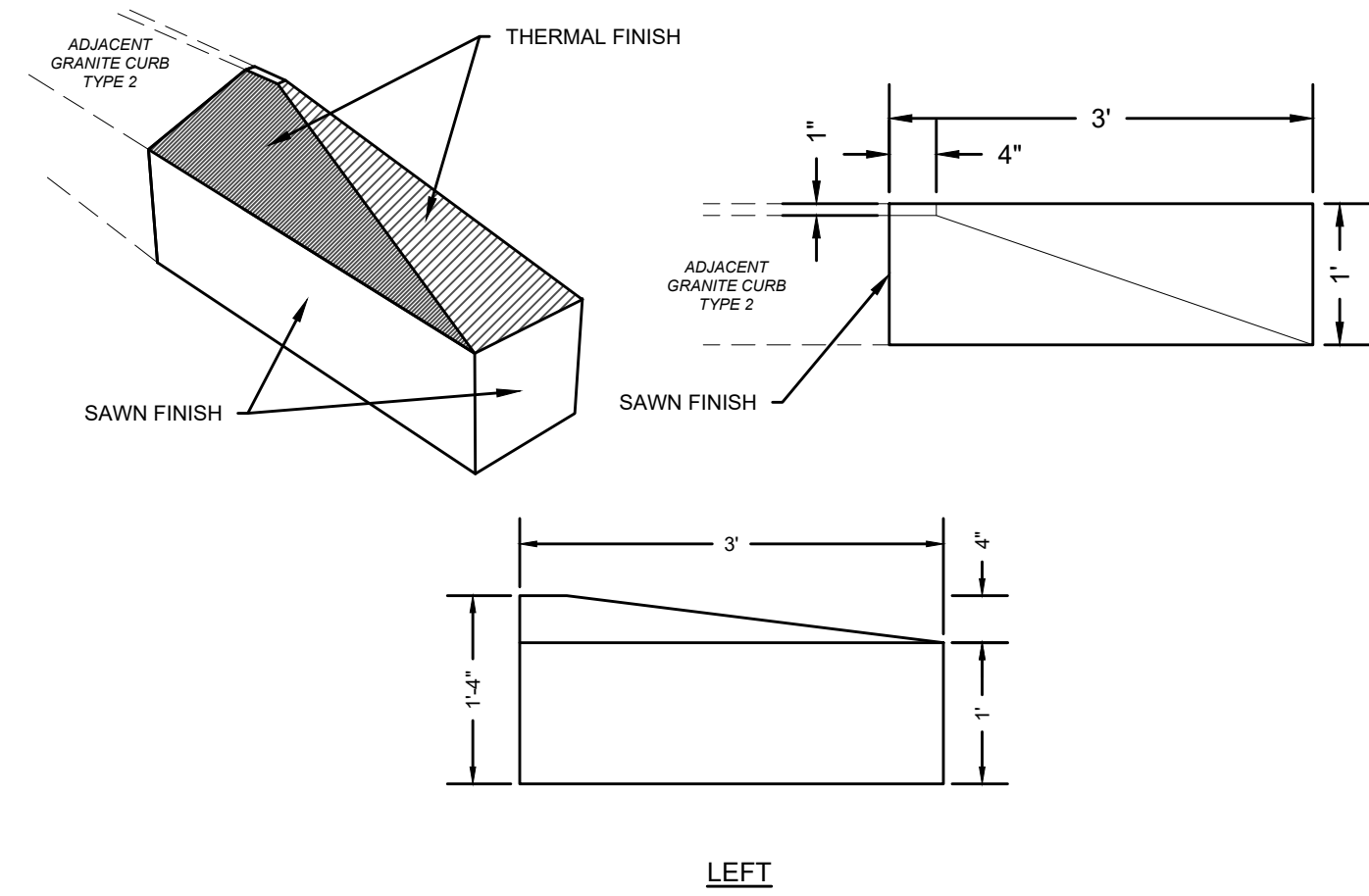
CS1 - GRANITE STAIR  
SCALE:  $\frac{3}{4}" = 1' - 0"$



CS2 - GRANITE EDGING  
SCALE:  $\frac{3}{4}" = 1' - 0"$



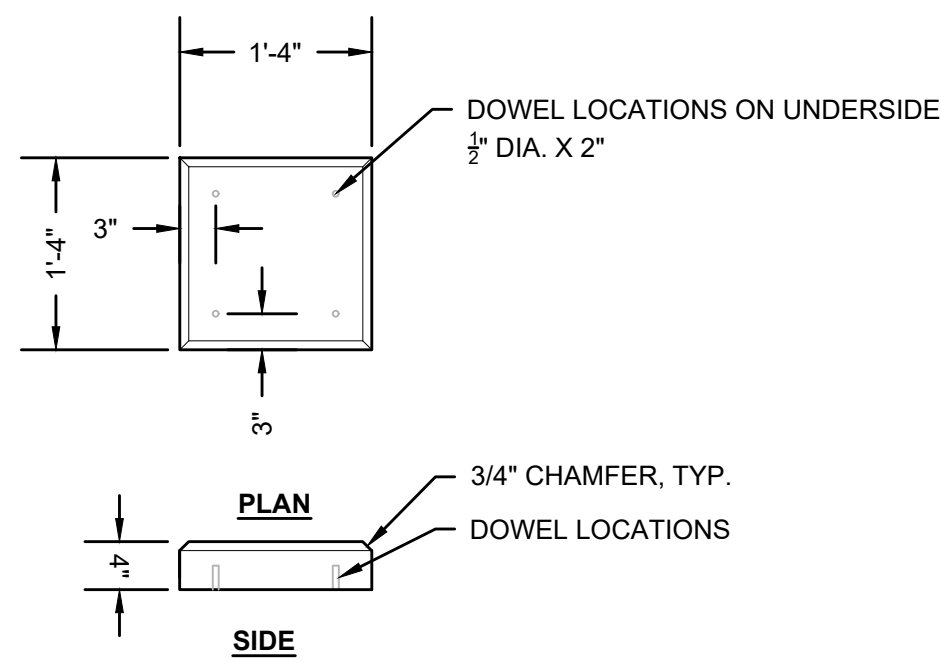
CS3 - CURB TRANSITION



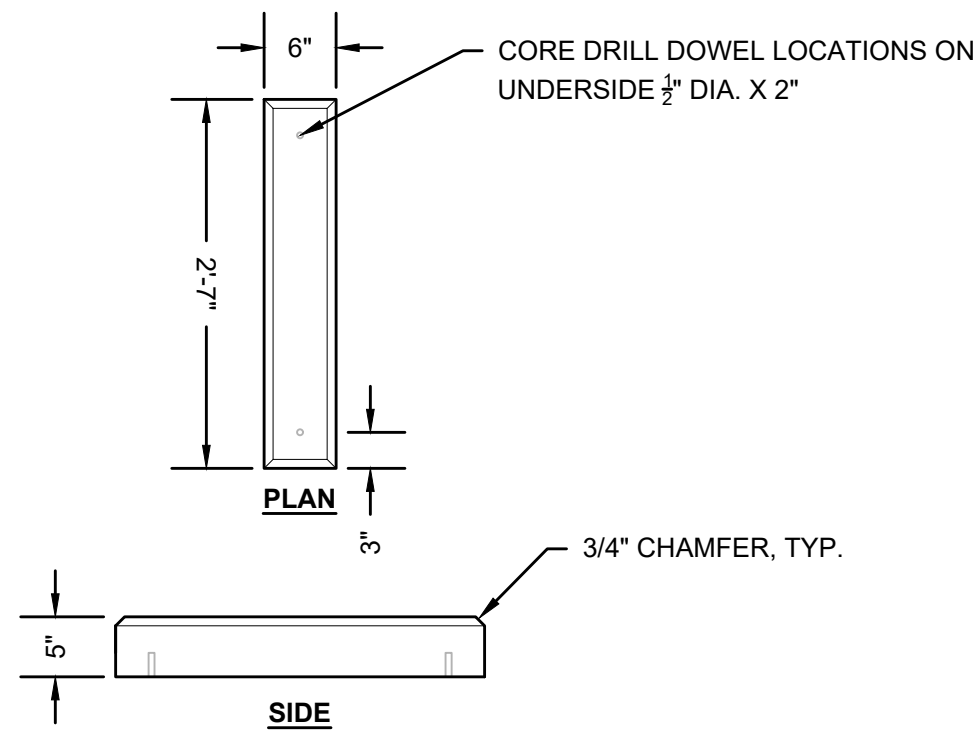
LEFT

NOTE:

1. CS2A - STRAIGHT
2. CS2B - RADIAL - R55"
3. CS2C - RADIAL - R29"



**CS4 - BIKE RACK BASE**  
SCALE:  $\frac{3}{8}" = 1' - 0"$



**CS5 - BENCH BASE**  
SCALE:  $\frac{3}{4}" = 1' - 0"$

NOTE: FIELD DRILL HOLES ON TOP OF BIKE RACK BASE FOR BIKE RACK ANCHORS PER MANUFACTURER'S RECOMMENDATION.

NOTE: FIELD DRILL HOLES ON TOP OF BENCH BASE FOR BENCH ANCHORS PER MANUFACTURER'S RECOMMENDATION.

GRANITE ID	AREA	QTY	GRANITE TYPE	FINISHES			NOTES
				TOP	SIDES	BOTTOM	
CS1 - GRANITE STAIR	1	2	TYPE 1 GRANITE	THERMAL	FRONT - ROCK FACE, REAR - SAWN	SAWN	
CS2A - GRANITE EDGING	1 & 2	310 LF	TYPE 2 GRANITE	SAWN	THERMAL	SAWN	STRAIGHT
CS2B - GRANITE EDGING	2	12 LF	TYPE 2 GRANITE	SAWN	THERMAL	SAWN	55' RADIUS
CS2C - GRANITE EDGING	2	12 LF	TYPE 2 GRANITE	SAWN	THERMAL	SAWN	29' RADIUS
CS3 - CURB TRANSITION LEFT	1	2	TYPE 2 GRANITE	THERMAL	THERMAL	SAWN	
CS3 - CURB TRANSITION RIGHT	1	3	TYPE 2 GRANITE	THERMAL	THERMAL	SAWN	
CS4 - BIKE RACK BASE	1 & 2	1	TYPE 2 GRANITE	THERMAL	SAWN	SAWN	
CS5 - BENCH BASE	1 & 2	10	TYPE 2 GRANITE	THERMAL	SAWN	SAWN	

## GRANITE SCHEDULE

SCALE: N/A

NOTES:

1. REFER TO THE SPECIFICATIONS FOR GRANITE TYPES.
2. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR ALL CS STONES PRIOR TO FABRICATION.



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PROJECT

**BLACKSTONE  
RIVER BIKEWAY  
SEGMENT 3A-1  
CONTRACT 1**

## Pawtucket, Rhode Island

TITLE

## GRANITE CUT STONES

[illegible]

NO.	REVISIONS	DATE
DRAWN BY:	AKP/BB/ALG	
DESIGNED BY:	AWG	
CHECKED BY:	AWG	
ISSUE DATE:	11/8/2023	
BETA JOB NO.:	6352	

SCALE

AS SHOWN

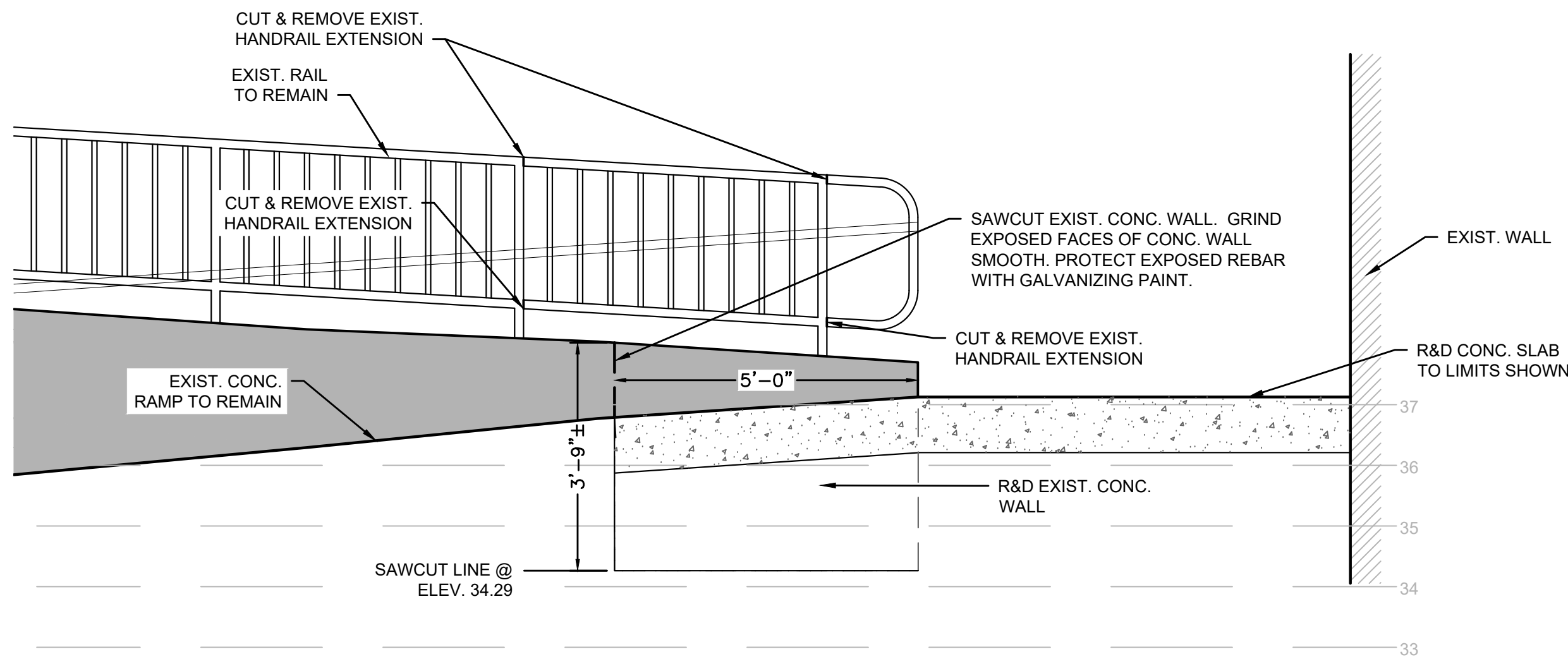
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## CONSTRUCTION DOCUMENTS

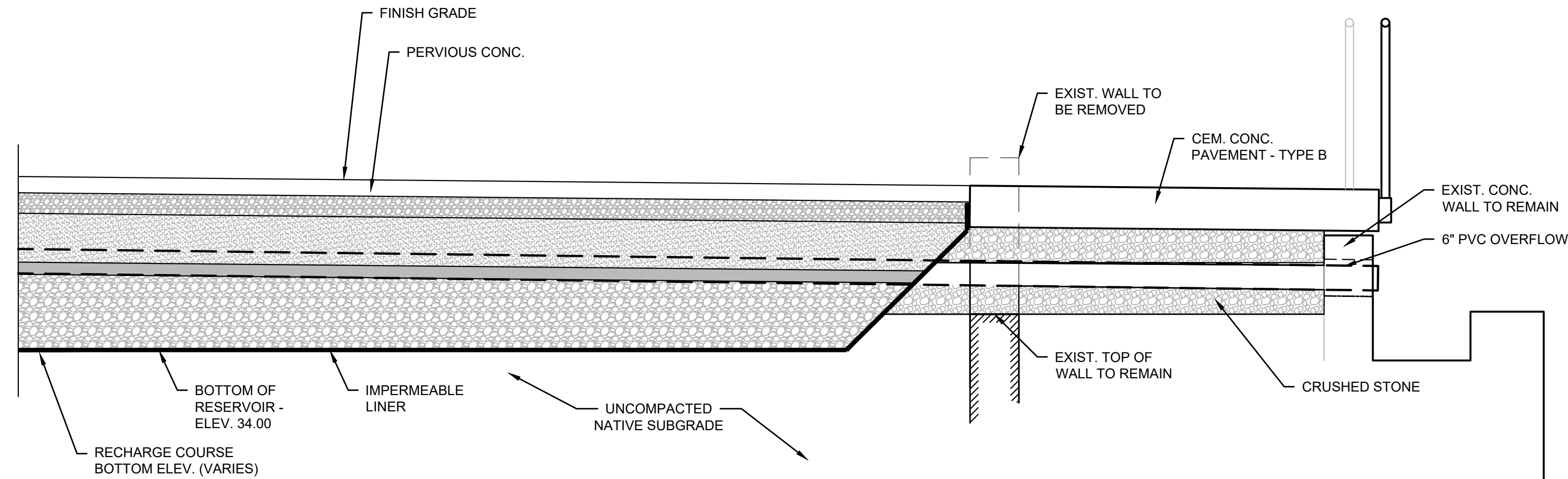
SHEET NO



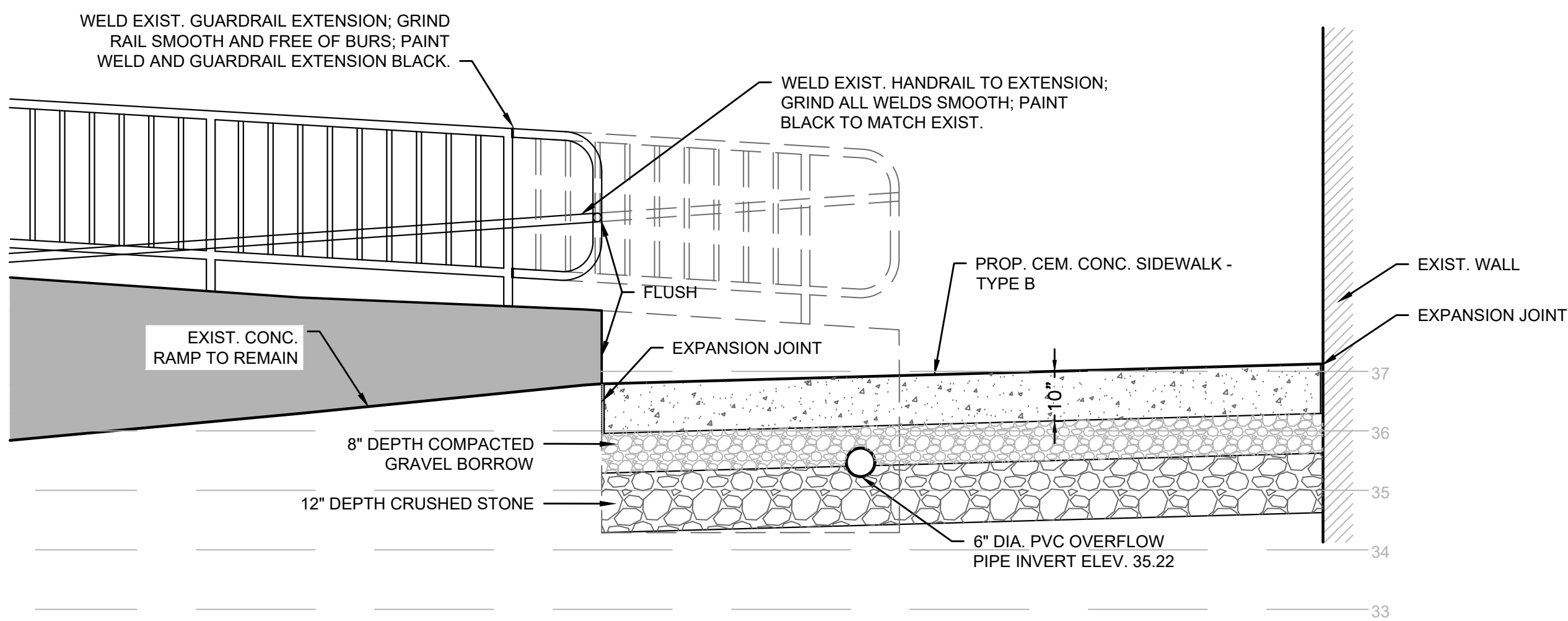
1/17/2023 1:07 PM \\BETA\INC.COM\RI\GL\PLANNING LANDSCAPE\600S\0352 - PAWTUCKET - BLACKSTONE RIVER BIKEWAY\DRAWING FILES\PLANSET\CONTRACT 1\CONSTRUCTION DOCUMENTS\DWG (BETA STD BW.CTB)



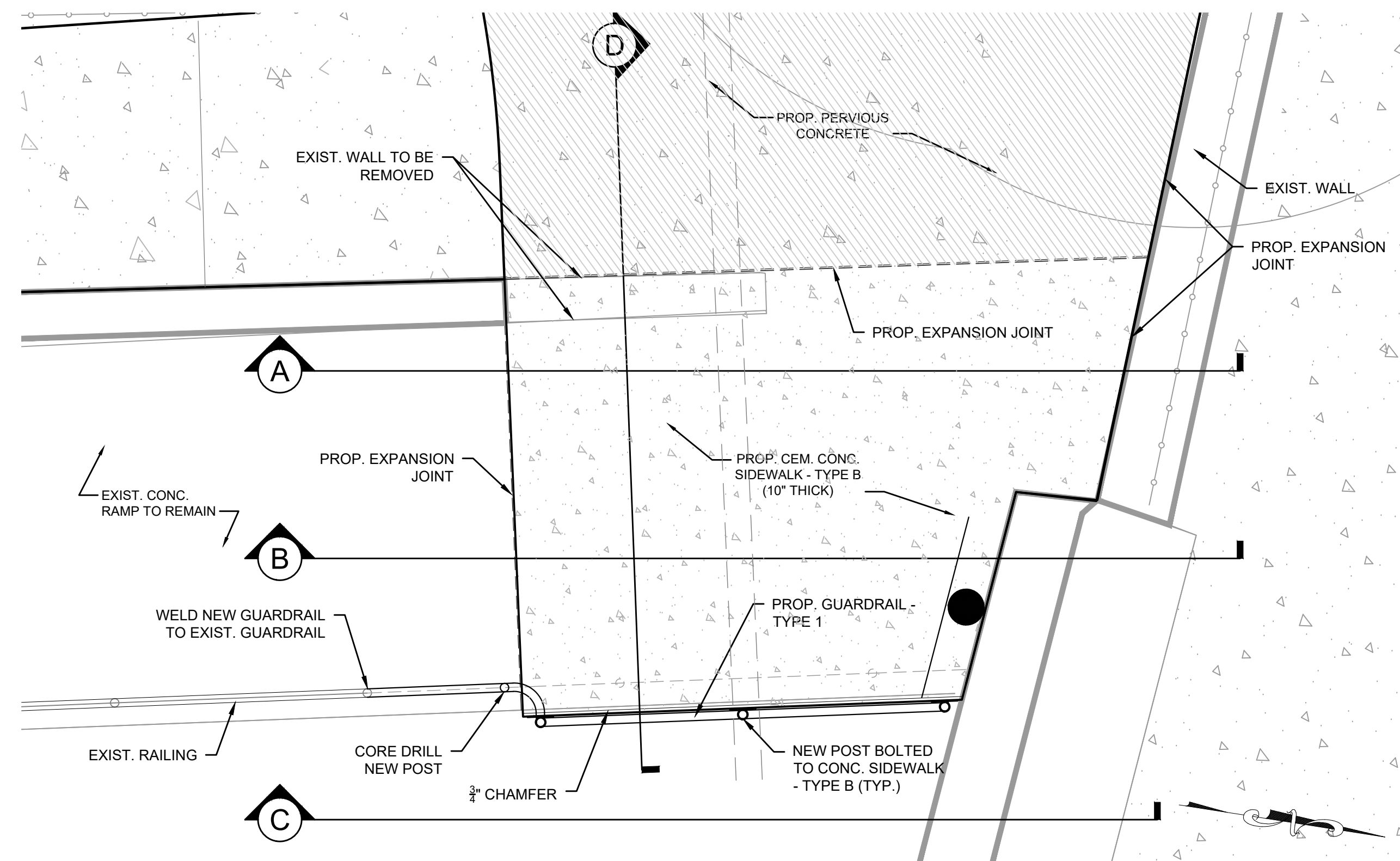
**MODIFICATIONS TO CONCRETE RAMP - SITE PREPARATION - SECTION A**  
SCALE:  $\frac{1}{2}$ "=1'-0"



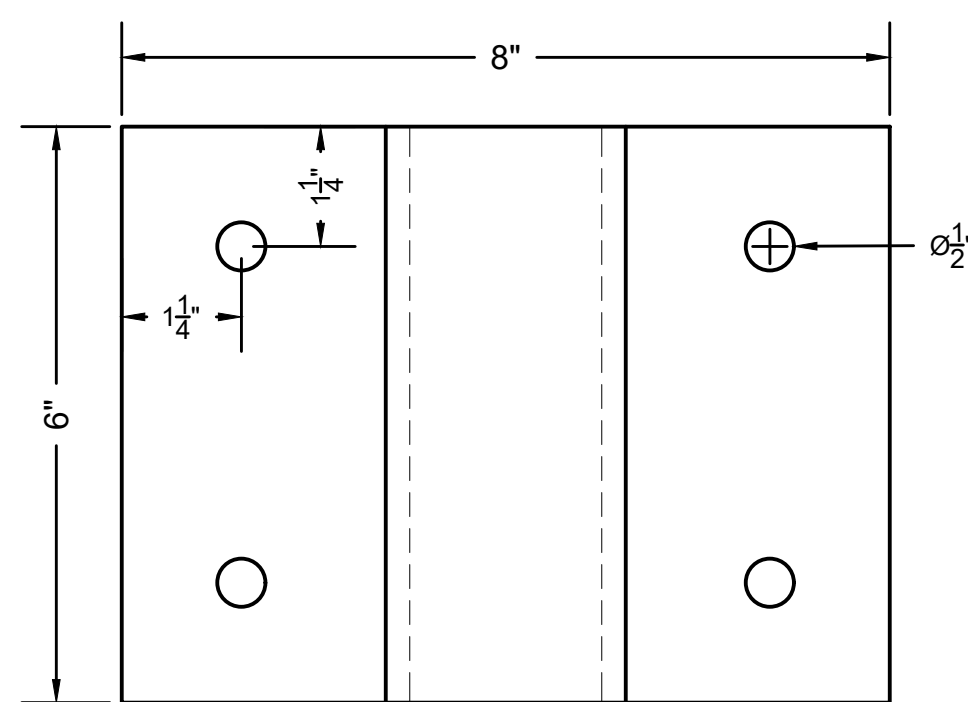
**MODIFICATIONS TO CONCRETE RAMP - SECTION D**  
SCALE:  $\frac{1}{2}$ "=1'-0"



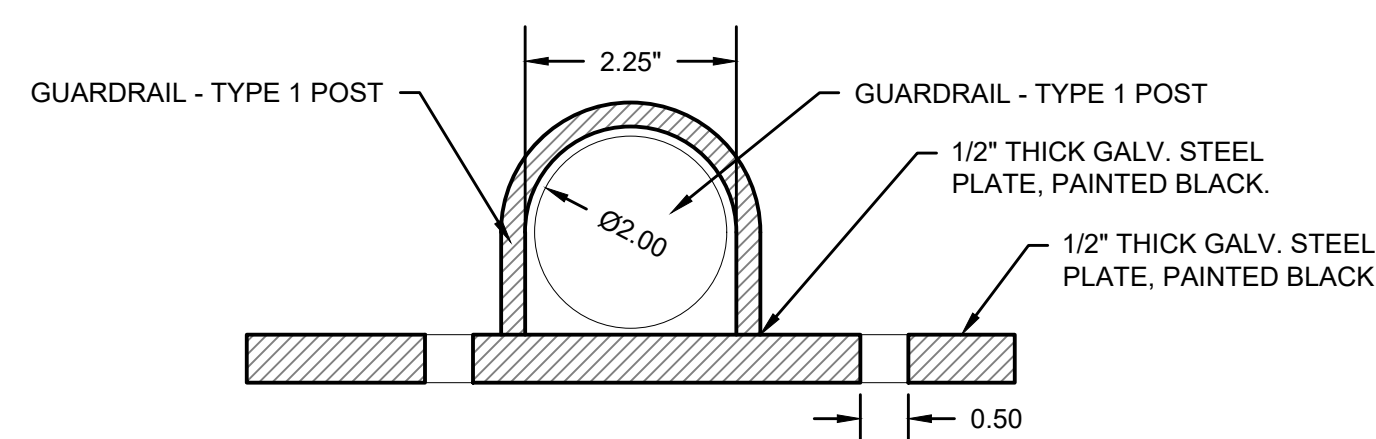
**MODIFICATIONS TO CONCRETE RAMP - PROPOSED - SECTION B**  
SCALE:  $\frac{1}{2}$ "=1'-0"



**MODIFICATIONS TO CONCRETE RAMP - PLAN**  
SCALE:  $\frac{1}{2}$ "=1'-0"

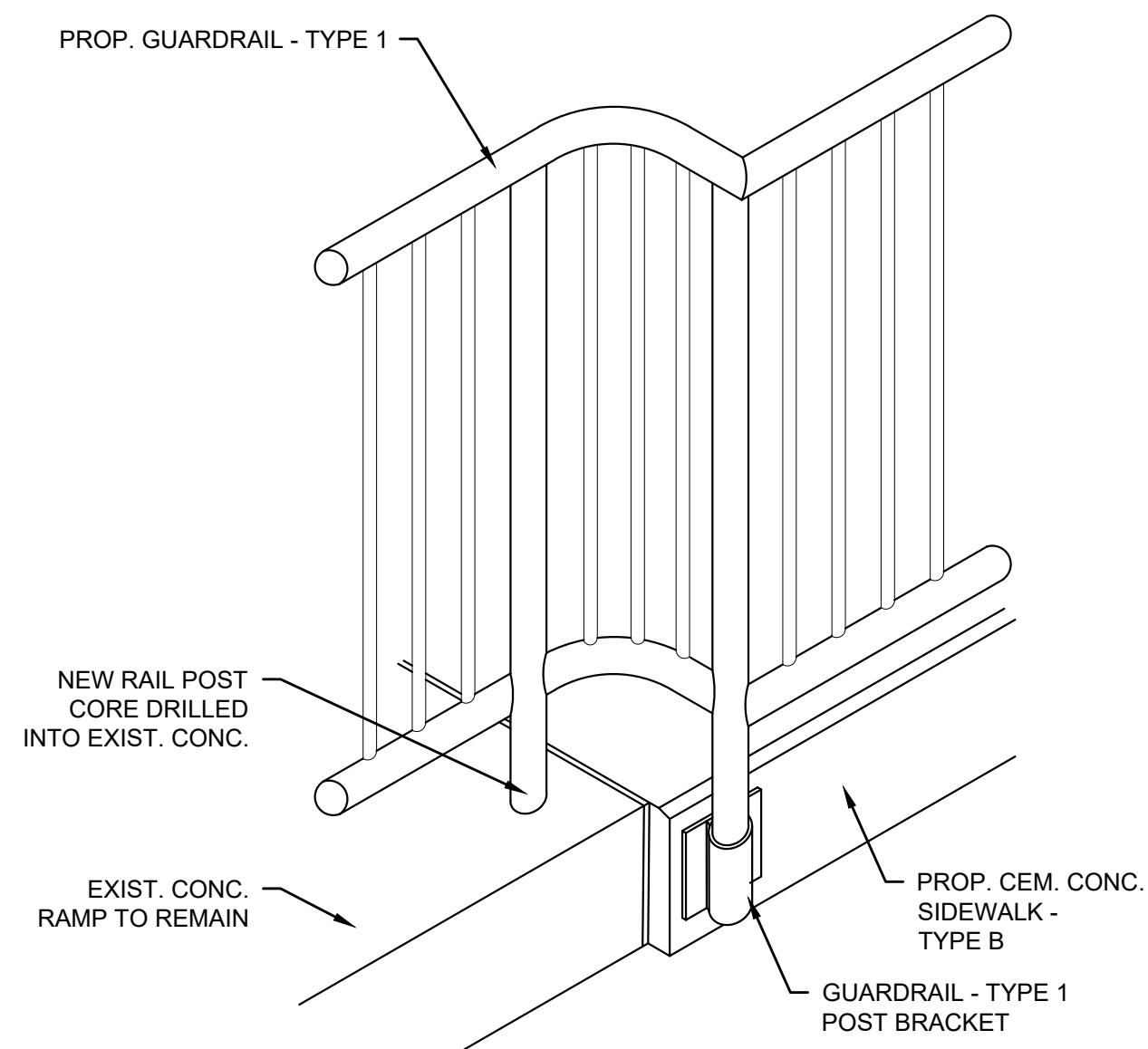


**ELEVATION**

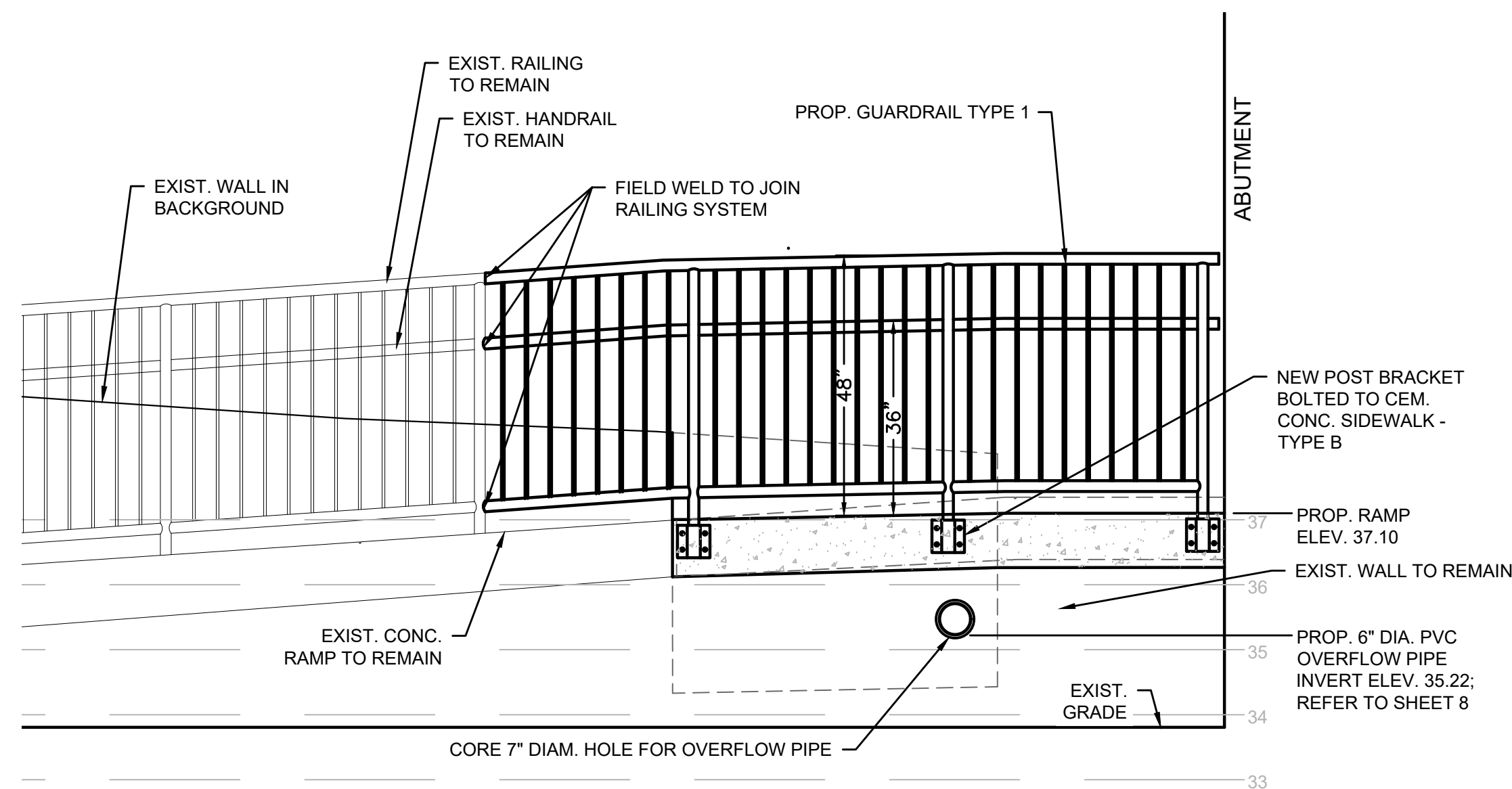


**PLAN**

**GUARDRAIL - TYPE 1 - POST BRACKET**  
SCALE:  $\frac{1}{2}$ "=1'-0"



**RAILING CONNECTION TO EXISTING**  
NOT TO SCALE



**MODIFICATIONS TO CONCRETE RAMP - GUARDRAIL TYPE 1 - ELEVATION C**  
SCALE:  $\frac{1}{2}$ "=1'-0"

NOTE: MINIMUM SLOPE SHALL BE 1% IN ANY DIRECTION. MAX SLOPE SHALL BE 1.75%.

PREPARED BY



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PROJECT

**BLACKSTONE  
RIVER BIKEWAY  
SEGMENT 3A-1  
CONTRACT 1**

Pawtucket, Rhode Island

TITLE

**AREA 1 DETAILS - 1**

NO.	REVISIONS	DATE
-----	-----------	------

DRAWN BY:	AKP/BB/ALG
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DESIGNED BY:	AWG
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CHECKED BY:	AWG
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ISSUE DATE:	11/8/2023
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BETA JOB NO.:	6352
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SCALE

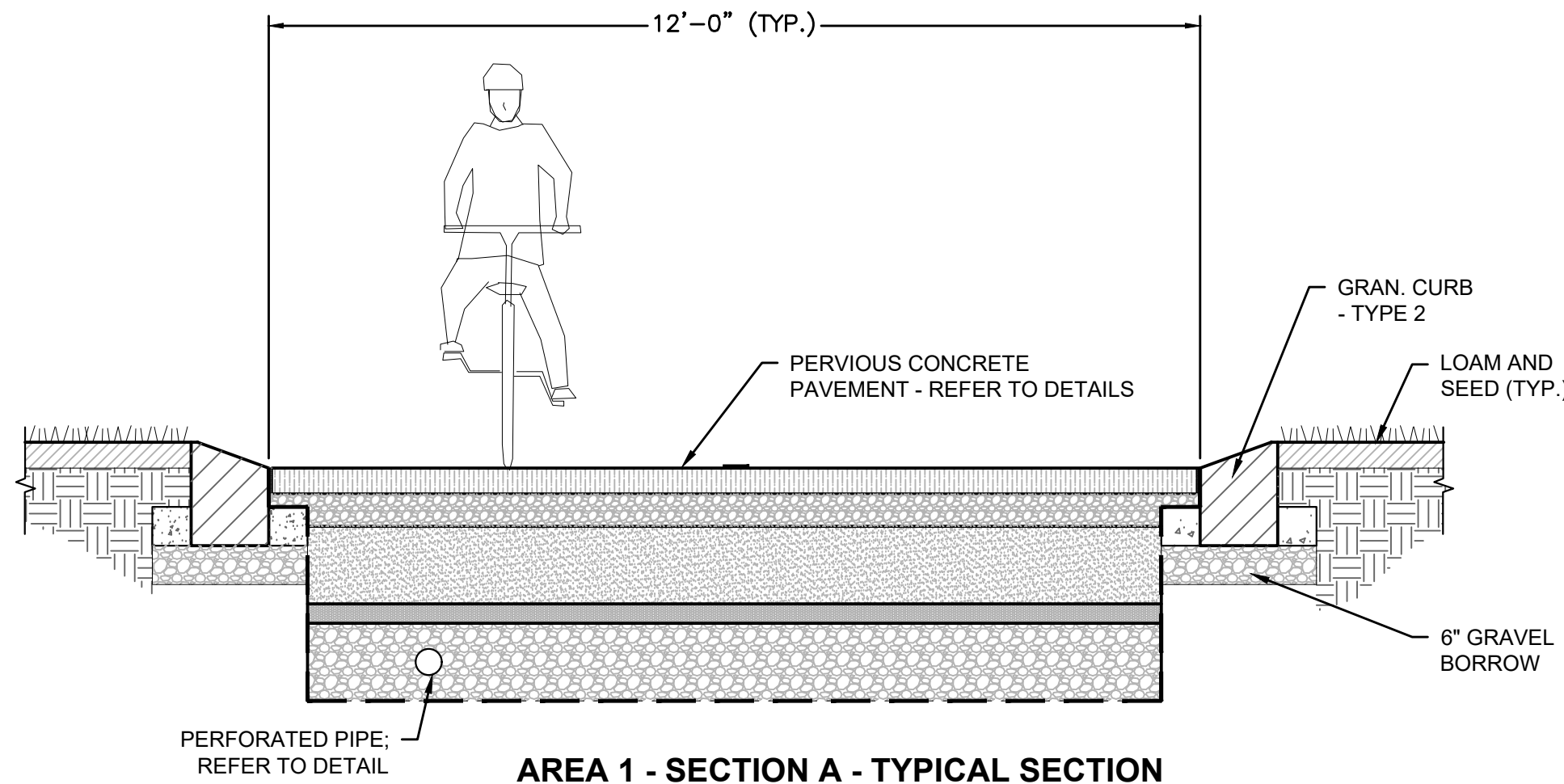
AS SHOWN

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**CONSTRUCTION DOCUMENTS**

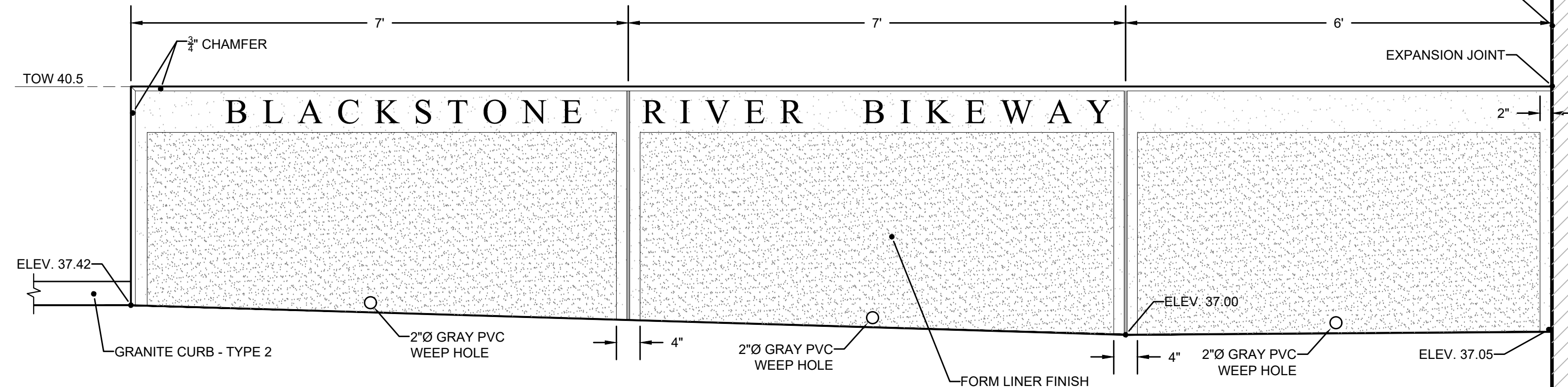
SHEET NO.



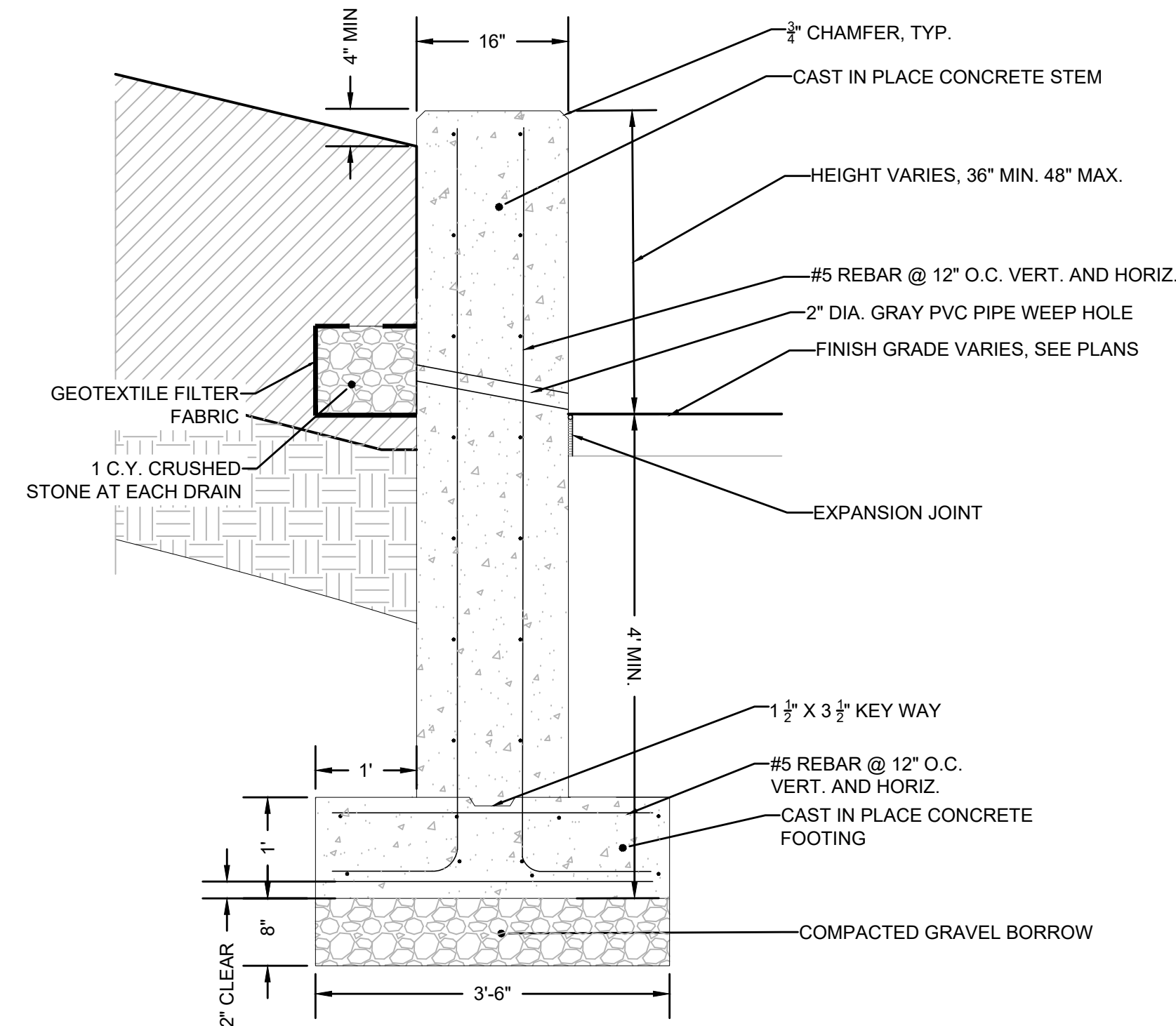
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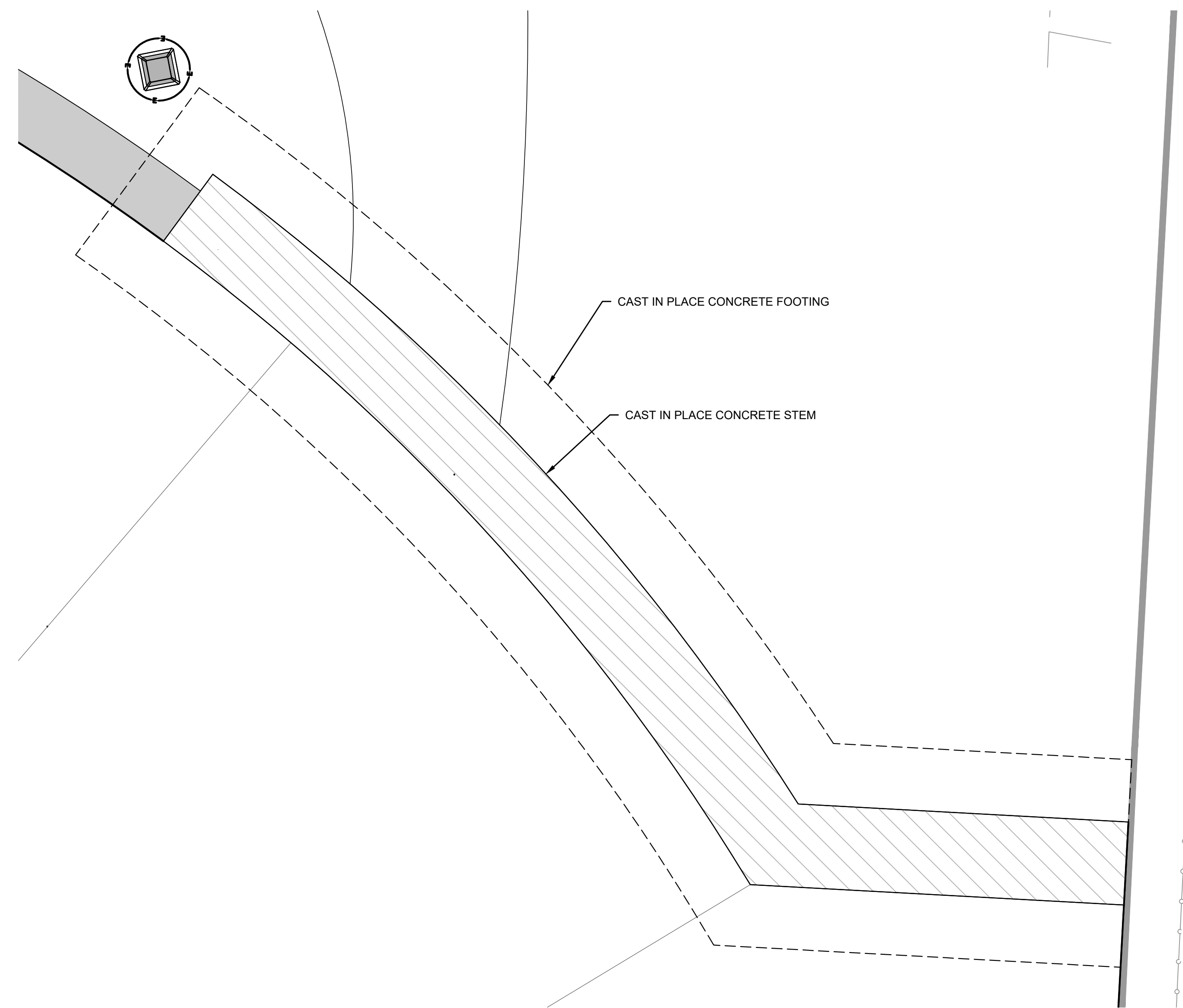
AREA 1 - SECTION A - TYPICAL SECTION  
SCALE: 1/4"=1'-0"



SEAT WALL W-1 - ELEVATION  
SCALE: 3/4"=1'-0"



SEAT WALL W-1 - SECTION  
SCALE: 3/4"=1'-0"



SEAT WALL W-1 - PLAN  
SCALE: 3/4"=1'-0"

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PROJECT

BLACKSTONE  
RIVER BIKEWAY  
SEGMENT 3A-1  
CONTRACT 1

Pawtucket, Rhode Island

TITLE

AREA 1 DETAILS - 2

NO.	REVISIONS	DATE
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DRAWN BY:	AKP/BB/ALG
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DESIGNED BY:	AWG
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CHECKED BY:	AWG
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ISSUE DATE:	11/8/2023
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BETA JOB NO.:	6352
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SCALE

AS SHOWN

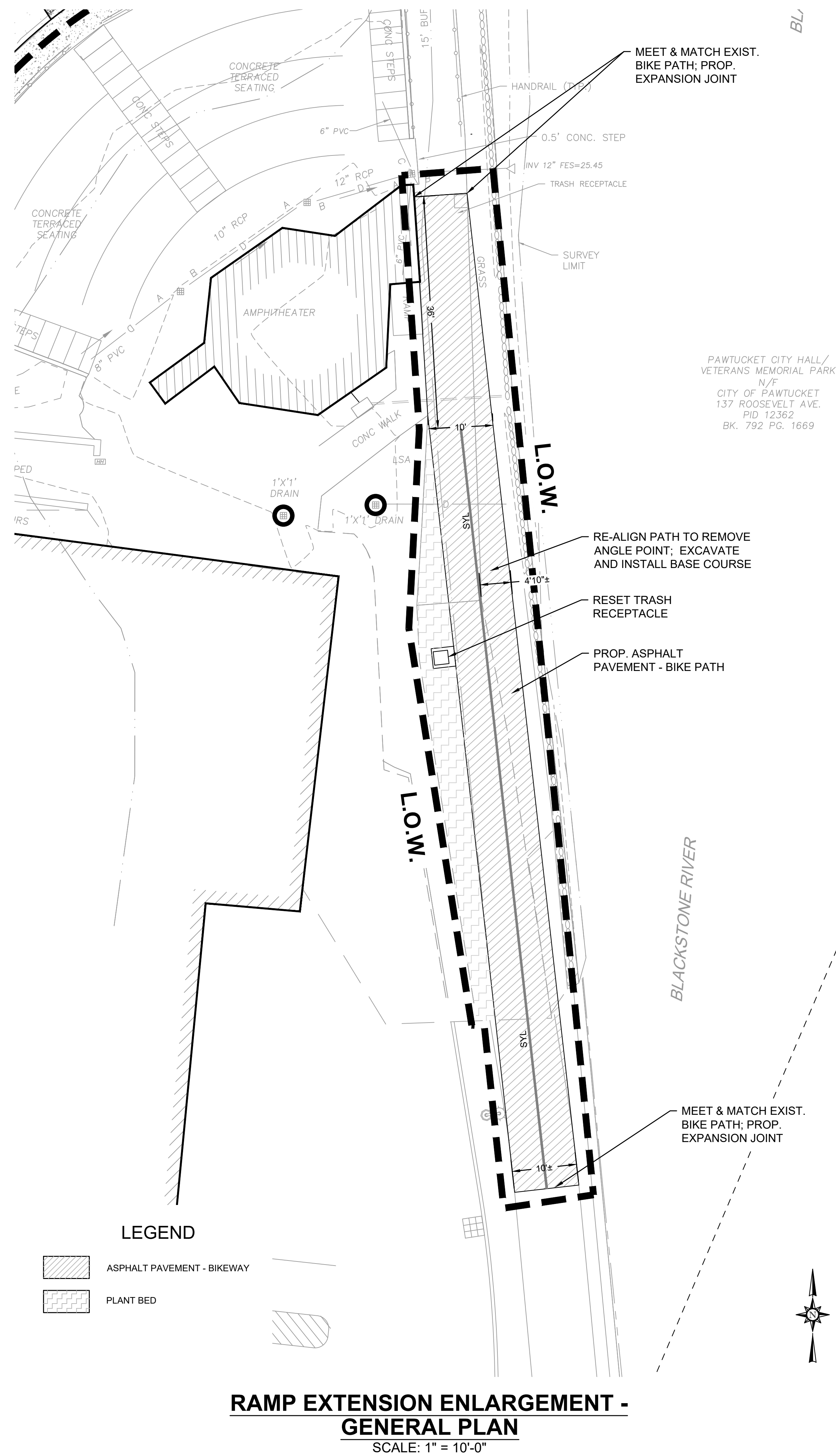
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SHEET NO.

13









SUBCONSULTANT

**BLACKSTONE  
RIVER BIKEWAY  
SEGMENT 3A-1  
CONTRACT 1**

TITLE

**AREA 1 RAMP  
EXTENSION  
ENLARGEMENT  
PLANS - 2**

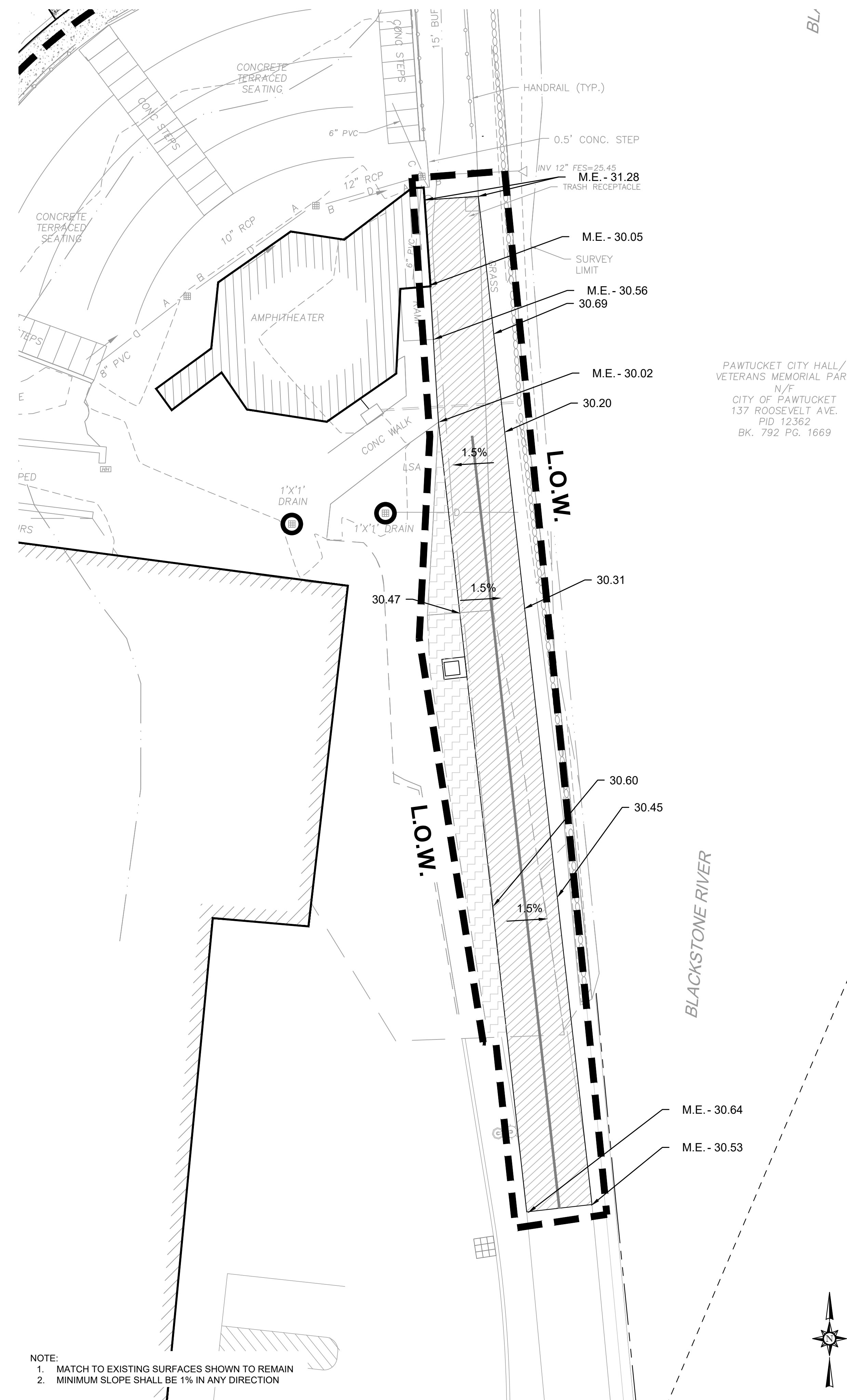
NO.	REVISIONS	DATE
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BETA JOB NO.: 6352

AS SHOWN

## CONSTRUCTION DOCUMENTS

15

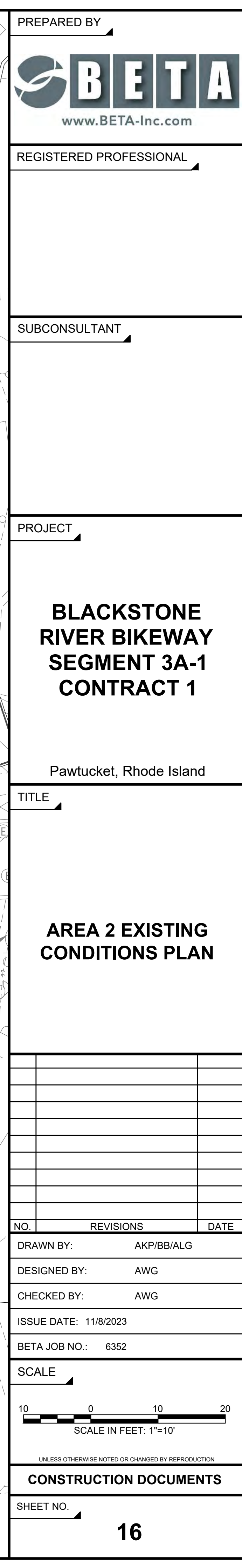


## RAMP EXTENSION ENLARGEMENT - GRADING & DRAINAGE PLAN

SCALE: 1" = 10'-0"



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[illegible]

NO.	REVISIONS	DATE
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DRAWN BY: AKP/BB/ALG

DESIGNED BY: AWG

CHECKED BY:                      AWG

ISSUE DATE: 11/8/2023

BETA JOB NO.: 6352

SCALE 

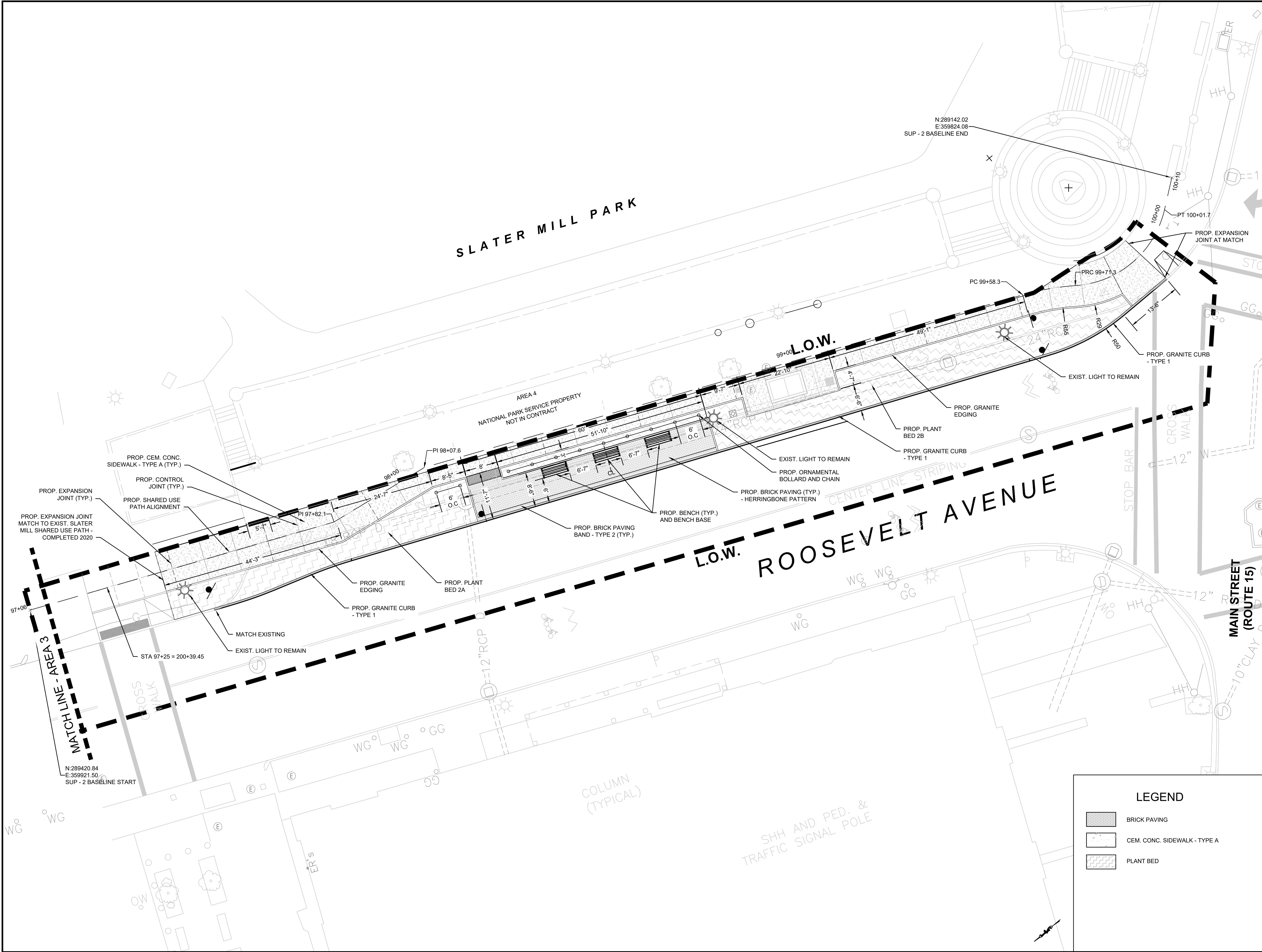
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SHEET NO. 4


17



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PROJECT

**BLACKSTONE RIVER BIKEWAY  
SEGMENT 3A-1  
CONTRACT 1**  
  
Pawtucket, Rhode Island

TITLE

**AREA 2  
GENERAL PLAN**

NO.	REVISIONS	DATE

DRAWN BY:

AKP/BB/ALG

DESIGNED BY:

AWG

CHECKED BY:

AWG


ISSUE DATE:

11/8/2023

BETA JOB NO.:

6352

SCALE

  
SCALE IN FEET: 1"=10'

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CONSTRUCTION DOCUMENTS

SHEET NO.

**18**



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NOTES:

1. NEW CURBING SHALL MEET EXISTING CURBING AND SIDEWALKS AS SHOWN
2. MINIMUM SLOPE SHALL BE 1% IN ANY DIRECTION

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PROJECT

BLACKSTONE  
RIVER BIKEWAY  
SEGMENT 3A-1  
CONTRACT 1

Pawtucket, Rhode Island

TITLE

AREA 2  
GRADING PLAN

NO.	REVISIONS	DATE
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DRAWN BY:	AKP/BB/ALG
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DESIGNED BY:	AWG
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CHECKED BY:	AWG
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ISSUE DATE:	11/8/2023
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BETA JOB NO.:	6352
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SCALE

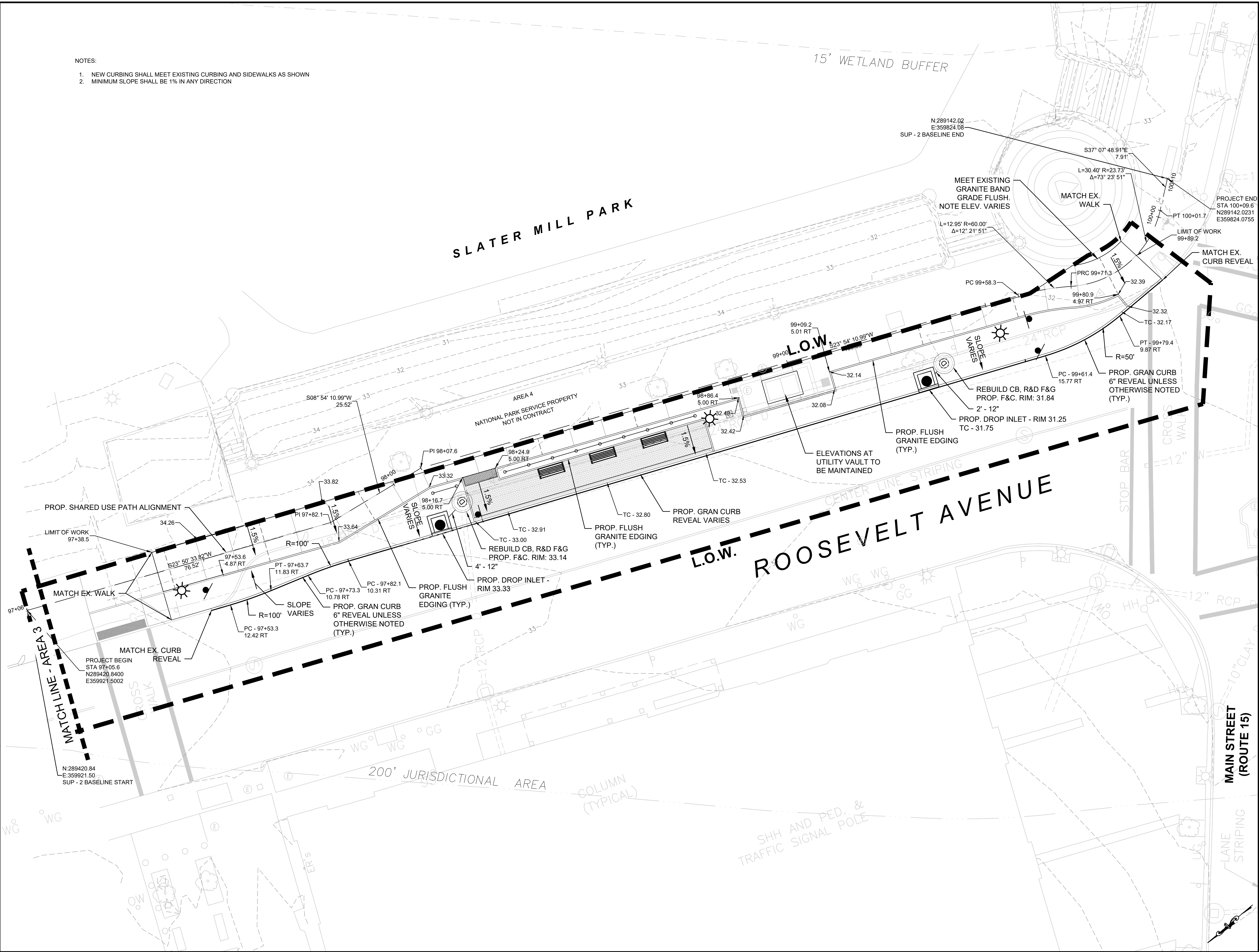


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CONSTRUCTION DOCUMENTS

SHEET NO.

19





SUBCONSULTANT

**BLACKSTONE  
RIVER BIKEWAY  
SEGMENT 3A-1  
CONTRACT 1**

TITLE

## AREA 2 PROFILE PLAN

[illegible]

NO.	REVISIONS	DATE
-----	-----------	------

DESIGNED BY: AWG

ISSUE DATE: 11/8/2023

SCALE 1



SCALE IN FEET: 1"=10'

## CONSTRUCTION DOCUMENTS

20

**THIS SHEET OMITTED FROM CONTRACT**

STA = 97+65.00  
ELEV = 33.92  
A.D. = 0.44%  
K = 45.01  
20' VC

PVT: 97+75  
ELEV: 33.82

PVC: 97+45.84  
ELEV: 33.71

PVI STA = 97+95.84  
PVI ELEV = 33.60  
A.D. = -0.77%  
K = 25.95  
20' VC

PVT: 98+05.84  
ELEV: 33.42  
PVC: 98+10.42  
ELEV: 33.34

PVI STA = 98+20.42  
PVI ELEV = 33.16  
A.D. = 1.29%  
K = 15.46  
20' VC

PVT: 98+30.42  
ELEV: 33.11

PVI STA = 98+51.94  
PVI ELEV = 33.00  
A.D. = -0.71%  
K = 28.34  
20' VC

PVT: 98+61.94  
ELEV: 32.88

GRADE BREAK STA = 98+93.00  
ELEV = 32.60

STATION=99+10.00  
ELEV= 32.32

STATION=98+93.00  
ELEV= 32.39

STATION=99+02.04  
ELEV= 32.25

PROPOSED GRADE

EXISTING GRADE

-1.04%

-1.81%

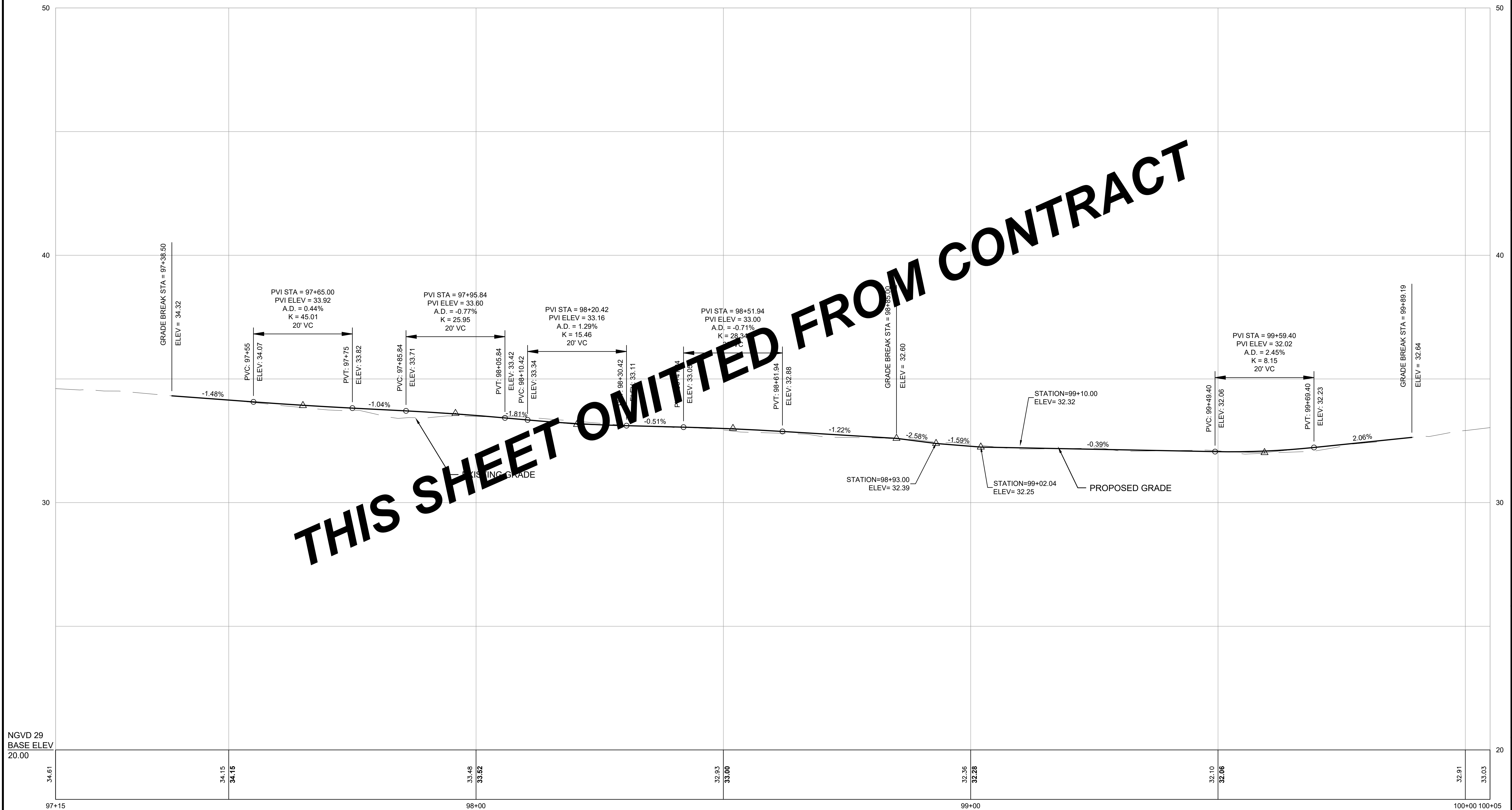
-0.51%

-1.22%

-2.58%

-1.59%

-0.39%





SUBCONSULTANT 4

**BLACKSTONE  
RIVER BIKEWAY  
SEGMENT 3A-1  
CONTRACT 1**

TITLE 1

## AREA 2 UTILITY PLAN

[illegible]

NO.	REVISIONS	DATE
-----	-----------	------

DRAWN BY: AKP/BB/ALG

DESIGNED BY:                   AWG

CHECKED BY:                      AWG

ISSUE DATE: 11/8/2023

BETA JOB NO.: 6352

SCALE 4



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## CONSTRUCTION DOCUMENTS

SHEET NO. .

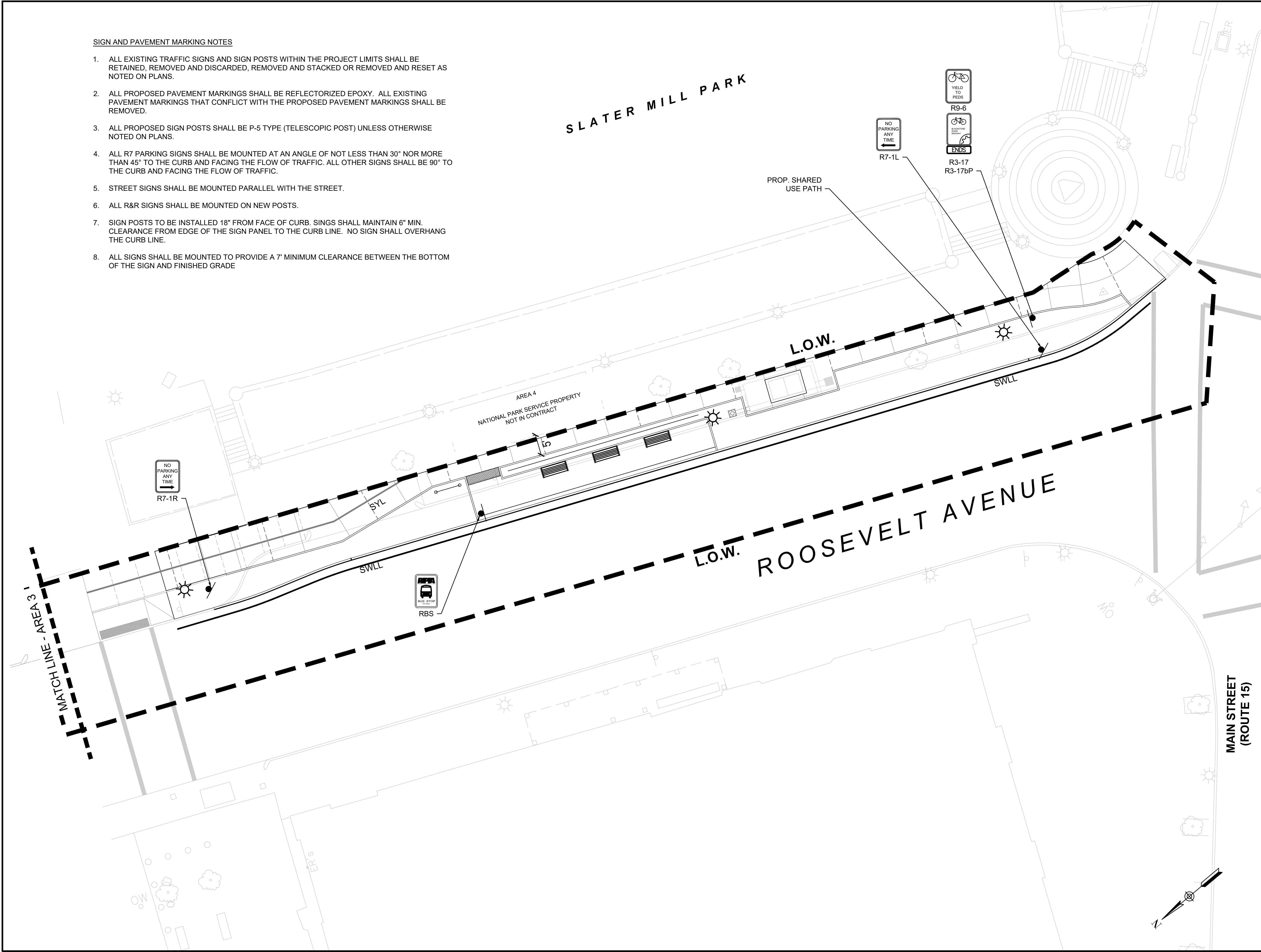
21




1/17/2023 1:16 PM I:\BETA\INC\COM\IR\GLA\PLANNING\LANDSCAPE\600S\6352\_PAWTUCKET - BLACKSTONE RIVER BIKEWAY\DRAWING FILES\PLANSET\CONTRACT 1\CONSTRUCTION DOCUMENTS\6352 - AREA 2 SIGN STRIPE.DWG (BETA STD BW.CTB)

SIGN AND PAVEMENT MARKING NOTES

1. ALL EXISTING TRAFFIC SIGNS AND SIGN POSTS WITHIN THE PROJECT LIMITS SHALL BE RETAINED, REMOVED AND DISCARDED, REMOVED AND STACKED OR REMOVED AND RESET AS NOTED ON PLANS.
2. ALL PROPOSED PAVEMENT MARKINGS SHALL BE REFLECTORIZED EPOXY. ALL EXISTING PAVEMENT MARKINGS THAT CONFLICT WITH THE PROPOSED PAVEMENT MARKINGS SHALL BE REMOVED.
3. ALL PROPOSED SIGN POSTS SHALL BE P-5 TYPE (TELESCOPIC POST) UNLESS OTHERWISE NOTED ON PLANS.
4. ALL R7 PARKING SIGNS SHALL BE MOUNTED AT AN ANGLE OF NOT LESS THAN 30° NOR MORE THAN 45° TO THE CURB AND FACING THE FLOW OF TRAFFIC. ALL OTHER SIGNS SHALL BE 90° TO THE CURB AND FACING THE FLOW OF TRAFFIC.
5. STREET SIGNS SHALL BE MOUNTED PARALLEL WITH THE STREET.
6. ALL R&R SIGNS SHALL BE MOUNTED ON NEW POSTS.
7. SIGN POSTS TO BE INSTALLED 18" FROM FACE OF CURB. SINGS SHALL MAINTAIN 6" MIN. CLEARANCE FROM EDGE OF THE SIGN PANEL TO THE CURB LINE. NO SIGN SHALL OVERHANG THE CURB LINE.
8. ALL SIGNS SHALL BE MOUNTED TO PROVIDE A 7' MINIMUM CLEARANCE BETWEEN THE BOTTOM OF THE SIGN AND FINISHED GRADE



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**BLACKSTONE RIVER BIKEWAY  
SEGMENT 3A-1  
CONTRACT 1**

Pawtucket, Rhode Island

TITLE

**AREA 2  
SIGNAGE AND  
STRIPING PLAN**

NO.	REVISIONS	DATE

DRAWN BY:

AKP/BB/ALG

DESIGNED BY:

AWG

CHECKED BY:

AWG


ISSUE DATE:

11/8/2023

BETA JOB NO.:

6352

SCALE

  
SCALE IN FEET: 1"=10'

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**CONSTRUCTION DOCUMENTS**

SHEET NO.

**22**



AREA 4  
NATIONAL PARK SERVICE PROPERTY  
NOT IN CONTRACT

4'-7" SHARED USE PATH

10'-11" PLANT BED

ROOSEVELT AVE  
N. BOUND

EXISTING CURB

1.3% SLOPE

ADJUST FRAME TO PROPOSED GRADE REPLACE GRATE WITH SOLID COVER


DROP INLET DRAINAGE STRUCTURE

CURB LINE

1.5% SLOPE

APPROXIMATE 12" GAS LINE - VERIFY IN FIELD

APPROXIMATE 24" DRAINAGE LINE  
I = 26.83 (SW)

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SUBCONSULTANT					
PROJECT					
<p style="text-align:center;"><b>BLACKSTONE RIVER BIKEWAY SEGMENT 3A-1 CONTRACT 1</b></p> <p style="text-align:right;">Pawtucket, Rhode Island</p>					
TITLE					
<p style="text-align:center;"><b>AREA 2 DETAIL SHEET - 1</b></p>					
NO.	REVISIONS				DATE
DRAWN BY:	AKP/BB/ALG				
DESIGNED BY:	AWG				
CHECKED BY:	AWG				
ISSUE DATE:	11/8/2023				
BETA JOB NO.:	6352				
SCALE					
<p style="text-align:center;">AS SHOWN</p> <p style="font-size: small; text-align: center;">UNLESS OTHERWISE NOTED OR CHANGED BY REPRODUCTION</p>					
<b>CONSTRUCTION DOCUMENTS</b>					
SHEET NO.					
<b>23</b>					



AREA 4  
NATIONAL PARK SERVICE PROPERTY  
NOT IN CONTRACT

4'-4" SHARED USE PATH

6'-7" PLANT BED

ROOSEVELT AVE  
N. BOUND

2.2% SLOPE

EXIST. VAULT

EXISTING CURB

CURB LINE

APPROXIMATE 12" GAS LINE -  
VERIFY IN FIELD

APPROXIMATE 24" DRAINAGE LINE  
ELEV. 27.58

24



[illegible]

AREA 4  
NATIONAL PARK SERVICE PROPERTY  
NOT IN CONTRACT

4'  
SHARED USE PATH

3'  
PLANT  
BED

8'-5"  
BRICK PAVING


ROOSEVELT AVE  
N. BOUND

1.5% SLOPE

CURB LINE

APPROXIMATE 24" DRAINAGE LINE  
ELEV. 28.98

APPROXIMATE 12" GAS LINE -  
VERIFY IN FIELD

PREPARED BY		
 <b>BETA</b> www.BETA-Inc.com		
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SUBCONSULTANT		
PROJECT		
<b>BLACKSTONE RIVER BIKEWAY SEGMENT 3A-1 CONTRACT 1</b>		
Pawtucket, Rhode Island		
TITLE		
<b>AREA 2 DETAIL SHEET - 3</b>		
NO.	REVISIONS	DATE
DRAWN BY: AKP/BB/ALG		
DESIGNED BY: AWG		
CHECKED BY: AWG		
ISSUE DATE: 11/8/2023		
BETA JOB NO.: 6352		
SCALE		
AS SHOWN		
UNLESS OTHERWISE NOTED OR CHANGED BY REPRODUCTION		
<b>CONSTRUCTION DOCUMENTS</b>		
SHEET NO.		
<b>25</b>		



[illegible]

AREA 4  
NATIONAL PARK SERVICE PROPERTY  
NOT IN CONTRACT

3'-10" SHARED USE PATH

11'-8" PLANT BED

ROOSEVELT AVE  
N. BOUND

EXISTING CURB

.3% SLOPE

1.5% SLOPE

ADJUST FRAME TO PROPOSED GRADE REPLACE GRATE WITH SOLID COVER

DROP INLET DRAINAGE STRUCTURE

CURB LINE


APPROXIMATE 18" DRAINAGE LINE  
I = 29.28 (NE)

APPROXIMATE 12" GAS LINE - VERIFY IN FIELD

[illegible]




[illegible]

<div style="display: flex; justify-content: space-between; align-items: center;"><div style="text-align: center;"><div><b>BETA</b> www.BETA-Inc.com</div></div><div style="text-align: right;">PREPARED BY _____</div></div> <div style="text-align: center; border-top: 1px solid black; border-bottom: 1px solid black; padding: 5px 0;">REGISTERED PROFESSIONAL</div> <div style="height: 100px; vertical-align: top;">SUBCONSULTANT _____</div> <div style="text-align: center; border-top: 1px solid black; border-bottom: 1px solid black; padding: 5px 0;">PROJECT</div> <div style="text-align: center; padding: 20px 0;"><h2 style="margin: 0;">BLACKSTONE RIVER BIKEWAY SEGMENT 3A-1 CONTRACT 1</h2><p style="margin: 10px 0;">Pawtucket, Rhode Island</p><div style="display: flex; justify-content: space-between; align-items: center;"><div style="width: 30%;">TITLE _____</div><div style="width: 70%; height: 100px;"></div></div><div style="text-align: center; padding: 20px 0;"><h2 style="margin: 0;">AREA 2 DETAIL SHEET - 5</h2></div><table border="1" style="width: 100%; border-collapse: collapse;"><thead><tr><th style="width: 10%;">NO.</th><th style="width: 80%;">REVISIONS</th><th style="width: 10%;">DATE</th></tr></thead><tbody><tr><td> </td><td> </td><td> </td></tr><tr><td> </td><td> </td><td> </td></tr><tr><td> </td><td> </td><td> </td></tr><tr><td> </td><td> </td><td> </td></tr><tr><td> </td><td> </td><td> </td></tr><tr><td> </td><td> </td><td> </td></tr><tr><td> </td><td> </td><td> </td></tr><tr><td> </td><td> </td><td> </td></tr><tr><td> </td><td> </td><td> </td></tr><tr><td> </td><td> </td><td> </td></tr></tbody></table><div style="display: flex; justify-content: space-between; align-items: center;"><div style="width: 30%;">DRAWN BY: _____</div><div style="width: 70%;">AKP/BB/ALG</div></div><div style="display: flex; justify-content: space-between; align-items: center;"><div style="width: 30%;">DESIGNED BY: _____</div><div style="width: 70%;">AWG</div></div><div style="display: flex; justify-content: space-between; align-items: center;"><div style="width: 30%;">CHECKED BY: _____</div><div style="width: 70%;">AWG</div></div><div style="display: flex; justify-content: space-between; align-items: center;"><div style="width: 30%;">ISSUE DATE: _____</div><div style="width: 70%;">11/8/2023</div></div><div style="display: flex; justify-content: space-between; align-items: center;"><div style="width: 30%;">BETA JOB NO.: _____</div><div style="width: 70%;">6352</div></div><div style="text-align: center; padding: 20px 0;"><h2 style="margin: 0;">SCALE</h2><div style="display: flex; justify-content: space-between; align-items: center; height: 100px;"><div style="width: 30%;"></div><div style="width: 70%; text-align: center;">AS SHOWN</div></div></div><div style="text-align: center; padding: 5px 0; font-size: small;">UNLESS OTHERWISE NOTED OR CHANGED BY REPRODUCTION</div><div style="text-align: center; padding: 10px 0;"><b>CONSTRUCTION DOCUMENTS</b></div><div style="display: flex; justify-content: space-between; align-items: center;"><div style="width: 30%;">SHEET NO. _____</div><div style="width: 70%; text-align: center;"><h1 style="margin: 0;">27</h1></div></div></div>			NO.	REVISIONS	DATE																														
NO.	REVISIONS	DATE																																	



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REGISTERED PROFESSIONAL


SUBCONSULTANT

PROJECT  
  
**BLACKSTONE  
RIVER BIKEWAY  
SEGMENT 3A-1  
CONTRACT 1**  
  
Pawtucket, Rhode Island

TITLE  
  
**AREA 3  
GENERAL PLAN**

NO.	REVISIONS	DATE

DRAWN BY: AKP/BB/ALG  
DESIGNED BY: AWG  
CHECKED BY: AWG  
ISSUE DATE: 11/8/2023  
BETA JOB NO.: 6352

SCALE  
  
SCALE IN FEET: 1"=20'

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CONSTRUCTION DOCUMENTS

SHEET NO. **28**



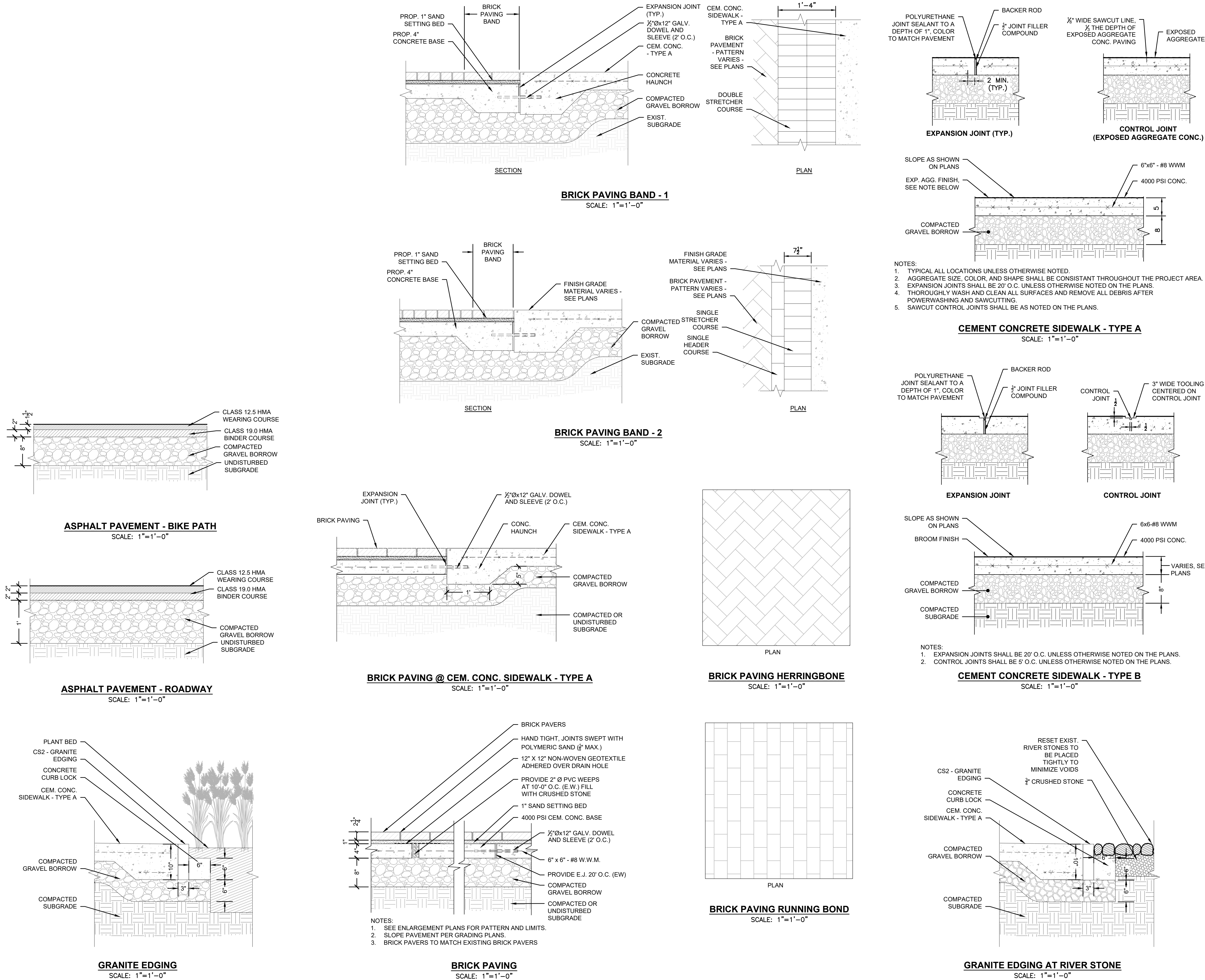
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NO.	REVISIONS	DATE
DRAWN BY:	AKP/BB/ALG	
DESIGNED BY:	AWG	
CHECKED BY:	AWG	
ISSUE DATE:	11/8/2023	
BETA JOB NO.:	6352	





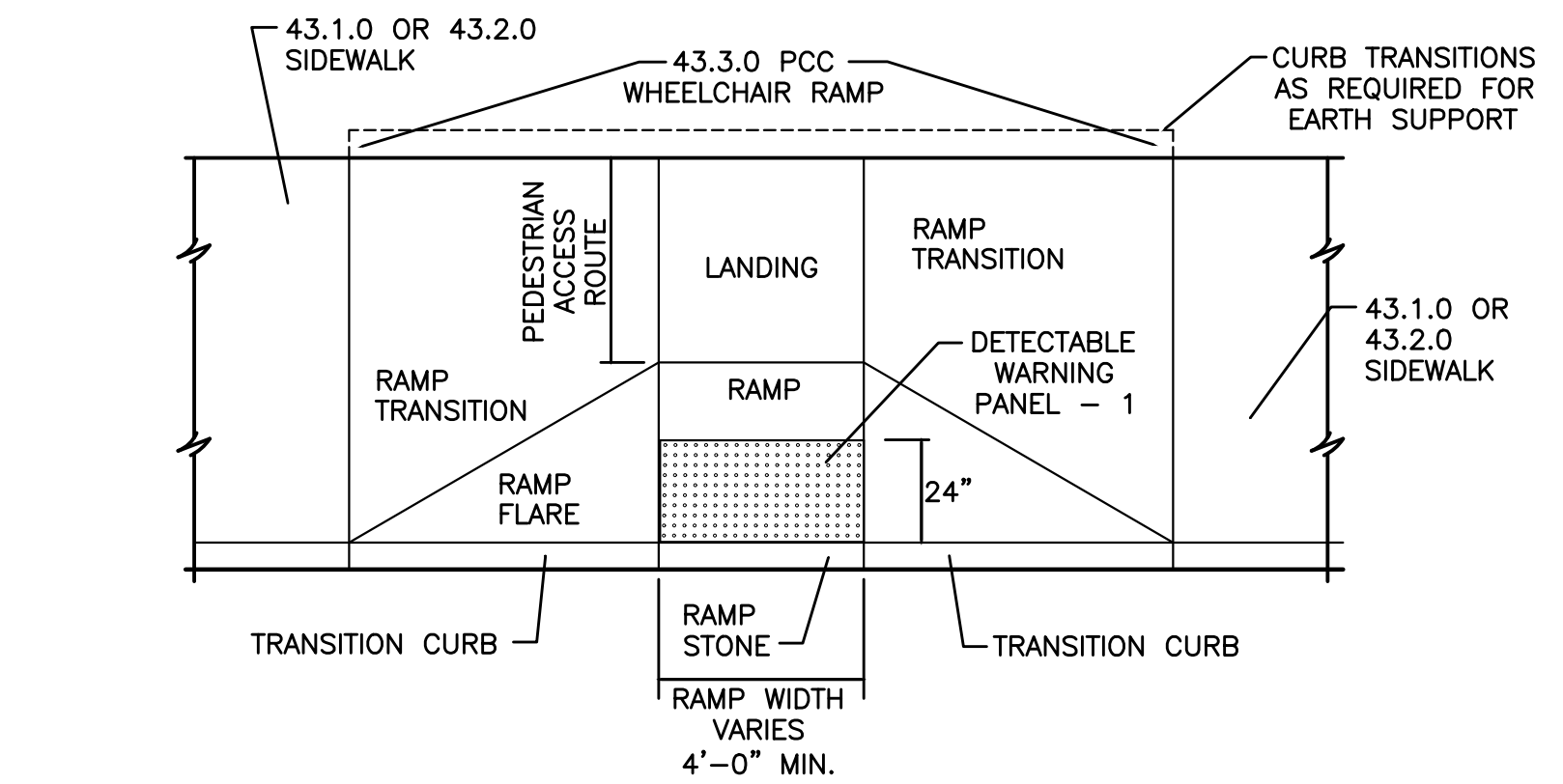
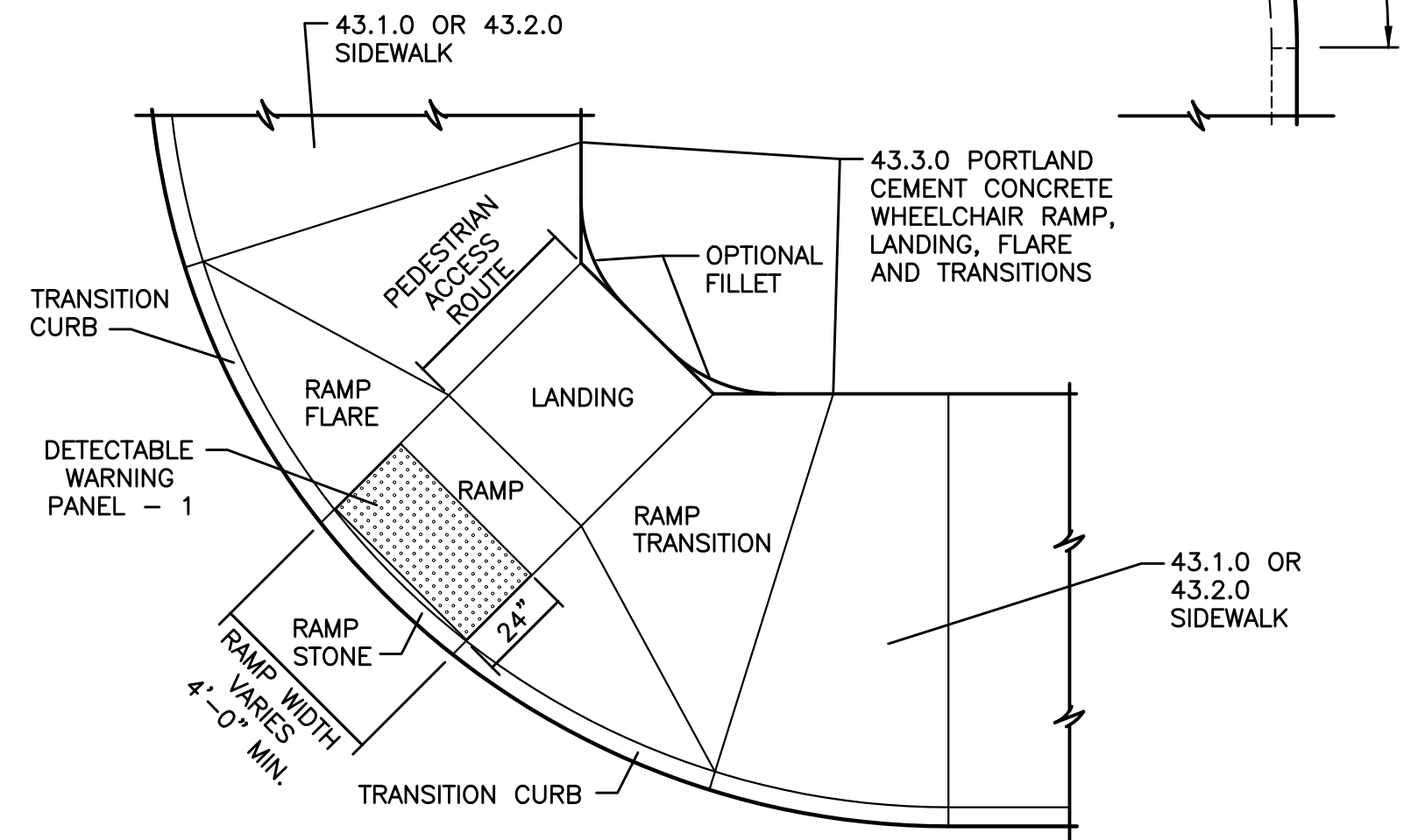
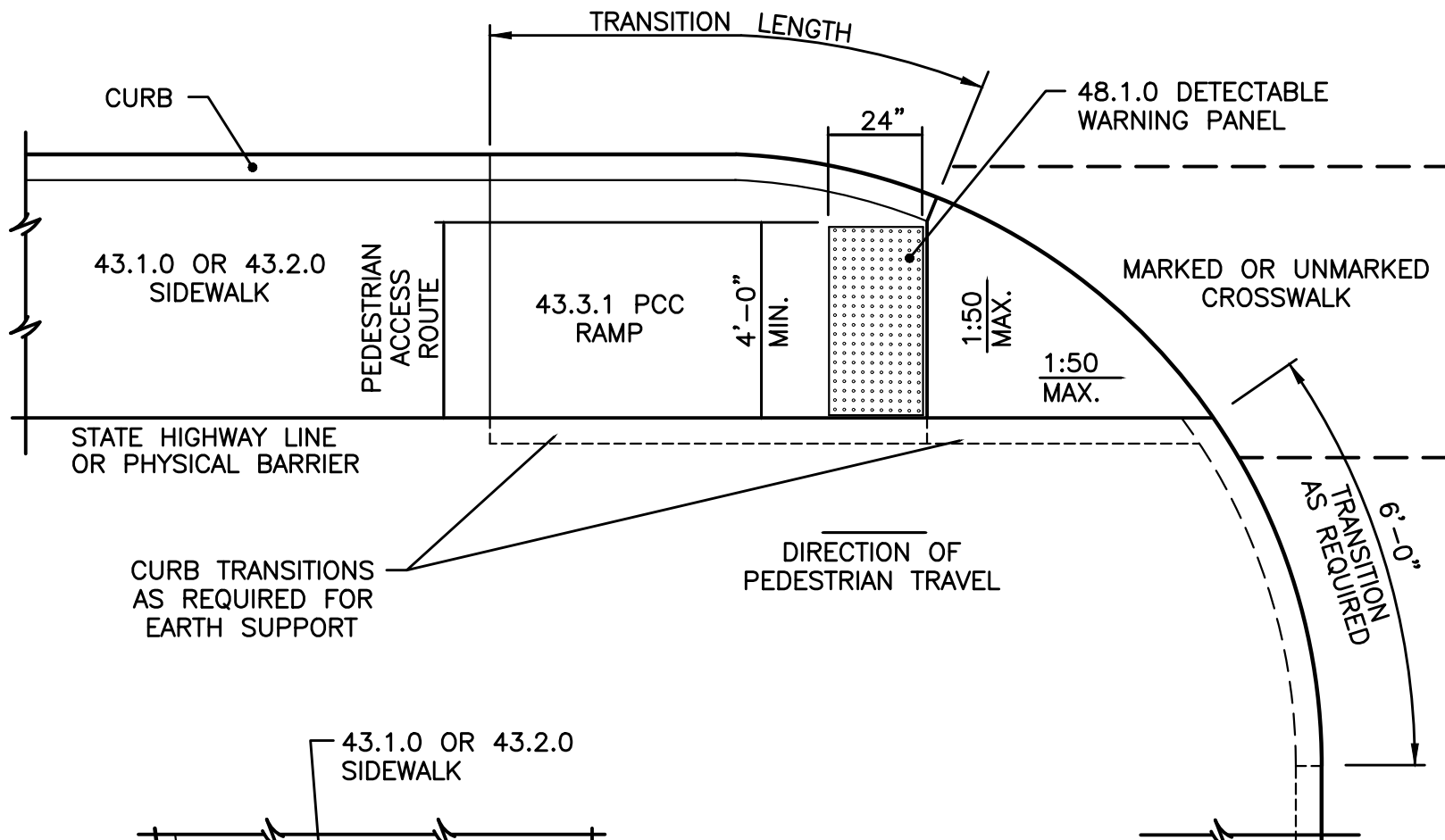
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SUBCONSULTANT		
PROJECT		
BLACKSTONE RIVER BIKEWAY SEGMENT 3A-1 CONTRACT 1		
Pawtucket, Rhode Island		
TITLE		
DETAILS - 1		
NO.	REVISIONS	DATE
DRAWN BY: AKP/BB/ALG		
DESIGNED BY: AWG		
CHECKED BY: AWG		
ISSUE DATE: 11/8/2023		
BETA JOB NO.: 6352		
SCALE		
AS SHOWN		
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CONSTRUCTION DOCUMENTS		
SHEET NO.		
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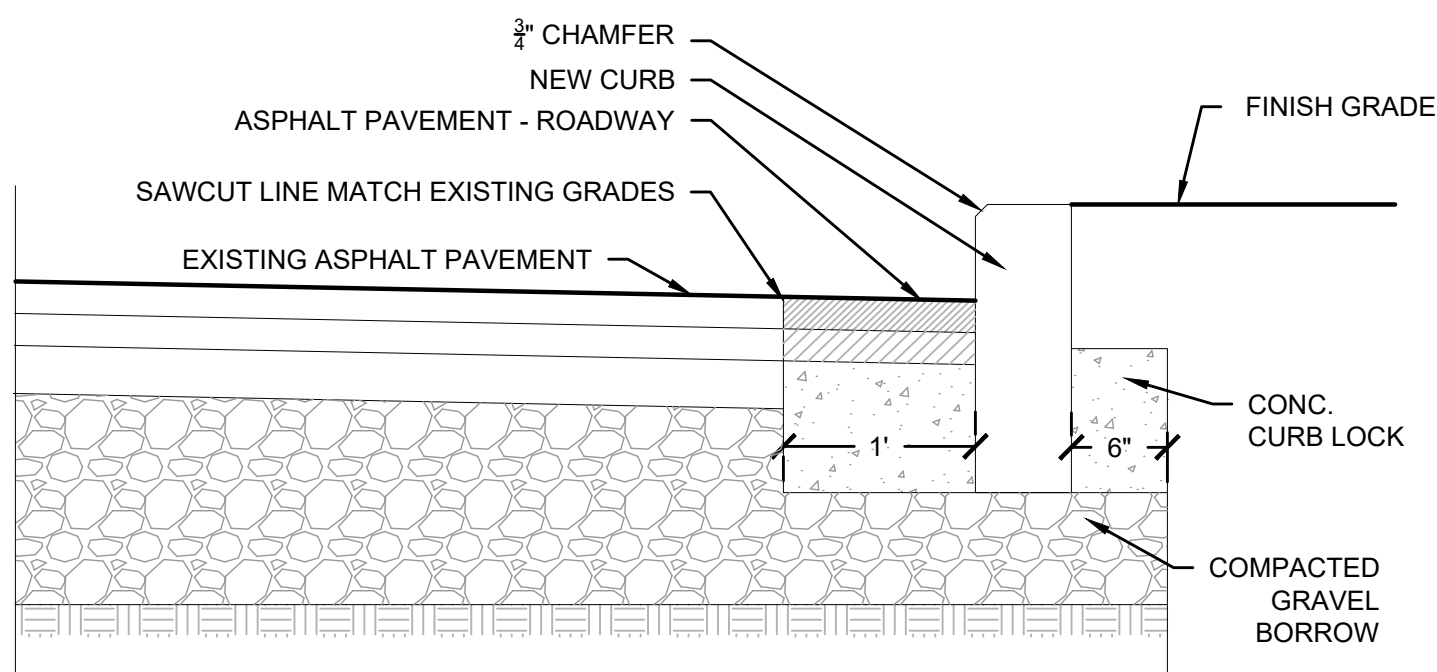


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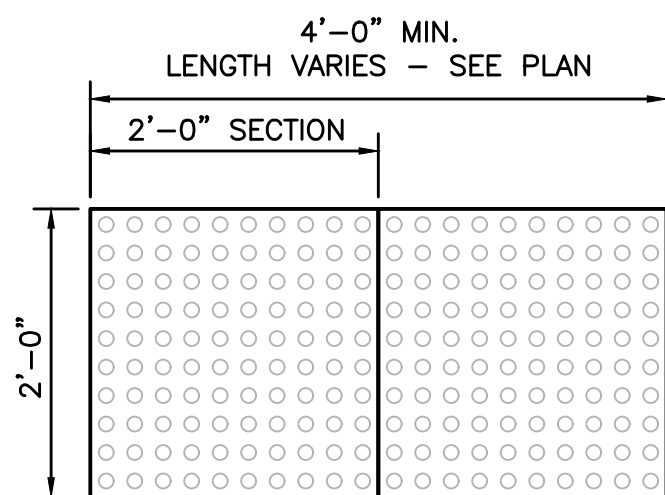


NOTE:  
DETECTOR WARNING PANEL SHALL BE IN ACCORDANCE WITH SECTION 942 OF THE R.I. STANDARD SPECIFICATIONS; PANEL TO MATCH RAMP WIDTH.

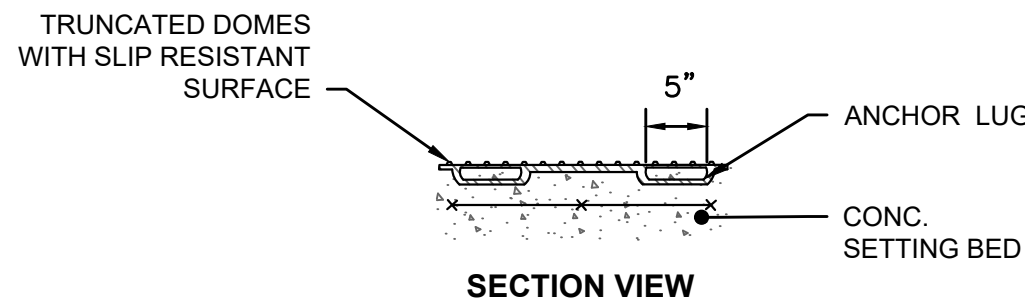
**DETECTABLE WARNING PLATE PLACEMENT**  
SCALE: 1"=1'-0"



**GRANITE CURB - TYPE 1 AT ROADWAY**  
SCALE: 1"=1'-0"



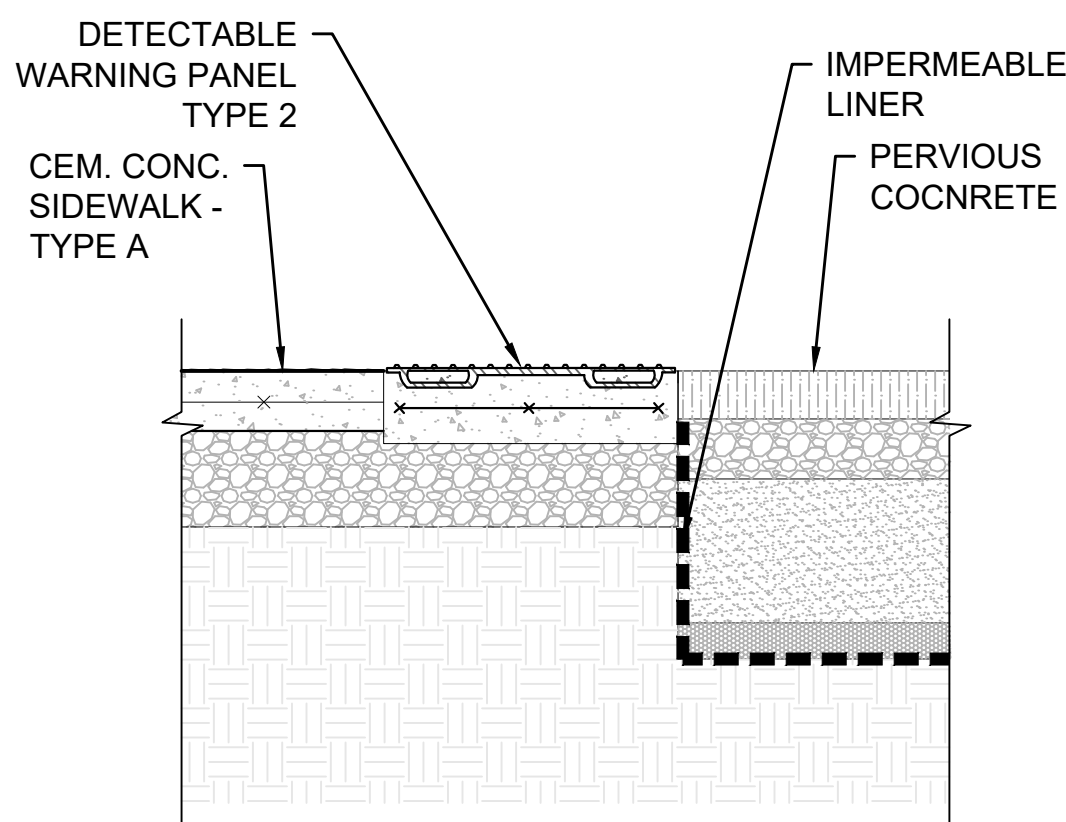
**TOP VIEW**



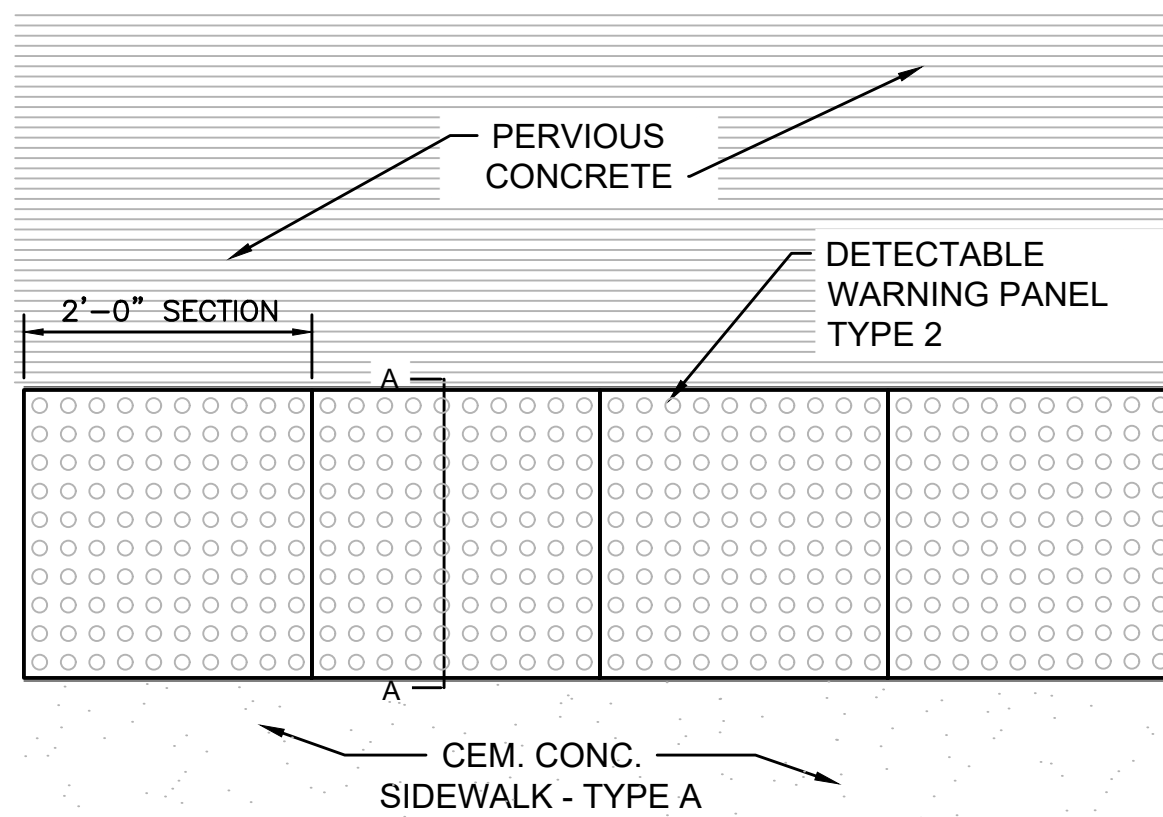
**SECTION VIEW**

- NOTES:
1. LOCATE AT ALL WHEELCHAIR RAMPS AS SHOWN ON THE PLANS.
  2. ADA COMPLIANT TACTILE WARNING PLATE.

**DETECTABLE WARNING PANEL TYPE 2**  
SCALE: 3/4"=1'-0"

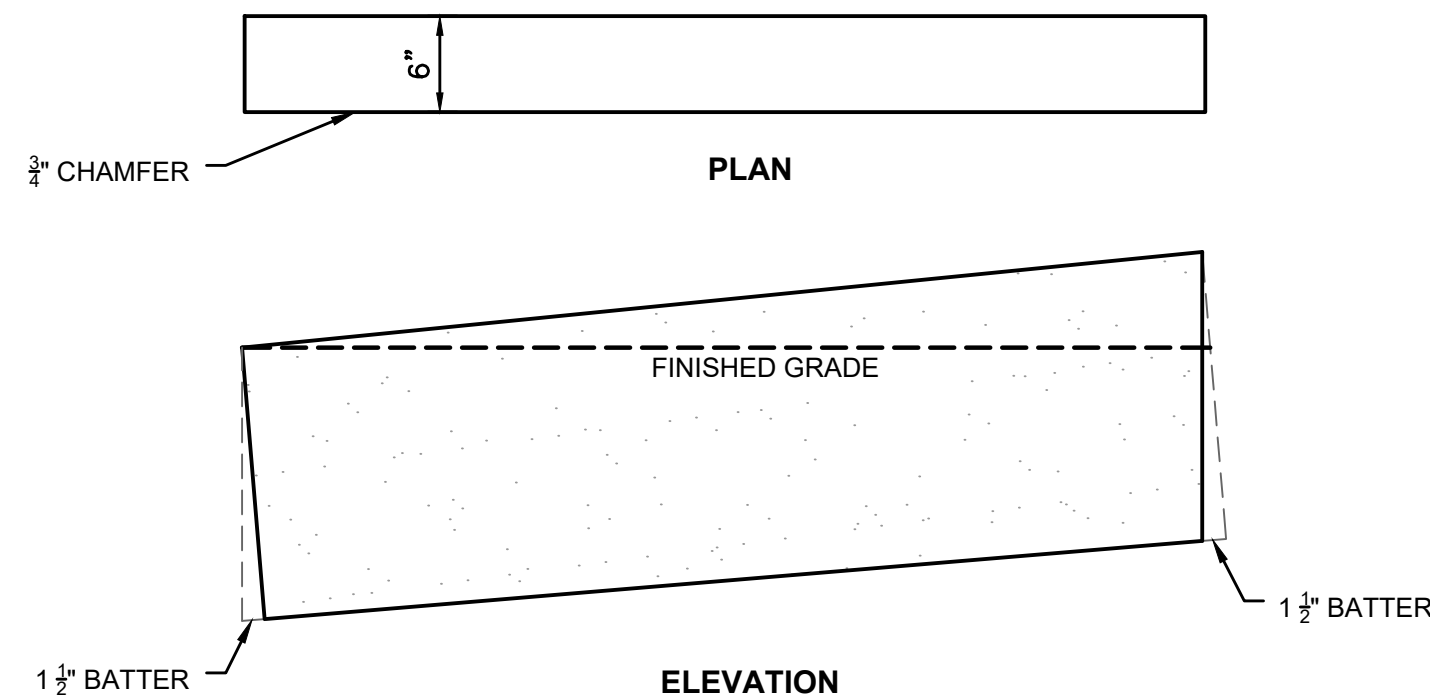


**SECTION A-A**  
SCALE: 3/4"=1'-0"

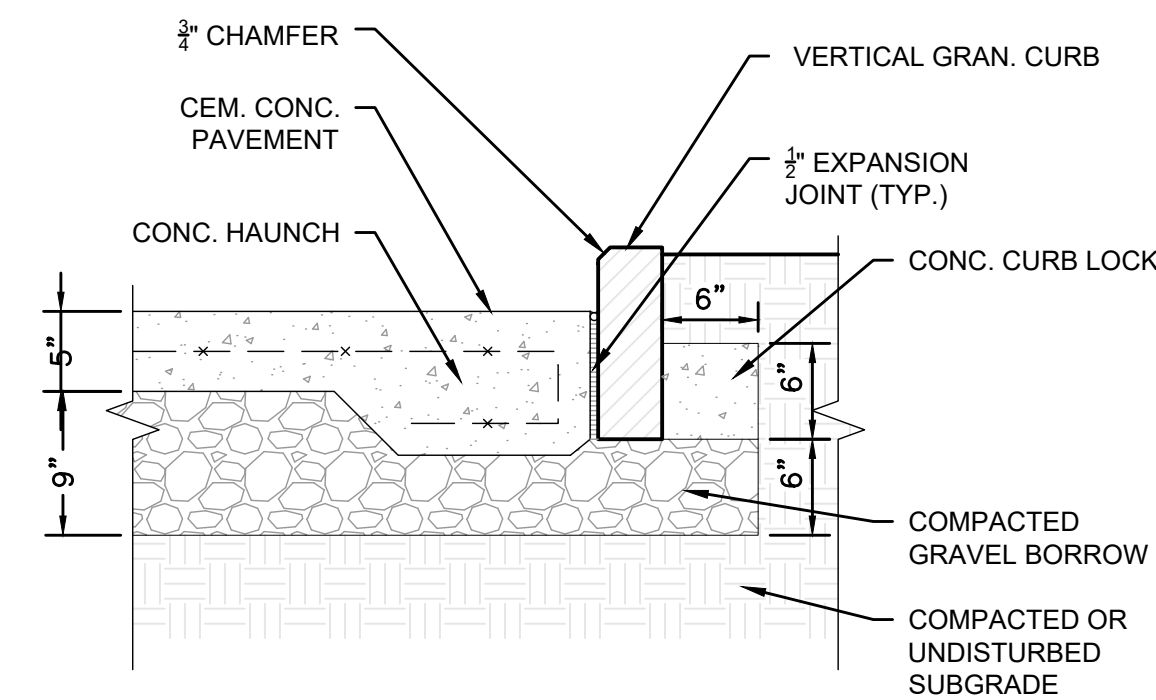


**PLAN**  
SCALE: 3/4"=1'-0"

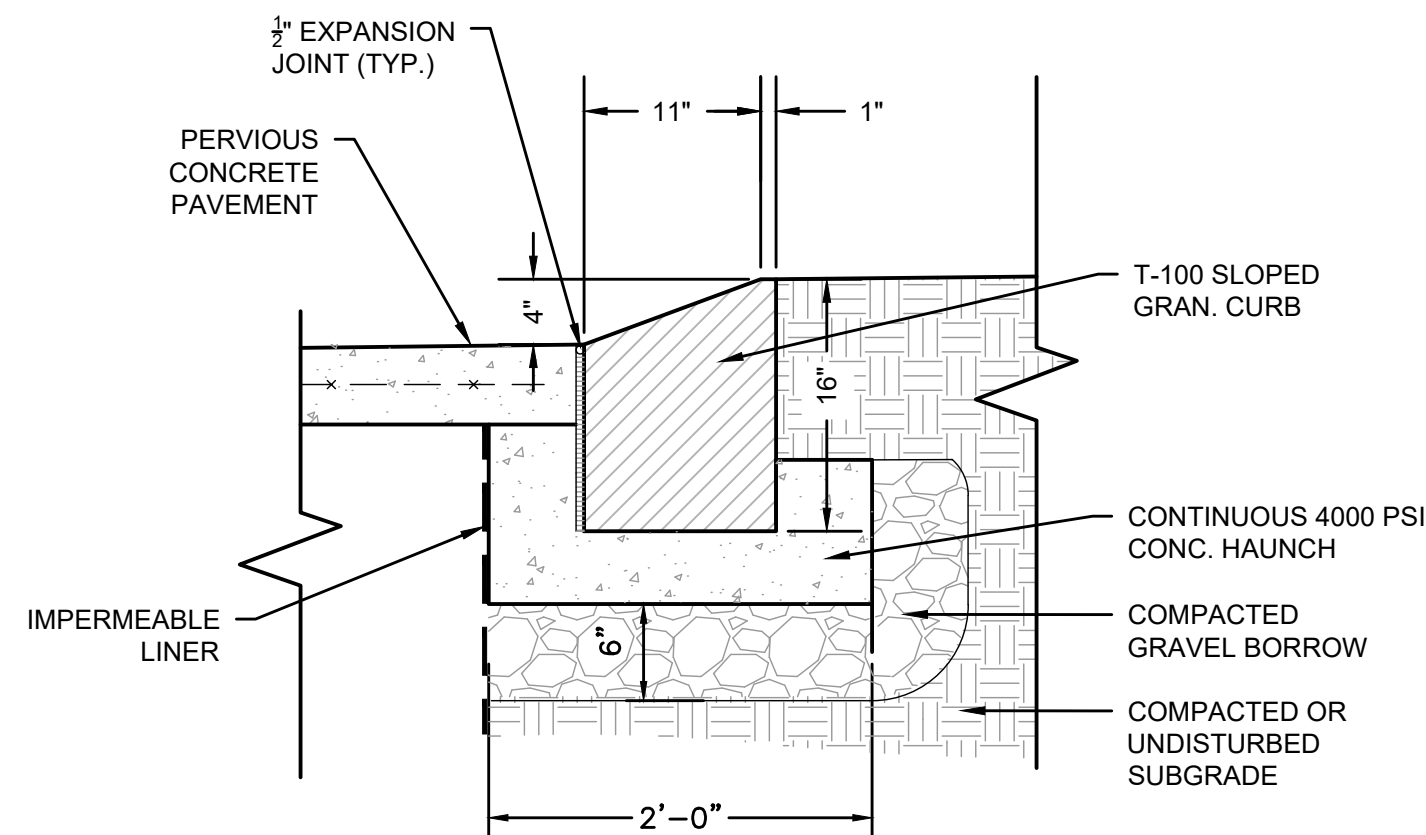
**DETECTABLE WARNING PANEL TYPE 2 AT PERVIOUS CONCRETE**  
SCALE: 3/4"=1'-0"



**GRANITE CURB - TYPE 1 TRANSITION**  
SCALE: 1"=1'-0"



**GRANITE CURB - TYPE 1 (TYP.)**  
SCALE: 1"=1'-0"



**GRANITE CURB - TYPE 2 (TYP.)**  
SCALE: 1"=1'-0"

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REGISTERED PROFESSIONAL

SUBCONSULTANT

PROJECT

**BLACKSTONE RIVER BIKEWAY  
SEGMENT 3A-1  
CONTRACT 1**

Pawtucket, Rhode Island

TITLE

**DETAILS - 2**

NO.	REVISIONS	DATE
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DRAWN BY:	AKP/BB/ALG
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DESIGNED BY:	AWG
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CHECKED BY:	AWG
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ISSUE DATE:	11/8/2023
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BETA JOB NO.:	6352
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SCALE

AS SHOWN

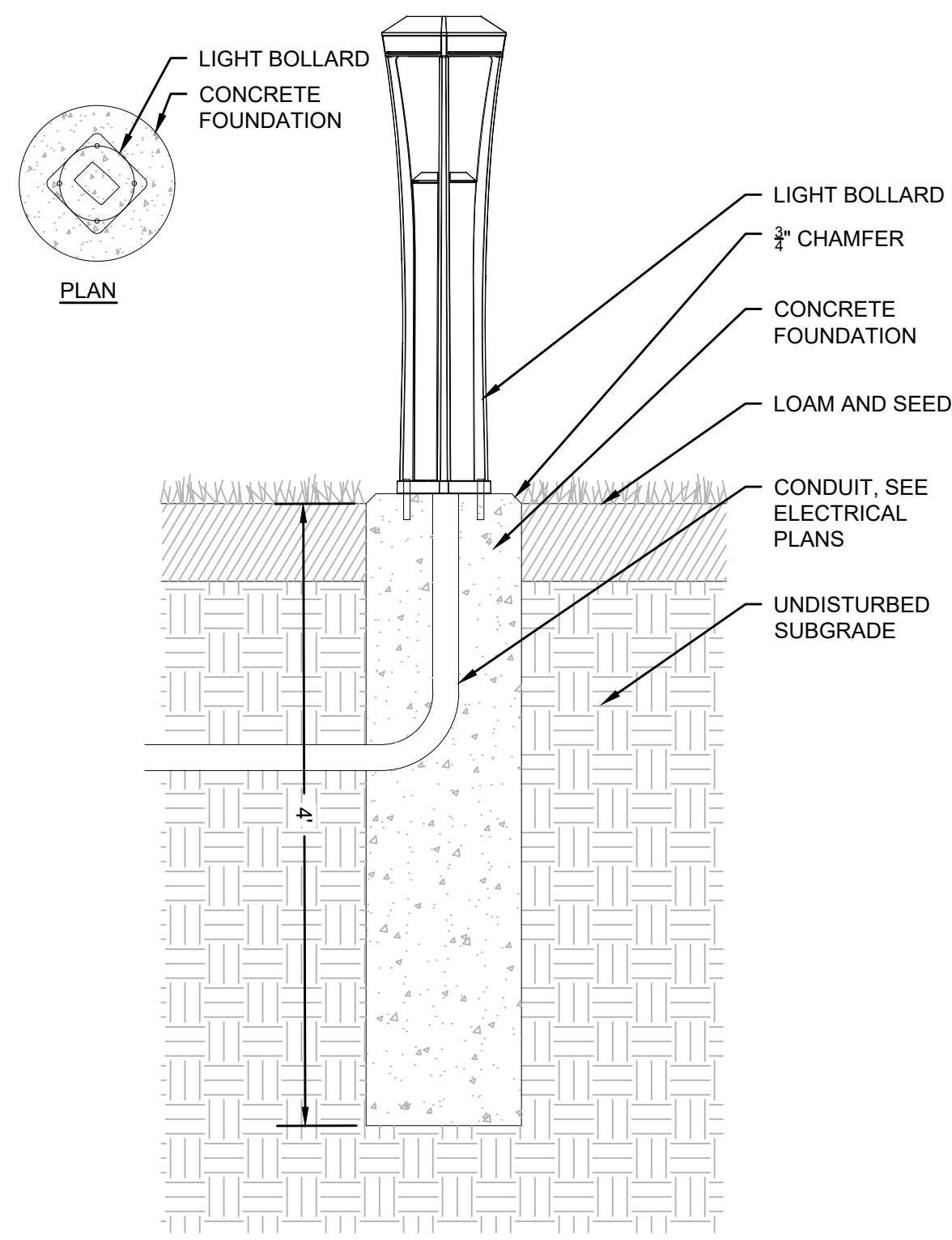
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**CONSTRUCTION DOCUMENTS**

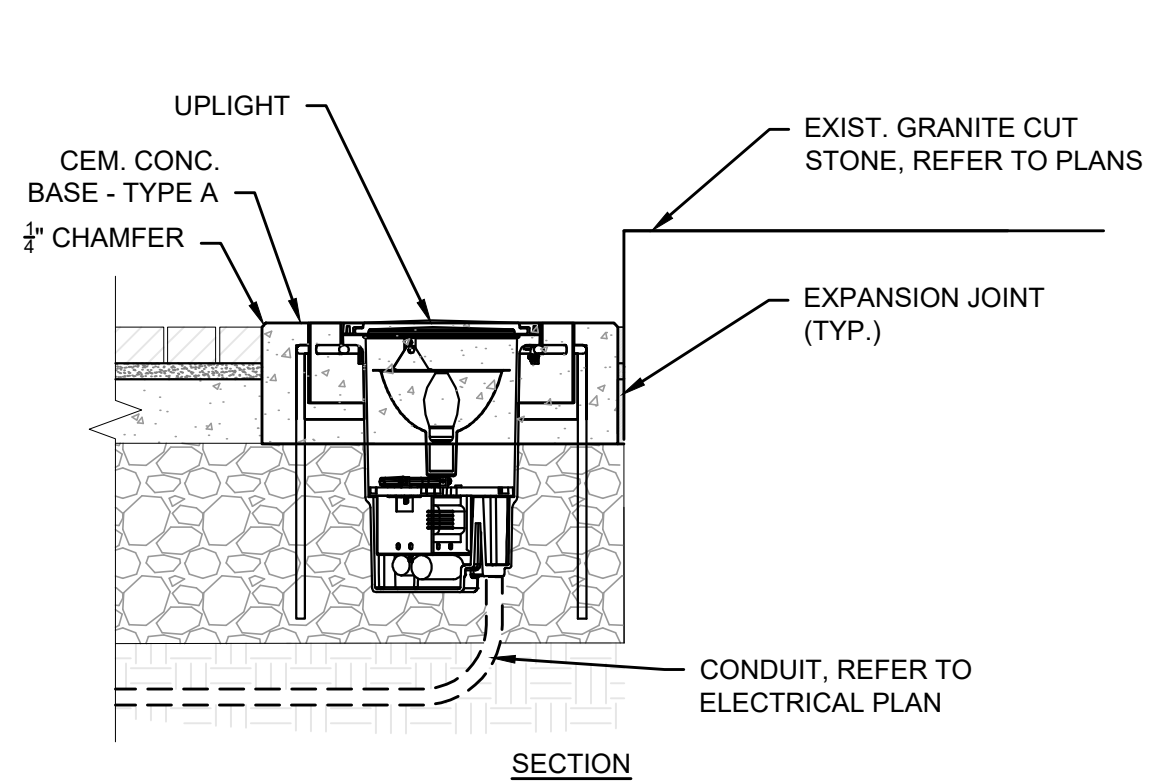
SHEET NO.



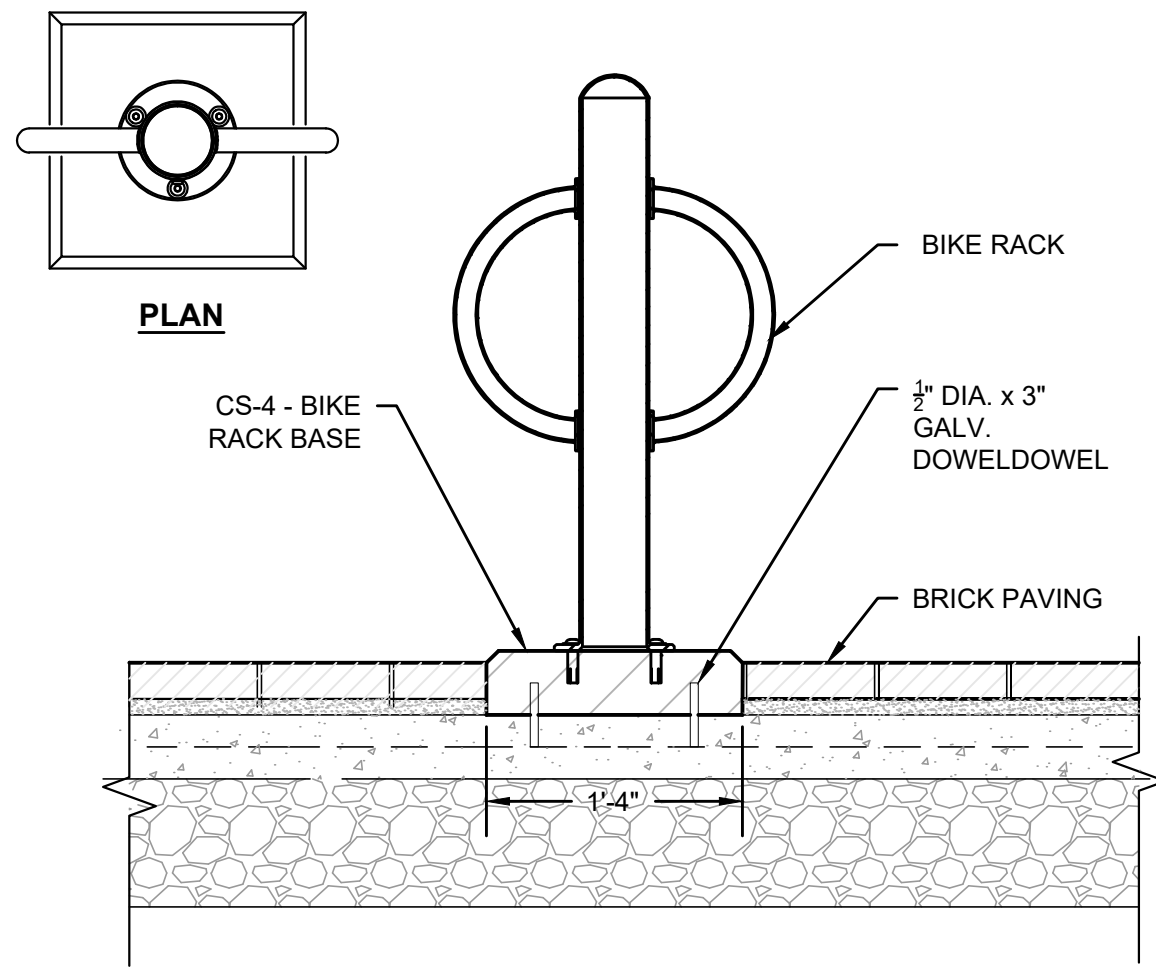
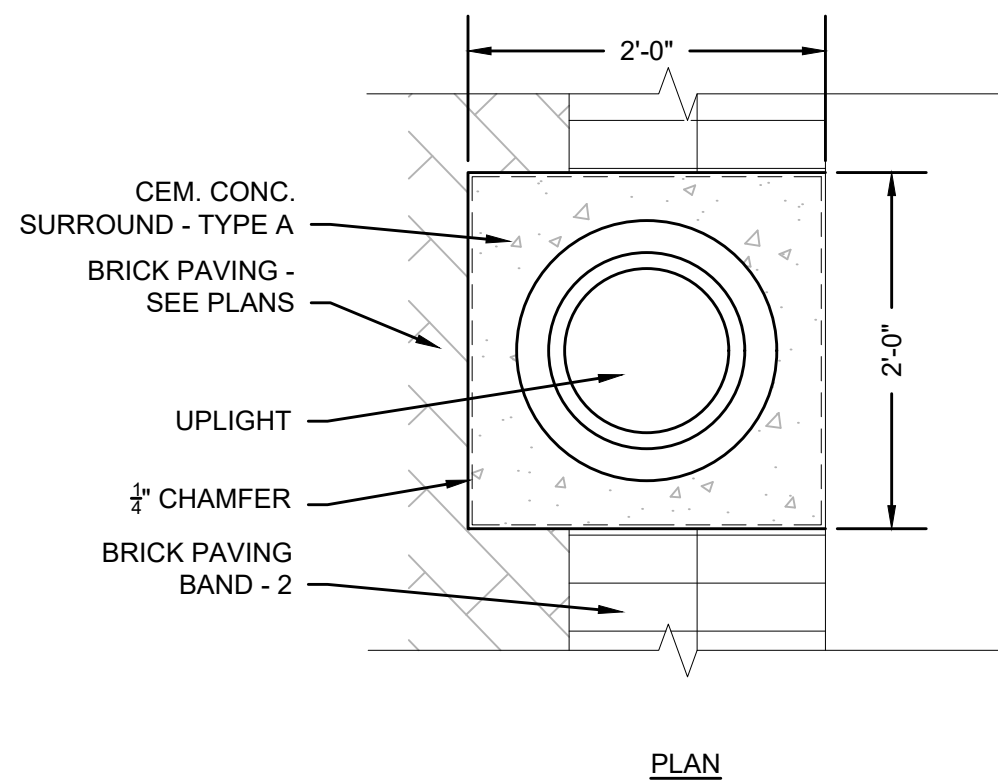
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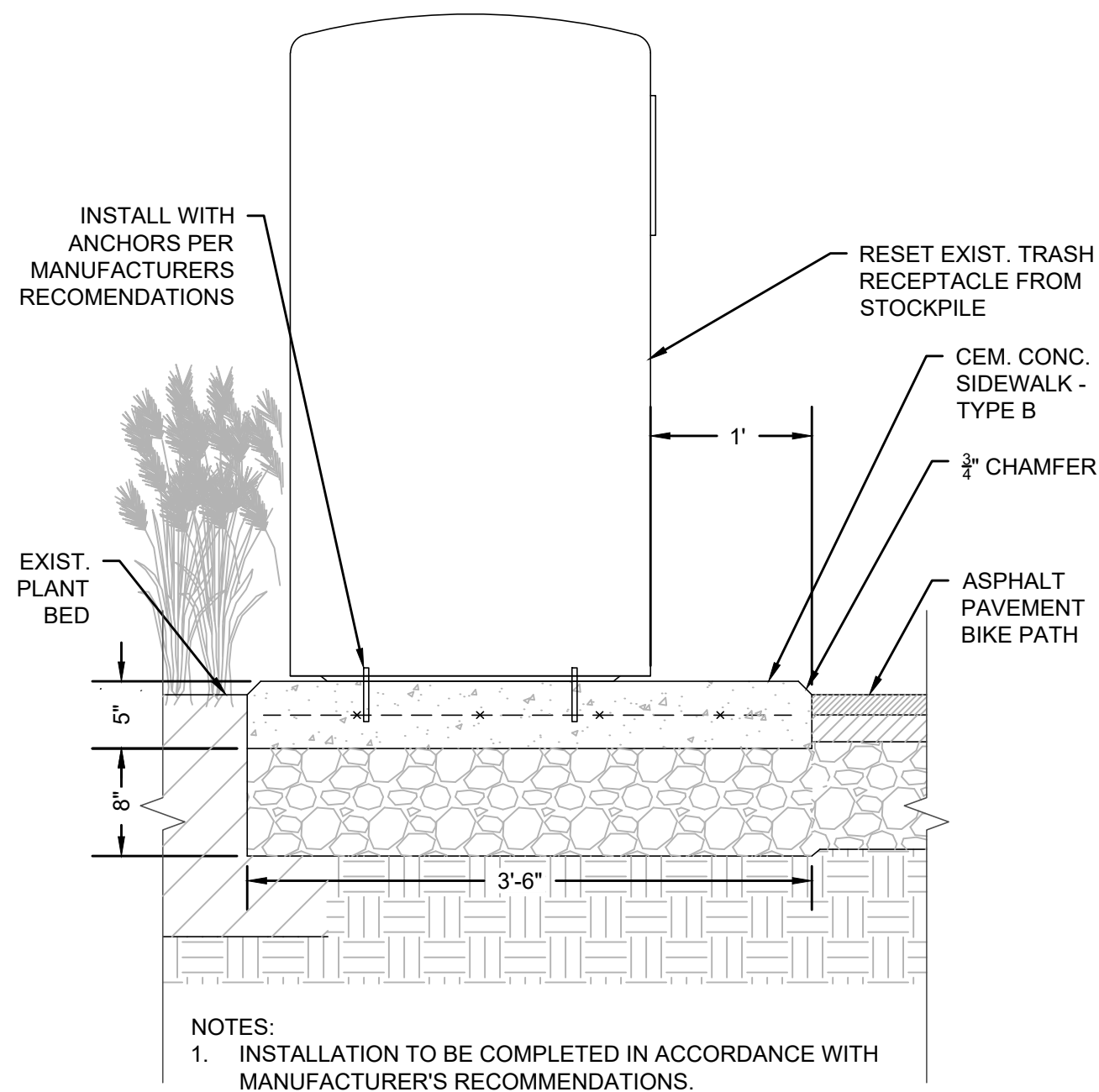
**BOLLARD LIGHT**  
SCALE: 1"=1'-0"



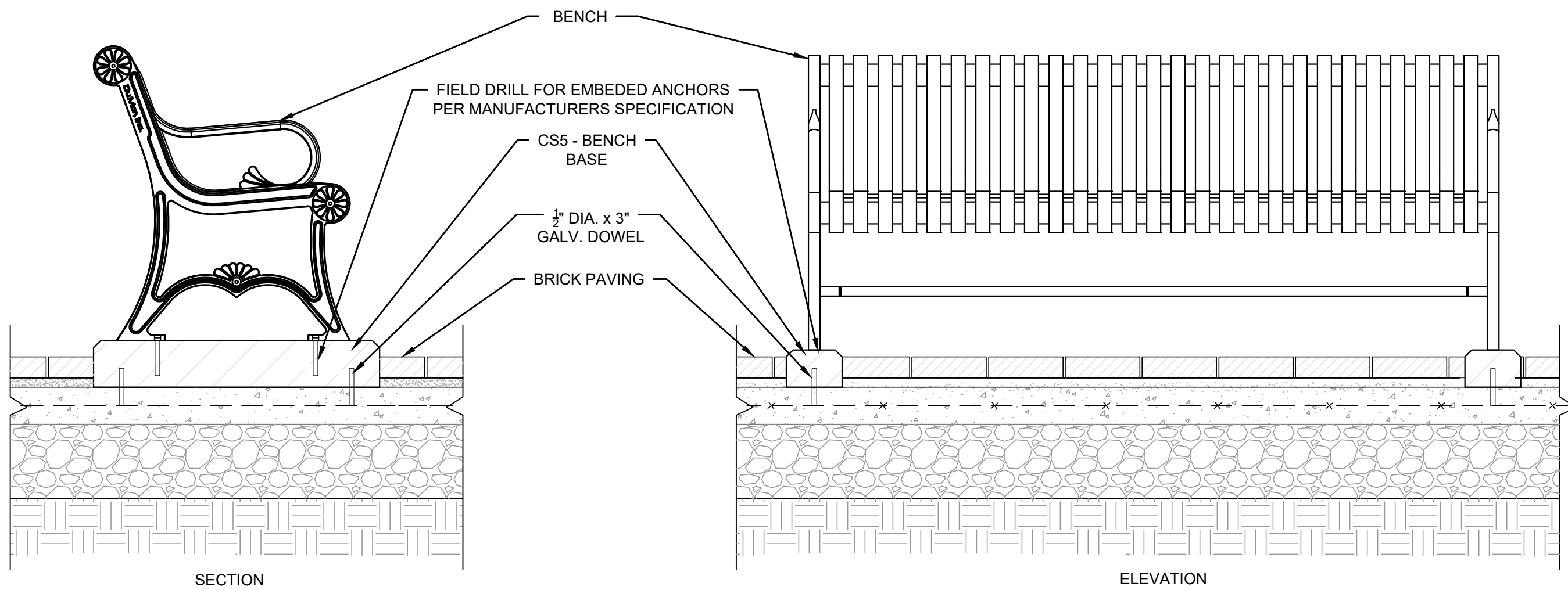
**UPLIGHT**  
SCALE: 1"=1'-0"



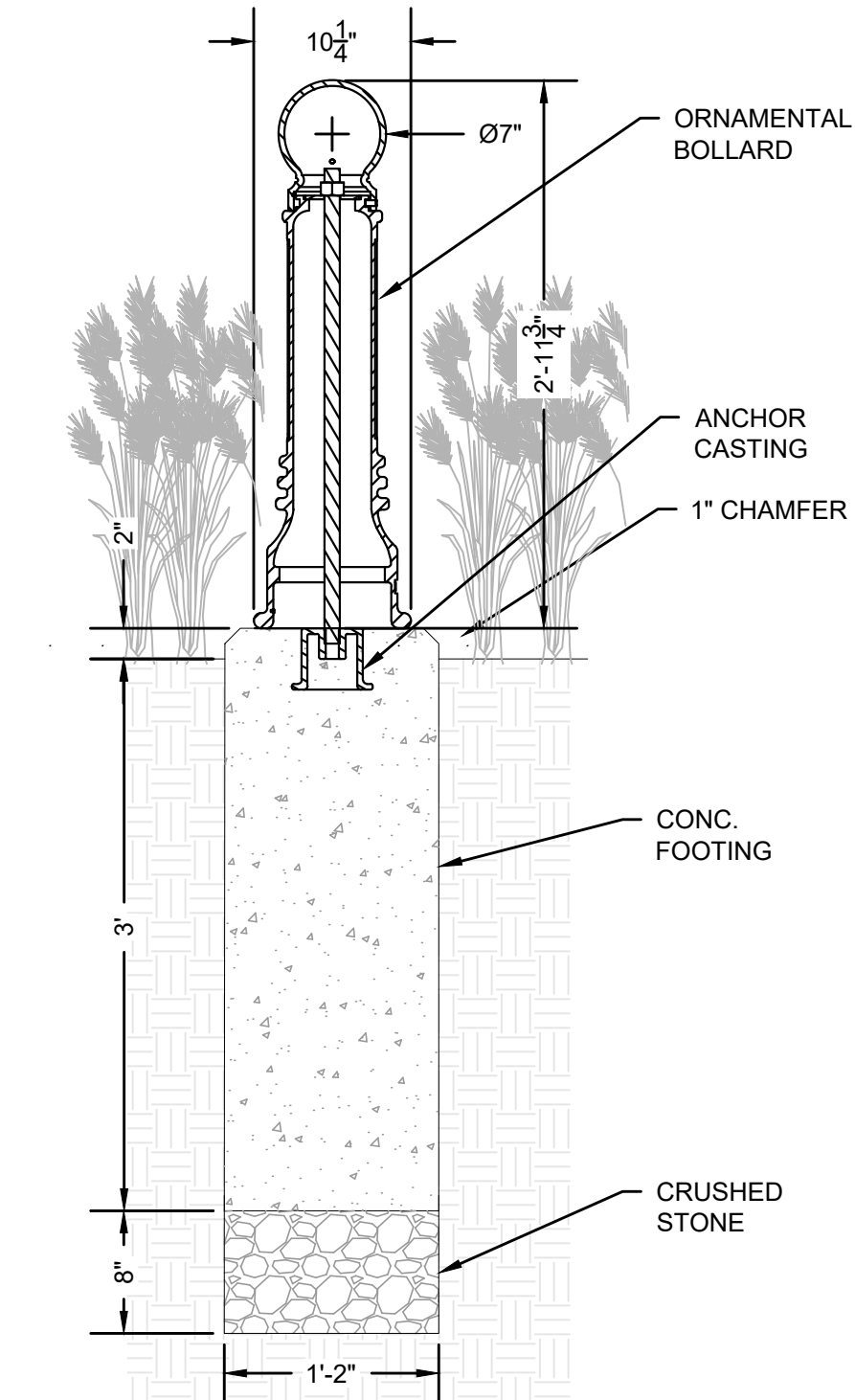
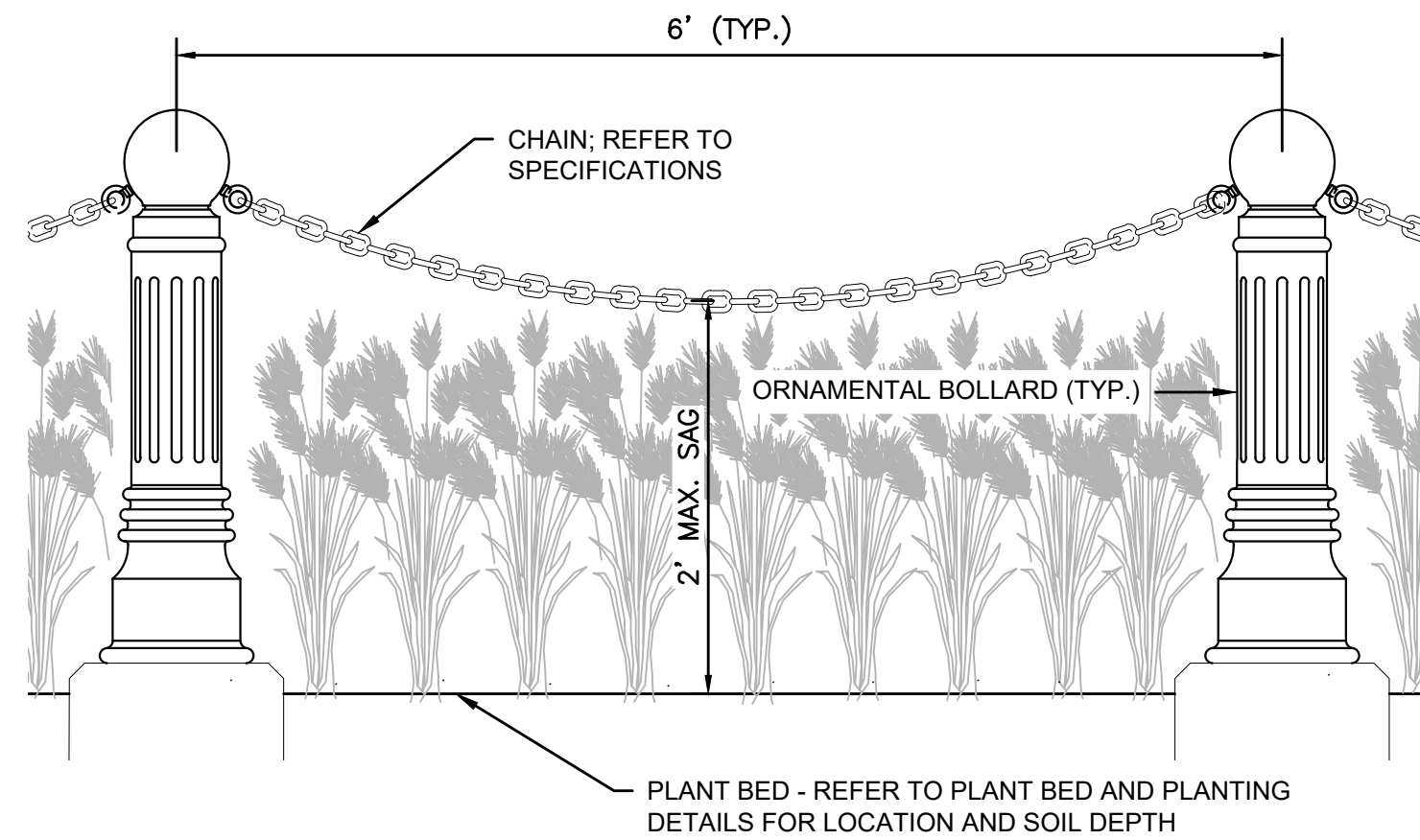
**BIKE RACK**  
SCALE: 1"=1'-0"



**RESET TRASH RECEPTACLE**  
SCALE: 1"=1'-0"



**BENCH (TYP.)**  
SCALE: 1"=1'-0"



**ORNAMENTAL BOLLARD AND CHAIN**  
SCALE: 1"=1'-0"

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SUBCONSULTANT

PROJECT

**BLACKSTONE  
RIVER BIKEWAY  
SEGMENT 3A-1  
CONTRACT 1**

Pawtucket, Rhode Island

TITLE

**DETAILS - 3**

NO.	REVISIONS	DATE
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DRAWN BY:	AKP/BB/ALG
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DESIGNED BY:	AWG
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CHECKED BY:	AWG
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ISSUE DATE:	11/8/2023
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BETA JOB NO.:	6352
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SCALE

AS SHOWN

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**CONSTRUCTION DOCUMENTS**

SHEET NO.





PLANT SCHEDULE: AREA 1 - B						
KEY	QTY	BOTANICAL NAME	COMMON NAME	SIZE	ROOT	SPACING
<b>PERENNIALS AND GRASSES</b>						
APC	8	ASTILBE 'PURPLE CANDLES'	ASTILBE	#1	CONT.	2' O.C.
IPAV	9	IRIS PALLIDA 'AUROO VARIEGATA'	VARIEGATED IRIS	#1	CONT.	1' O.C.
	12	IRIS LOUISIANA 'BLACK GAMECOCK'	IRIS	#1	CONT.	1' O.C.
LMMW	44	LIRIOPE MUSCARI 'MONROE'S WHITE'	WHITE LIRIOPE	#1	CONT.	1' O.C.
PT	190	PACHYSANDRA TERMINALIS	PACHYSANDRA	4"	CONT.	1' O.C.

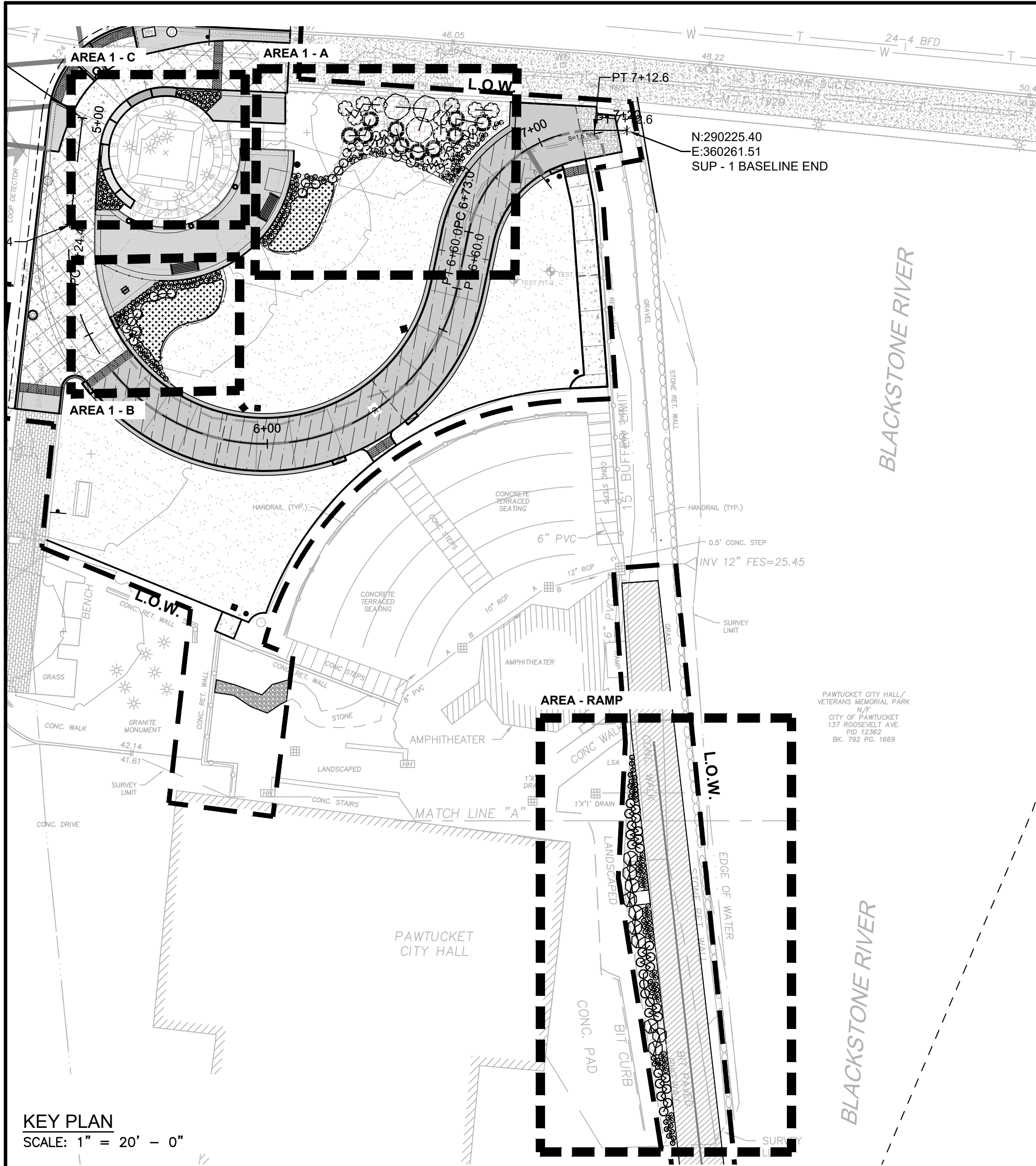


PLANT SCHEDULE: AREA 1 - A						
KEY	QTY	BOTANICAL NAME	COMMON NAME	SIZE	ROOT	SPACING
<b>SHRUBS</b>						
CAH	11	CLETHRRA ALNIFOLIA 'HUMMINGBIRD'	DWARF SWEET PEPPER BUSH	#3	CONT.	2' O.C.
RDVW	10	RHOODENDRON DELAWARE VALLEY WHITE'	DVW AZALEA	#3	CONT.	3.5' O.C.
VD	3	VIBURNUM DENTATUM	ARROWOOD VIBURNUM	#3	CONT.	5' O.C.
<b>PERENNIALS AND GRASSES</b>						
APC	15	ASTILBE PURPLE CANDLES'	ASTILBE	#1	CONT.	2' O.C.
GO	42	GALLUM ODORATUM	SWEET SCENTED BEDSTRAW	#1	CONT.	1' O.C.
HJ	15	HOSTA 'JUNE'	HOSTA	#1	CONT.	2' O.C.
IPAV	9	IRIS PALLIDA 'AUREO VARIEGATA'	VARIEGATED IRIS	#1	CONT.	1' O.C.
ILBG	9	IRIS LOUISIANA 'BLACK GAMECOCK'	IRIS	#1	CONT.	1' O.C.
LMWV	17	LIRIOPE MUSCARI 'MONROE'S WHITE'	WHITE LIRIOPE	#1	CONT.	1' O.C.
PT	140	PACHY SANDRA TERMINALIS	PACHY SANDRA	4"	CONT.	1' O.C.

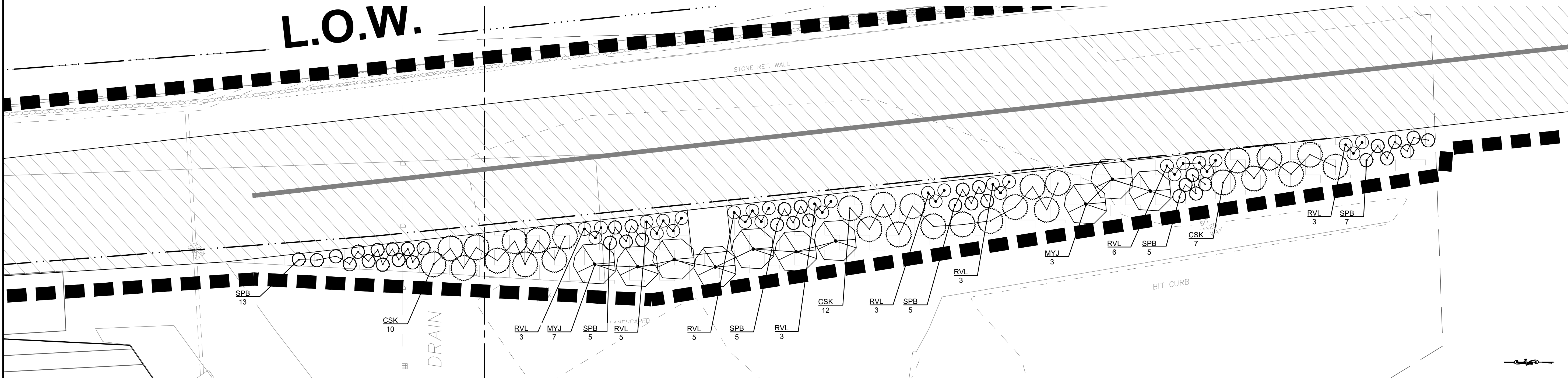




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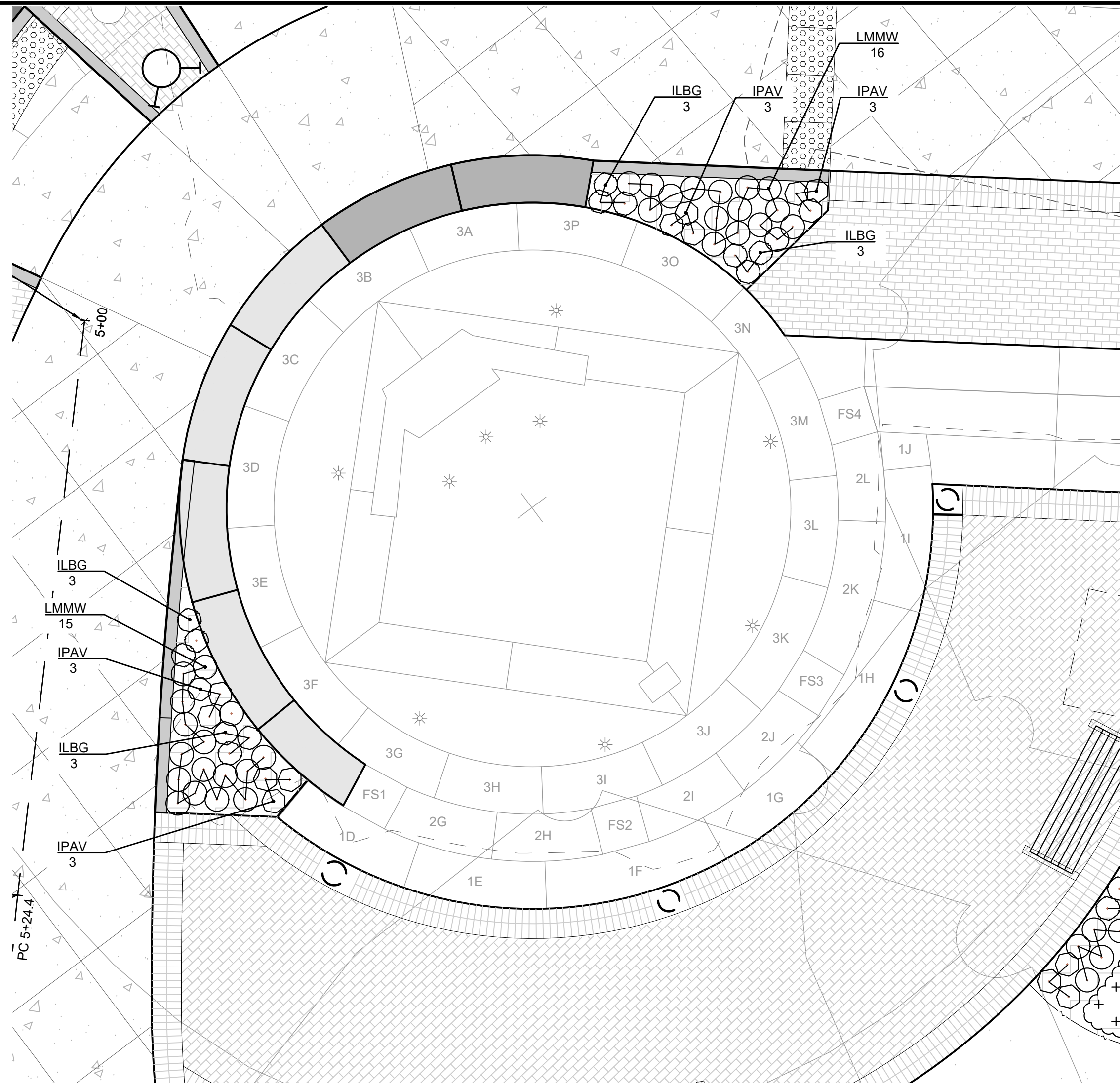


KEY PLAN  
SCALE: 1" = 20' - 0"



PLANTING ENLARGEMENT: AREA - 1 - D  
SCALE: 1" = 10' - 0"

KEY	QTY	BOTANICAL NAME	COMMON NAME	SIZE	ROOT	SPACING
SHRUBS						
CSK	26	CORNUS SERICEA 'KELSEY'	KELSEY RED TWIG DOGWOOD COMPACT	#3	CONT.	3' O.C.
PERENNIALS AND GRASSES						
MYJ	10	MISCANTHUS SINENSIS 'YAKU JIMA'	YAKU JIMA DWARF MAIDEN GRASS	#3	CONT.	3' O.C.
RVL	31	RUDBECKIA VIETTES 'LITTLE SUZY'	YELLOW CONEFLOWER	#1	CONT.	1' O.C.
SPB	40	SCHIZACHYRIUM SCOPARIUM 'PRARIE BLUES'	PRARIE BLUES LITTLE BLUESTEM	#1	CONT.	1' O.C.



PLANTING ENLARGEMENT: AREA - 1 - C  
SCALE: 1" = 10' - 0"

KEY	QTY	BOTANICAL NAME	COMMON NAME	SIZE	ROOT	SPACING
PERENNIALS AND GRASSES						
ILBG	12	IRIS LOUISIANA 'BLACK GAMECOCK'	BLACK GAMECOCK IRIS	#1	CONT.	1' O.C.
IPAV	12	IRIS PALLIDA 'AURORE VARIEGATA'	VARIEGATED IRIS	#1	CONT.	1' O.C.
LMMW	31	LIRIOPE MUSCARI 'MONROE'S WHITE'	WHITE LIRIOPE	#1	CONT.	1' O.C.

PREPARED BY



REGISTERED PROFESSIONAL

SUBCONSULTANT

PROJECT

BLACKSTONE  
RIVER BIKEWAY  
SEGMENT 3A-1  
CONTRACT 1

Pawtucket, Rhode Island

TITLE

OVERALL  
PLANTING  
PLAN - 2

NO.	REVISIONS	DATE
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DRAWN BY: AKP/BB/ALG

DESIGNED BY: AWG

CHECKED BY: AWG

ISSUE DATE: 11/8/2023

BETA JOB NO.: 6352

SCALE

AS SHOWN

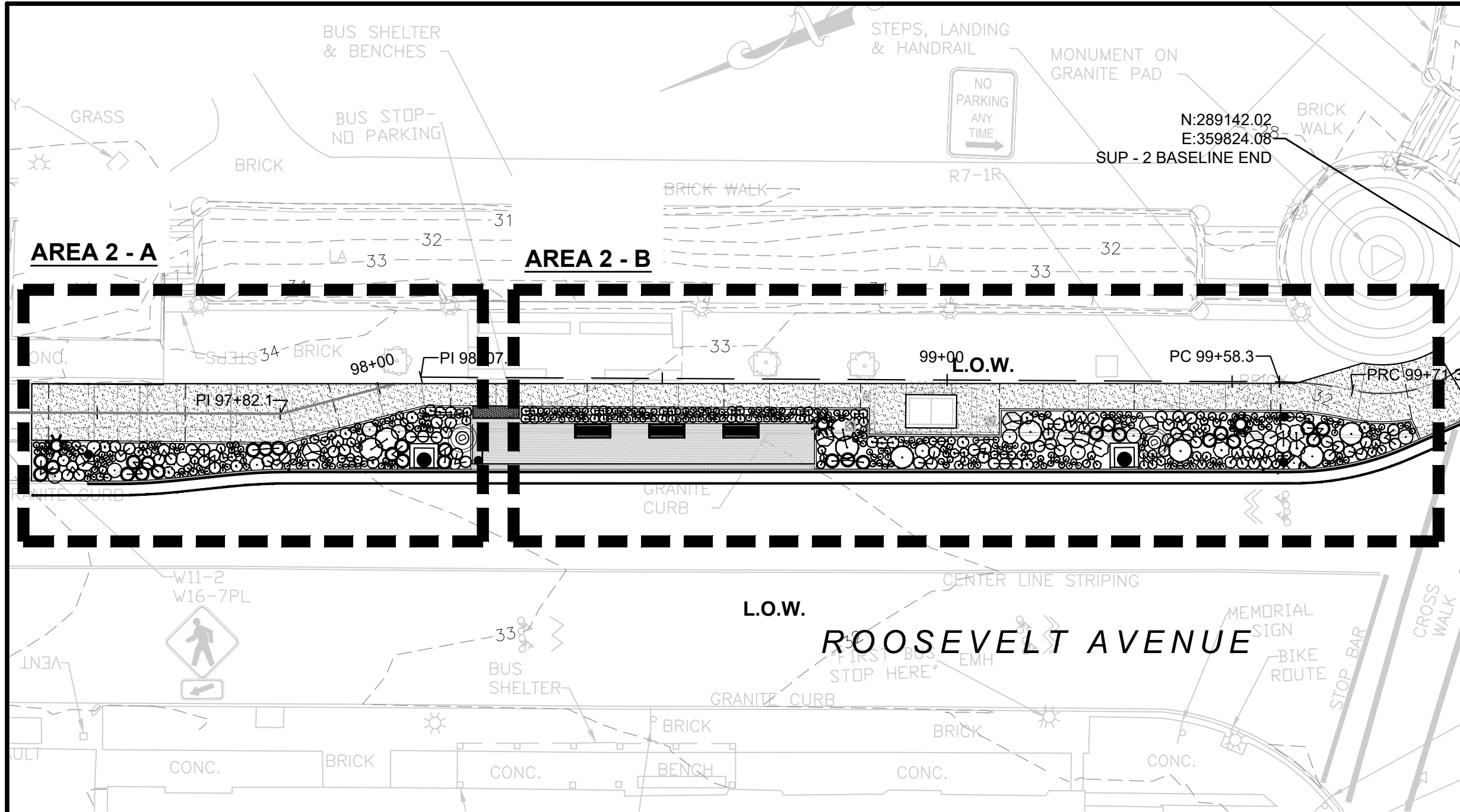
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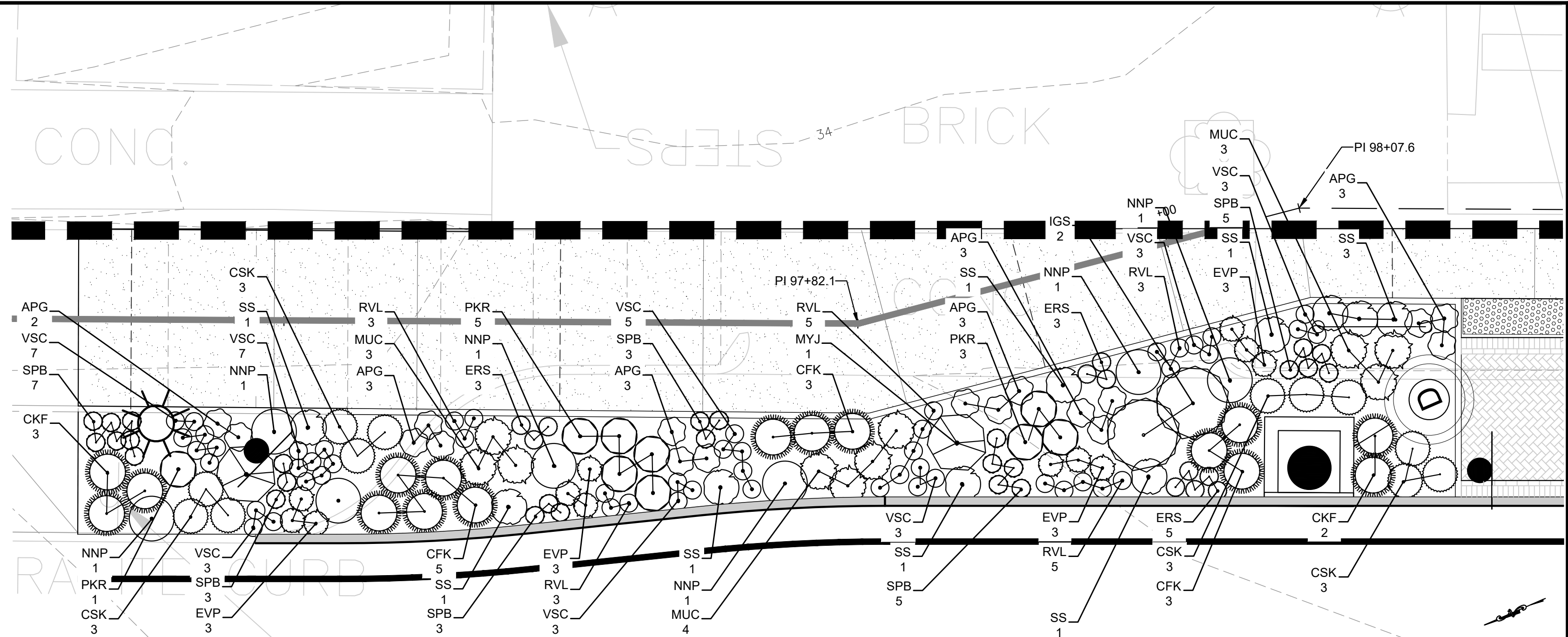
SHEET NO.



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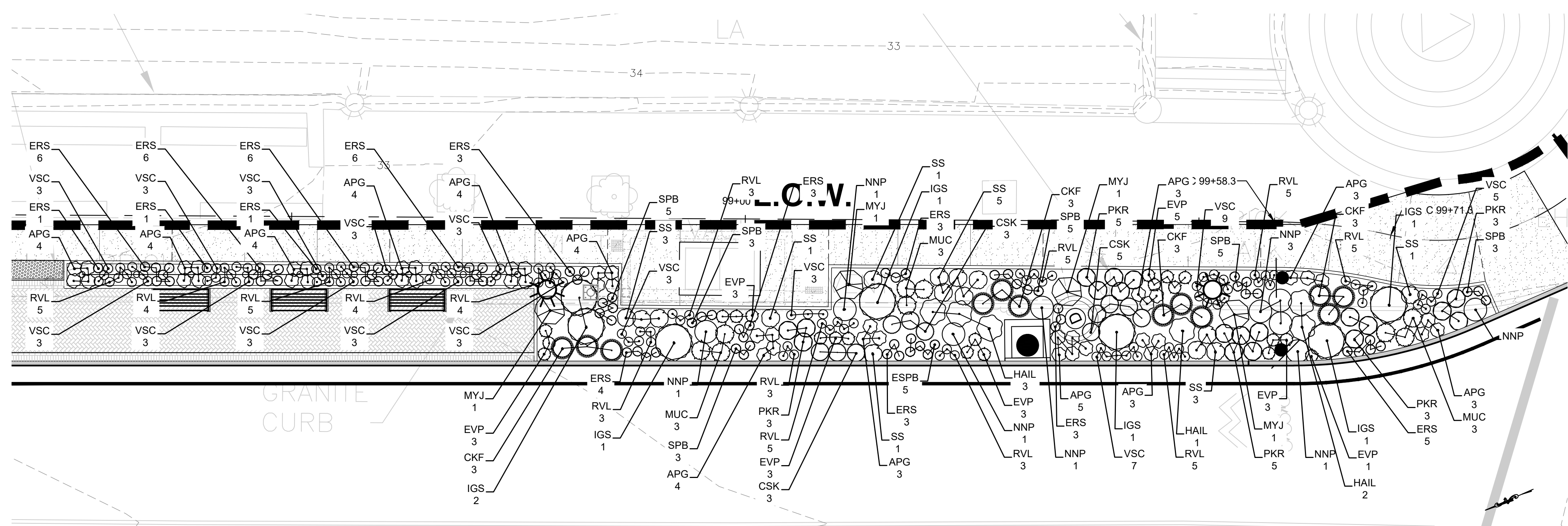
KEY PLAN  
SCALE: 1"=20' - 0"



PLANTING ENLARGEMENT - AREA 2 - A  
SCALE: 1" = 5' - 0"

PLANT SCHEDULE: AREA 2 - A

KEY	QTY	BOTANICAL NAME	COMMON NAME	SIZE	ROOT	SPACING
SHRUBS						
CSK	12	CORNUS SERICEA 'KELSEY'	KELSEY RED TWIG DOGWOOD COMPACT	#3	CONT.	3' O.C.
IGS	2	ILEX GLABRA SHAMROCK	SHAMROCK INKBERRY	#3	CONT.	3' O.C.
PERENNIALS AND GRASSES						
APG	17	ACHILLEA 'PINK GRAPERFRUIT'	PINK YARROW	#1	CONT.	1.5' O.C.
CKF	16	CALAMAGROSTIS 'KARL FOERSTER'	KARL FOERSTER FEATHER REED GRASS	#1	CONT.	2.5' O.C.
ERS	11	ERAGROSTIS SPECTABILIS	PURPLE LOVE GRASS	#1	CONT.	1' O.C.
EVP	12	ECHINOPS 'VEITCHS BLUE'	GLOBE THISTLE	#1	CONT.	1.5' O.C.
MUC	10	MUHLENBERGIA CAPILLARIS	PINK HAIR GRASS	#1	CONT.	2' O.C.
MYJ	2	MISCANTHUS SINENSIS 'YAKU JIMA'	YAKU JIMA DWARF MAIDEN GRASS	#3	CONT.	3' O.C.
NNP	7	NIPPONANTHEMUM NIPPONICUM	MONTAUK DAISY - WHITE	#1	CONT.	2.5' O.C.
PKR	9	PENNISETUM 'KARLEY ROSE'	KARLEY ROSE FOUNTAIN GRASS	#1	CONT.	2' O.C.
RVL	19	RUDBECKIA VIETTES LITTLE SUZY'	YELLOW CONEFLOWER	#1	CONT.	1' O.C.
SPB	26	SCHIZACHYRIUM SCOPARIUM 'PRARIE BLUES'	PRARIE BLUES LITTLE BLUESTEM	#1	CONT.	1' O.C.
SS	10	SOLIDAGO 'SEMPERVIRENS'	GOLDENROD	#1	CONT.	2' O.C.
VSC	34	VERONICA 'SNOW CANDLES'	WHITE SPIKE SPEEDWELL	#1	CONT.	1' O.C.



PLANTING ENLARGEMENT - AREA 2 - B  
SCALE: 1" = 8' - 0"

PLANT SCHEDULE: AREA 2 - B

KEY	QTY	BOTANICAL NAME	COMMON NAME	SIZE	ROOT	SPACING
SHRUBS						
CSK	11	CORNUS SERICEA 'KELSEY'	KELSEY RED TWIG DOGWOOD COMPACT	#3	CONT.	3' O.C.
IGS	7	ILEX GLABRA SHAMROCK	SHAMROCK INKBERRY	#3	CONT.	3' O.C.
PERENNIALS AND GRASSES						
APG	48	ACHILLEA 'PINK GRAPERFRUIT'	PINK YARROW	#1	CONT.	1.5' O.C.
CKF	12	CALAMAGROSTIS 'KARL FOERSTER'	KARL FOERSTER FEATHER REED GRASS	#1	CONT.	2.5' O.C.
ERS	51	ERAGROSTIS SPECTABILIS	PURPLE LOVE GRASS	#1	CONT.	1' O.C.
EVP	21	ECHINOPS 'VEITCHS BLUE'	GLOBE THISTLE	#1	CONT.	1.5' O.C.
HAIL	6	HYDRANGEA ARB. INVINCIBELLE LIMETTA	DWARF LIMETTA SMOOTH HYDRANGEA	#3	CONT.	3' O.C.
MUC	9	MUHLENBERGIA CAPILLARIS	PINK HAIR GRASS	#1	CONT.	2' O.C.
MYJ	4	MISCANTHUS SINENSIS 'YAKU JIMA'	YAKU JIMA DWARF MAIDEN GRASS	#3	CONT.	3' O.C.
NNP	9	NIPPONANTHEMUM NIPPONICUM	MONTAUK DAISY - WHITE	#1	CONT.	2.5' O.C.
PKR	19	PENNISETUM 'KARLEY ROSE'	KARLEY ROSE FOUNTAIN GRASS	#1	CONT.	2' O.C.
RVL	58	RUDBECKIA VIETTES LITTLE SUZY'	YELLOW CONEFLOWER	#1	CONT.	1' O.C.
SPB	29	SCHIZACHYRIUM SCOPARIUM 'PRARIE BLUES'	PRARIE BLUES LITTLE BLUESTEM	#1	CONT.	1' O.C.
SS	15	SOLIDAGO 'SEMPERVIRENS'	GOLDENROD	#1	CONT.	2' O.C.
VSC	56	VERONICA 'SNOW CANDLES'	WHITE SPIKE SPEEDWELL	#1	CONT.	1' O.C.

PREPARED BY



REGISTERED PROFESSIONAL

SUBCONSULTANT

PROJECT

BLACKSTONE  
RIVER BIKEWAY  
SEGMENT 3A-1  
CONTRACT 1

Pawtucket, Rhode Island

TITLE

OVERALL  
PLANTING  
PLAN - 3

NO. REVISIONS DATE

DRAWN BY: AKP/BB/ALG

DESIGNED BY: AWG

CHECKED BY: AWG

ISSUE DATE: 11/8/2023

BETA JOB NO.: 6352

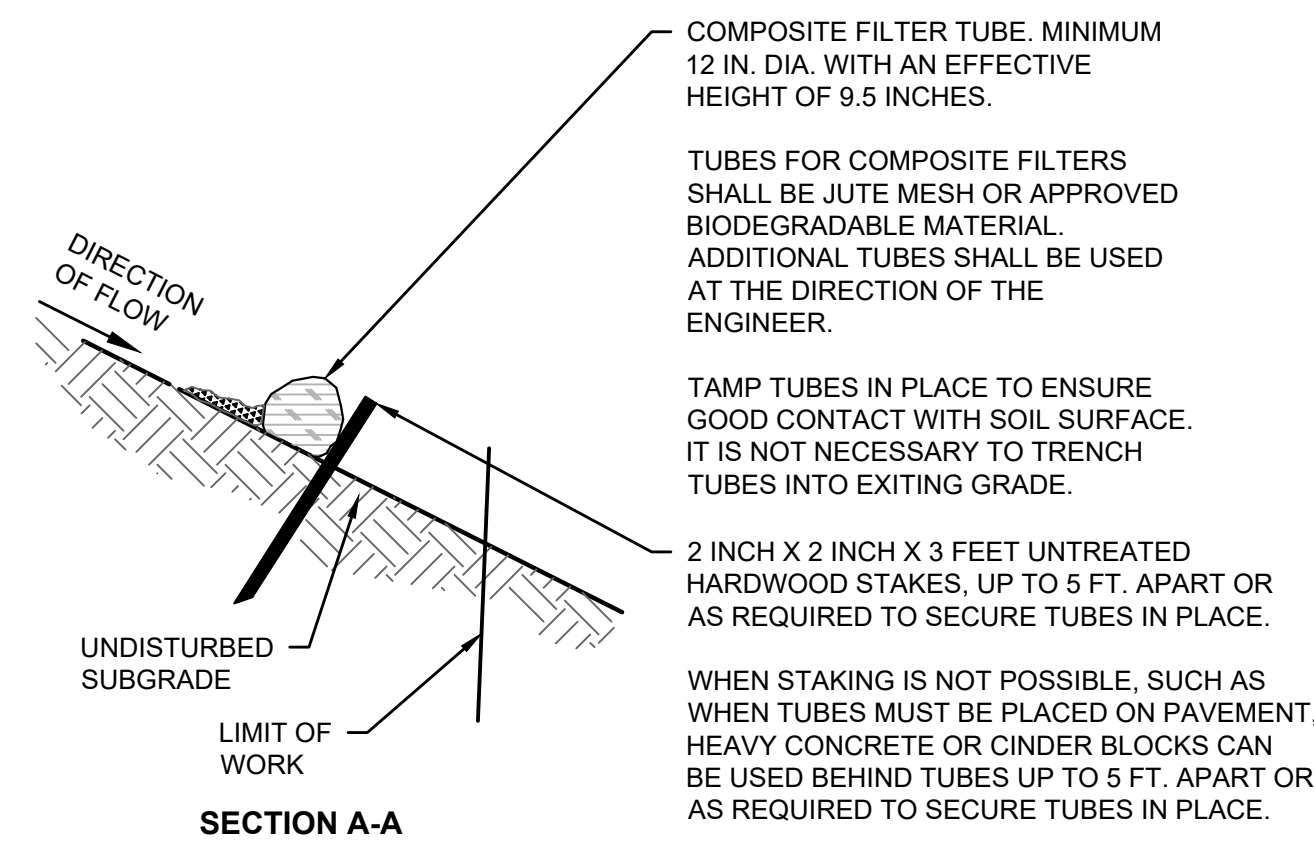
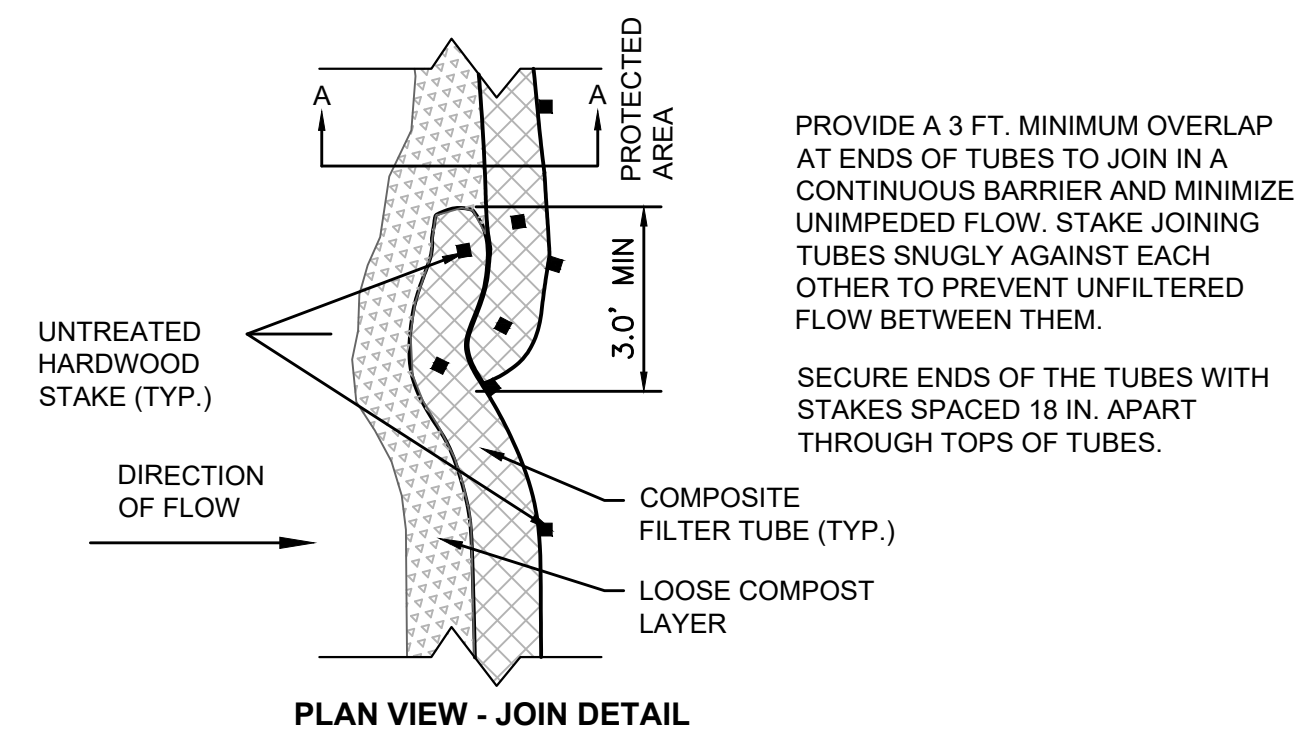
SCALE

AS SHOWN

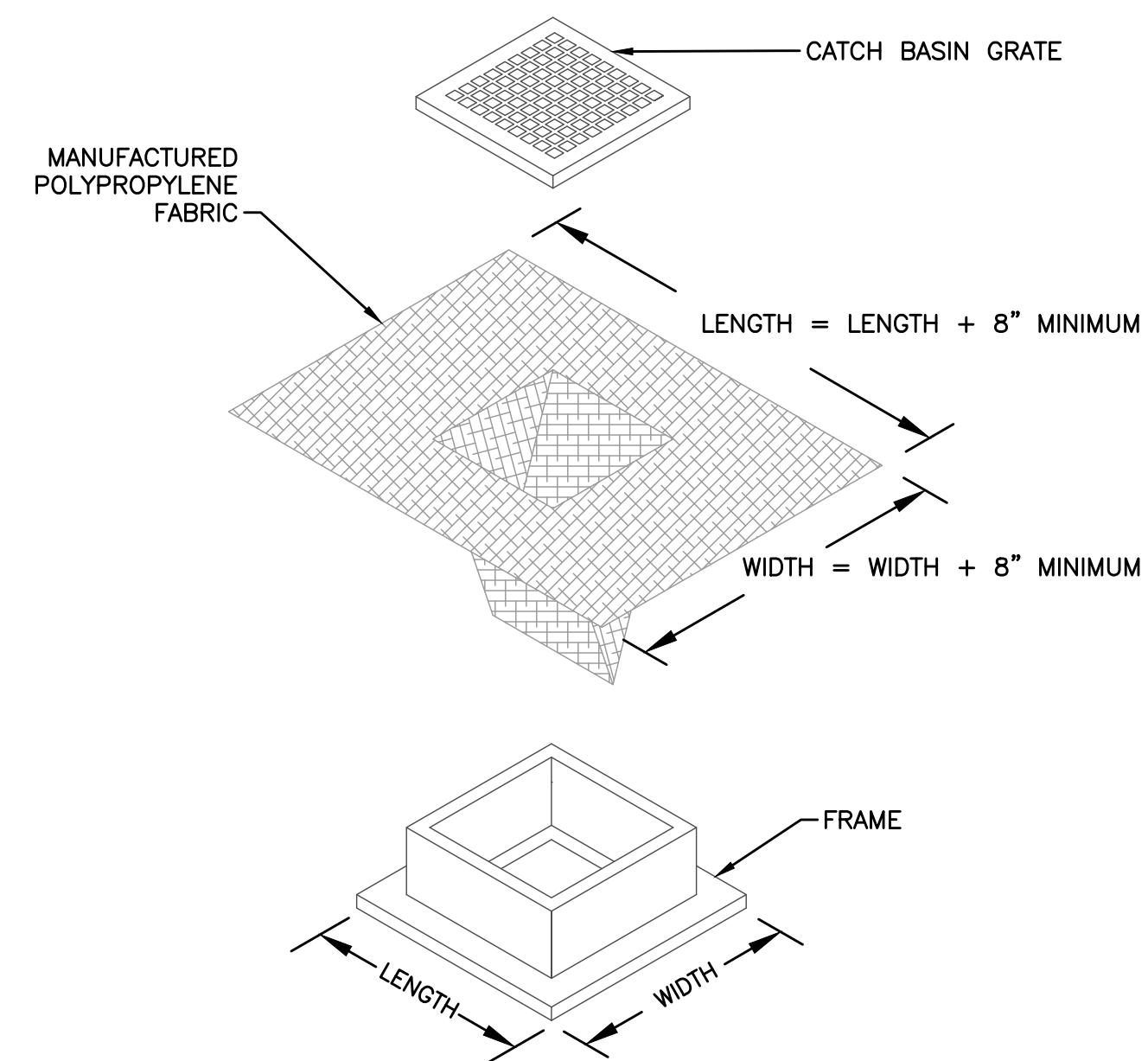
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CONSTRUCTION DOCUMENTS

SHEET NO.



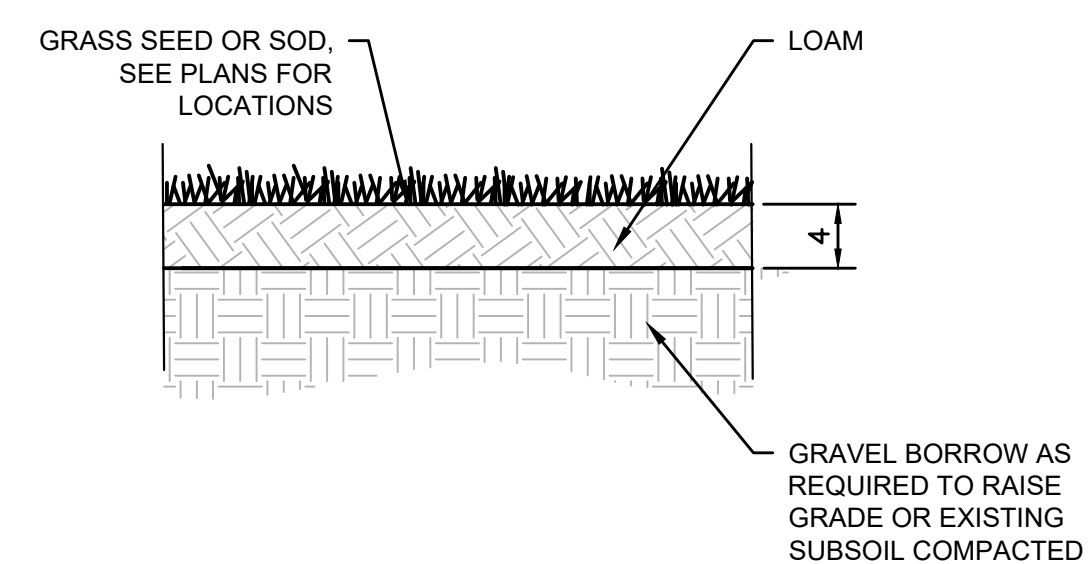


**COMPOST FILTER SOCK (TYP.)**  
SCALE: NTS

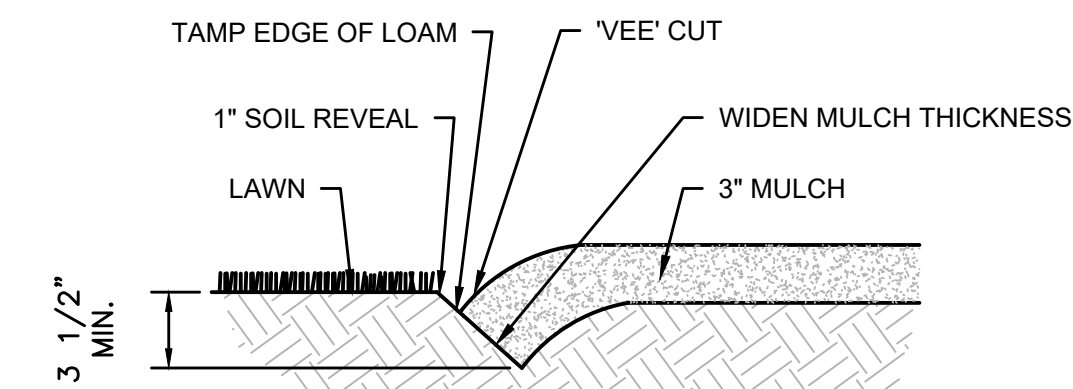
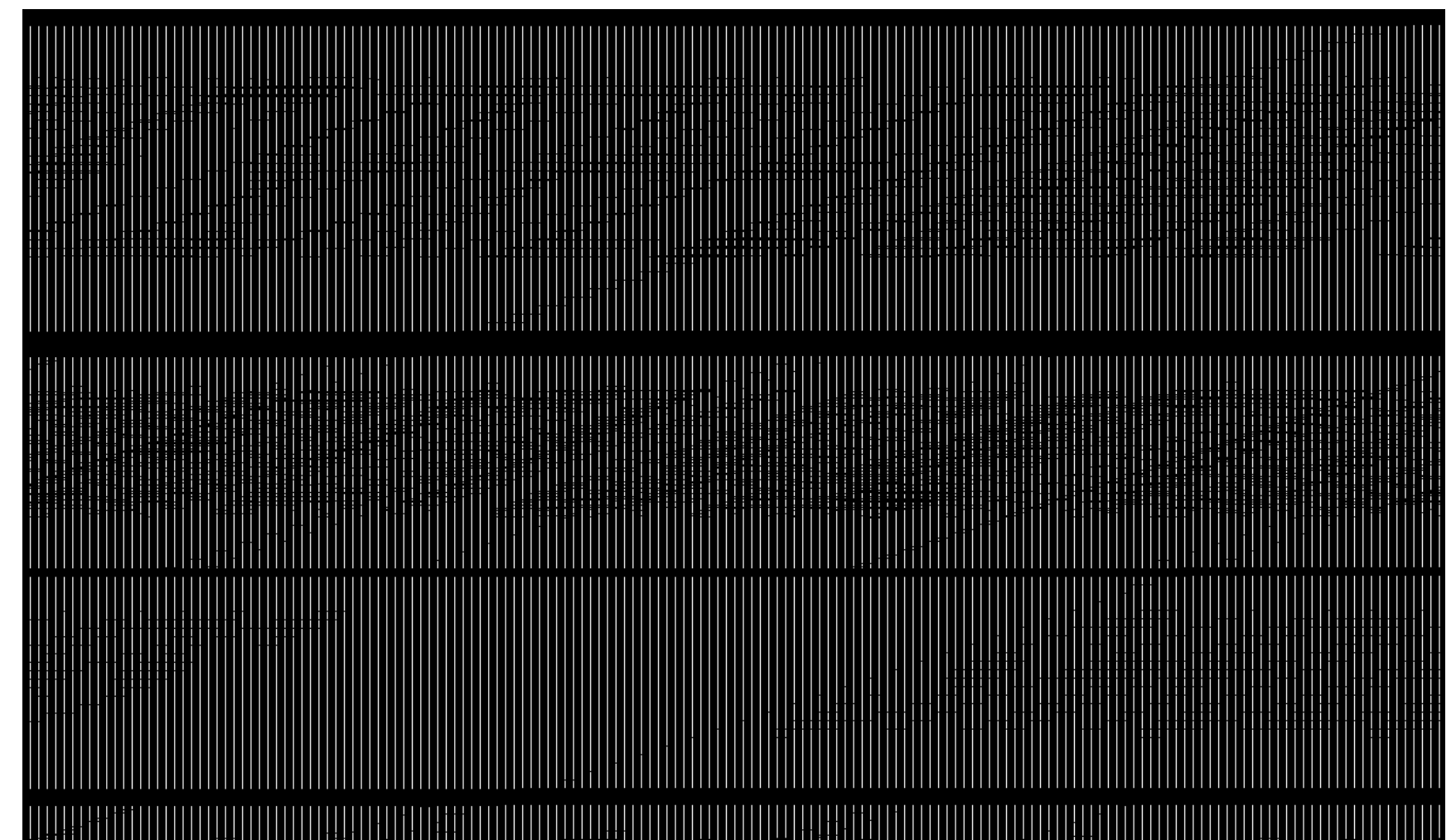


- NOTES
1. LENGTH AND WIDTH OF POLYPROPYLENE FABRIC MUST EXCEED EXISTING CATCH BASIN FRAME DIMENSIONS BY A MINIMUM OF 8".
  2. REMOVE CATCH BASIN GRATE AND INSTALL POLYPROPYLENE FABRIC OVER CATCH BASIN FRAME. REPLACE CATCH BASIN GRATE TO SECURE POLYPROPYLENE FABRIC IN PLACE.

**TYPICAL CATCH BASIN EROSION CONTROL PROTECTION**  
SCALE: NTS

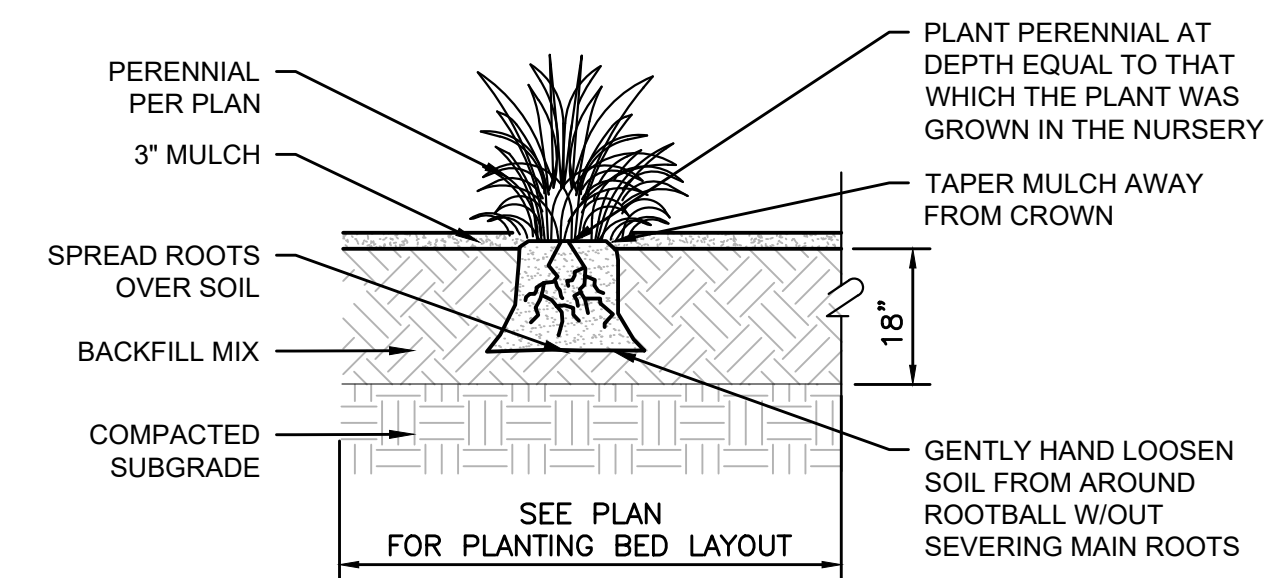


LOAM AND SEED  
NOT TO SCALE

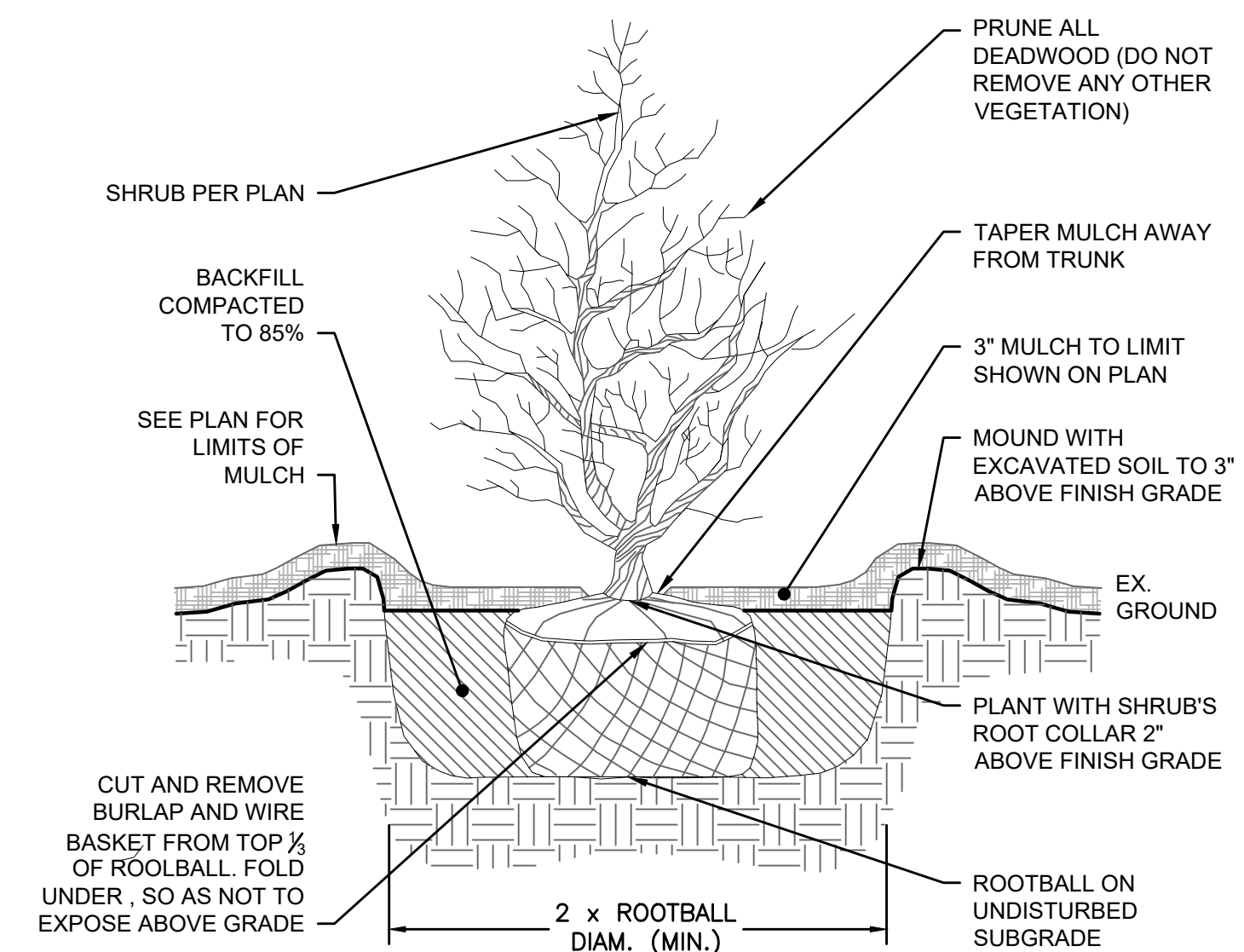


NOTE:  
LOCATE BEDLINE AS SHOWN ON PLAN.

BEDLINE EDGE  
NOT TO SCALE



**PERENNIAL AND GROUND COVER PLANTING**  
SCALE: NTS



**SHRUB PLANTING**  
SCALE: NTS



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1 IRRIGATION ENCLOSURE DETAIL  
IR2.00 NOT TO SCALE



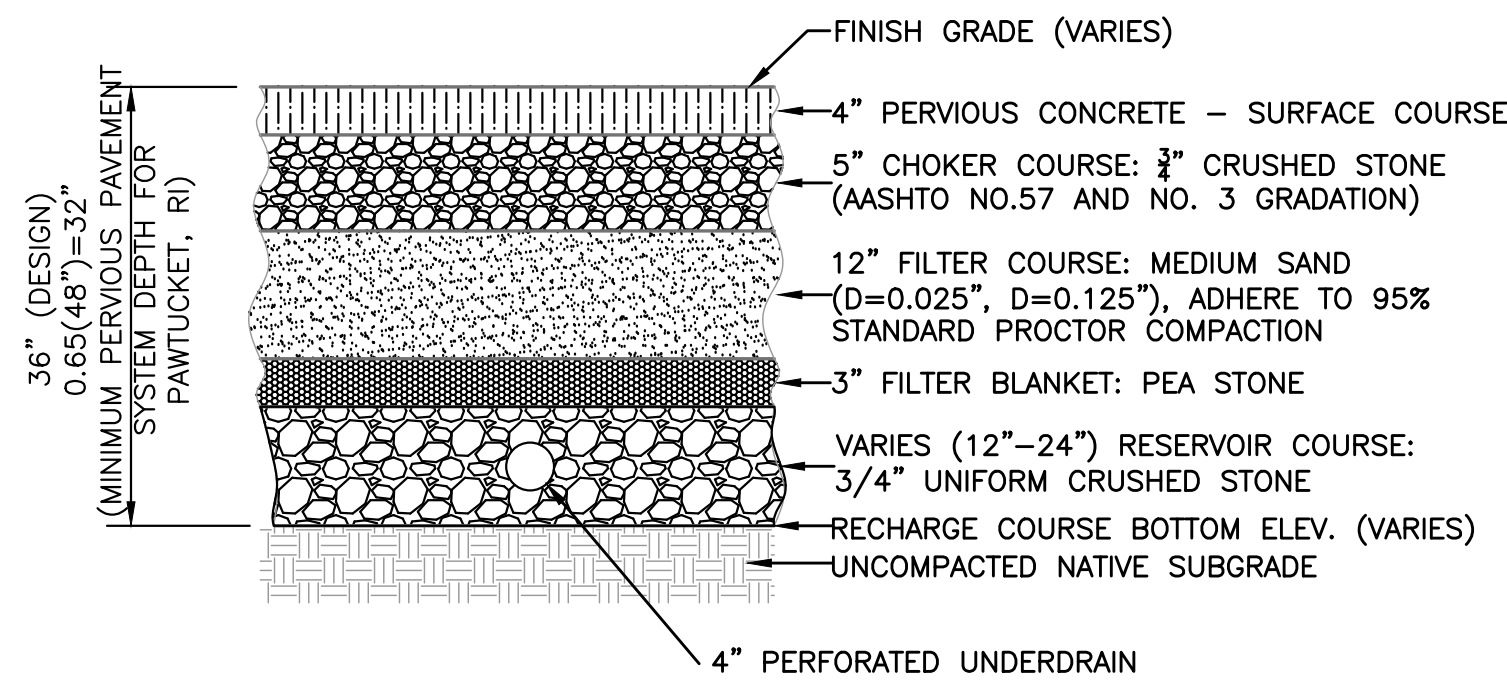






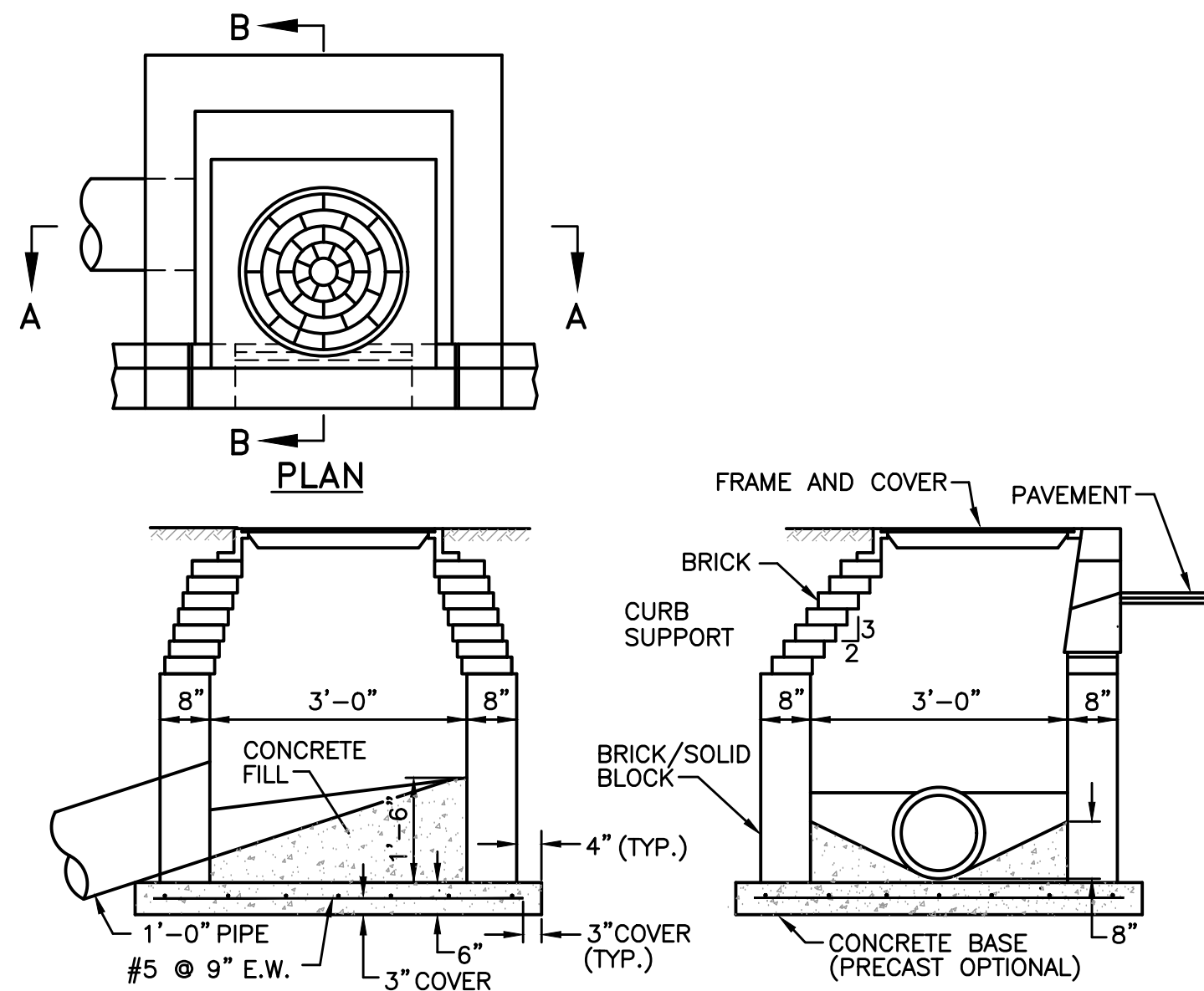
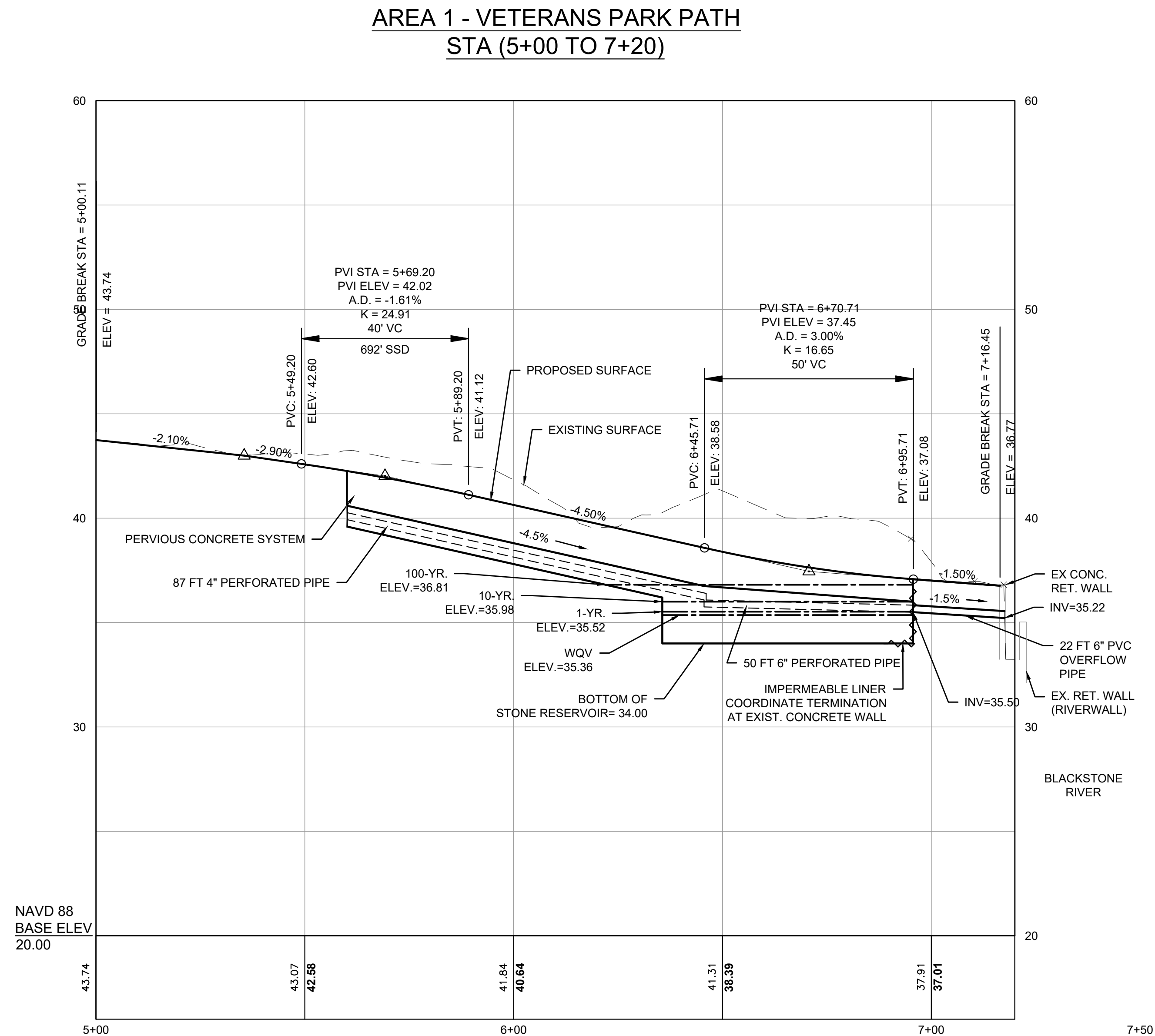


1/17/2023 1:30 PM I:\BETA\INC.COM\RI\GLA\PLANNING LANDSCAPE\600S\0352 - PAWTUCKET - BLACKSTONE RIVER BIKEWAY\DRAWING FILES\PLANSET\CONTRACT 1\CONSTRUCTION DOCUMENTS\BMP DETAILS.DWG (BETA STD BW.CTB)



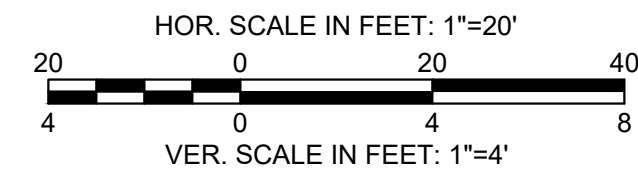
PERVIOUS CONC. SYSTEM  
TYPICAL CROSS SECTION

NOTE:  
FOR GRADATIONS, REFER TO THE  
SPECIFICATIONS.



NOTES:  
1. SHALL BE IN ACCORDANCE WITH SECTION 702 OF THE R.I. STANDARD SPECIFICATIONS.  
2. 1/2\"/>

BRICK/SOLID BLOCK DROP INLET  
NOT TO SCALE



PREPARED BY



REGISTERED PROFESSIONAL

SUBCONSULTANT

PROJECT

BLACKSTONE  
RIVER BIKEWAY  
SEGMENT 3A-1  
CONTRACT 1

Pawtucket, Rhode Island

TITLE

CIVIL DETAILS

NO.	REVISIONS	DATE
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DRAWN BY:	AKP/BB/ALG
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DESIGNED BY:	AWG
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CHECKED BY:	AWG
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ISSUE DATE:	11/8/2023
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BETA JOB NO.:	6352
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SCALE

AS SHOWN

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CONSTRUCTION DOCUMENTS

SHEET NO.













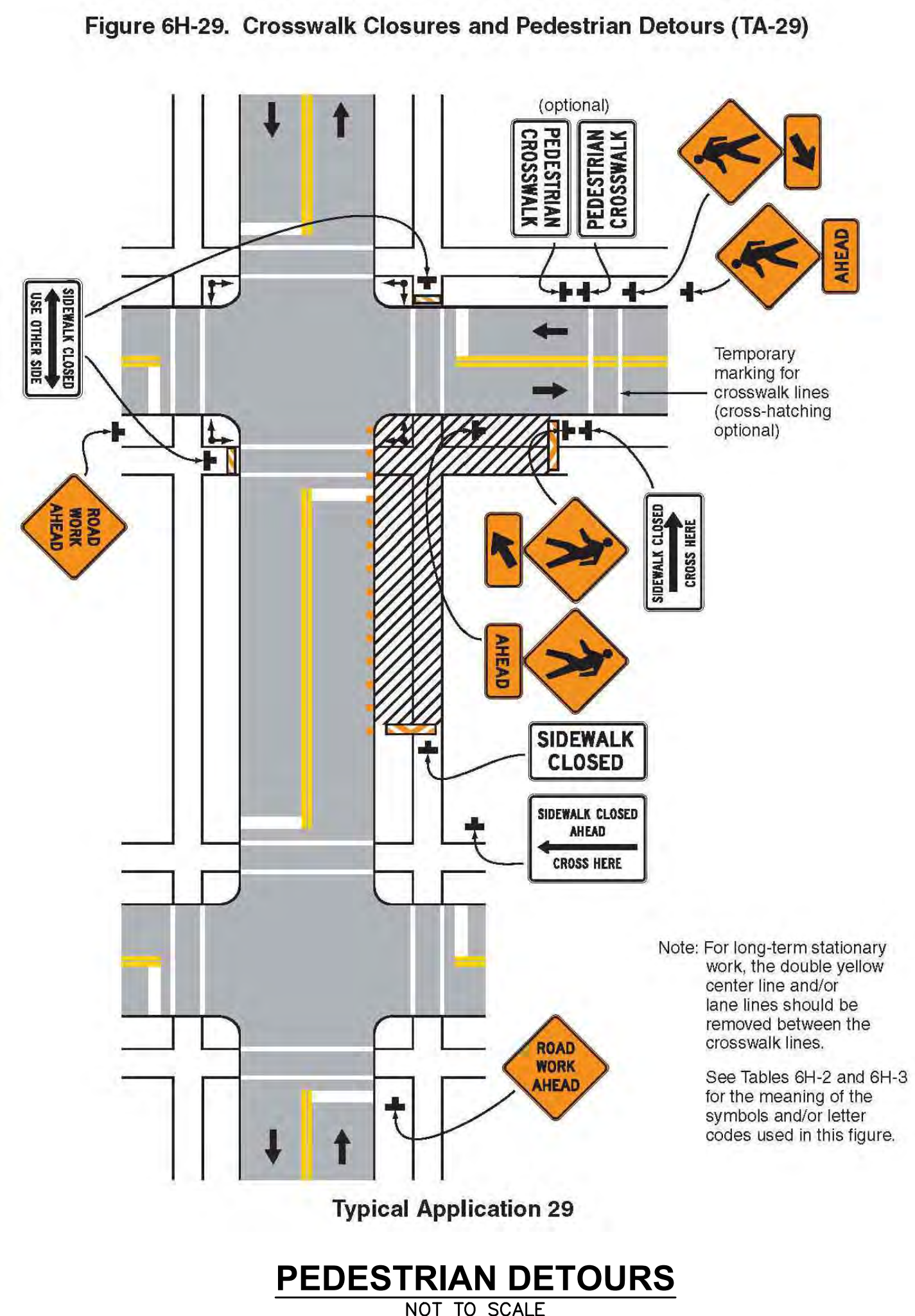
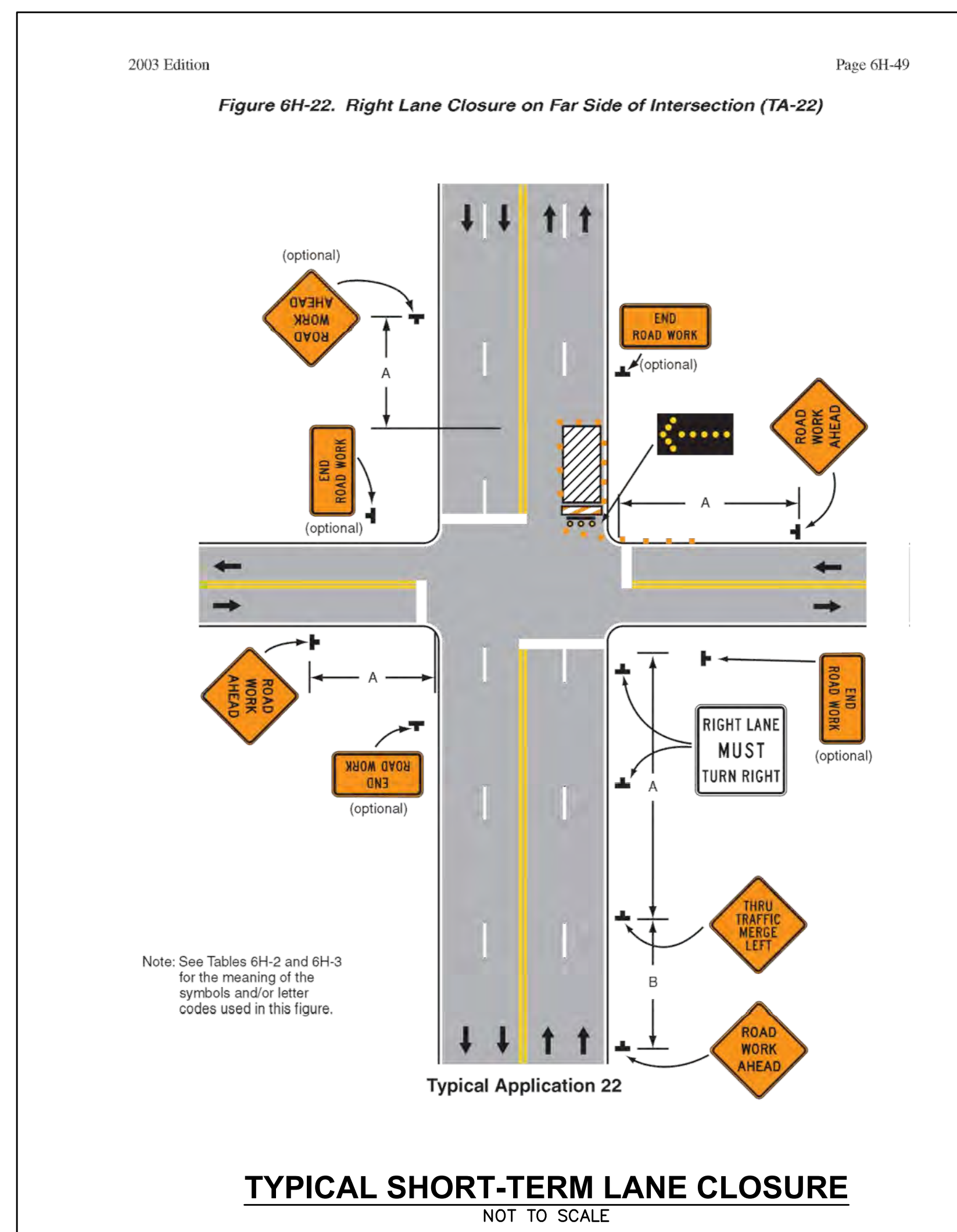




## NOTES

1. ALL WORK SHALL BE IN CONFORMANCE WITH THE 2000 MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) WITH THE LATEST REVISIONS.
2. TEMPORARY CONSTRUCTION SIGNING AND BARRICADES SHALL BE IN PLACE PRIOR TO THE START OF ANY WORK.
3. ALL TEMPORARY CONSTRUCTION SIGNING AND BARRICADES SHALL BE REMOVED FROM THE HIGHWAY OR COVERED WHEN THEY ARE NOT REQUIRED FOR CONTROL OF TRAFFIC.
4. ALL SIGNS SHALL HAVE A BLACK LEGEND ON A REFLECTIVE ORANGE BACKGROUND AND BE IN ACCORDANCE WITH MASSHIGHWAY STANDARDS AND THE MUTCD.
5. ALL CONSTRUCTION SIGNS SHALL BE ATTACHED TO THEIR OWN INDEPENDENT SUPPORTS.

<h3><u>LEGEND</u></h3> <ul style="list-style-type: none"> <li>• CHANNELIZING DEVICE</li> <li> ARROW PANEL</li> <li> POLICE DETAIL</li> <li> TYPE III BARRICADE</li> <li> TRAFFIC SIGNAL</li> <li> CRASH CUSHION</li> <li> FLAGGER</li> </ul>	<h3><u>TAPER LENGTH (L)</u></h3> $L = \frac{WS^2}{8}$ <p>FOR <math>S &lt; 40\text{ MPH}</math></p> $L = W \times S \text{ FOR } S > 45\text{ MPH}$ <p>WHERE L = TAPERED LENGTH (FEET)  W = WIDTH OF OFFSET (FEET)  S = POSTED SPEED OR OFF-PEAK  85th PERCENTILE SPEED (MPH)</p>	<h3><u>SPACING OF CHANNELIZING DEVICES (D)</u></h3> <p>D # 1 TIMES THE SPEED LIMIT (FEET)  FOR TAPER CHANNELIZATION</p> <p>D # 2 TIME THE SPEED LIMIT (FEET)  FOR TANGENT CHANNELIZATION</p>
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NOT TO SCALE

1. PROVIDE THE HANDHOLE AS DETAILED ABOVE, OR APPROVED EQUAL. INSTALL PER MANUFACTURER'S RECOMMENDATIONS, AND IN ACCORDANCE WITH INDUSTRY STANDARDS.
2. PROVIDE WITH THE WORD "ELECTRIC" ON COVER.
3. PROPERLY BOND AND GROUND HANDHOLES PER LATEST EDITION OF NEC.



NOT TO SCALE

NOTE 1: INSTALL PER MANUFACTURER'S RECOMMENDATIONS.  
NOTE 2: EXISTING (2) 12' POLE LIGHTS SHALL BE RELOCATED. REPLACE BALLASTS AND LAMPS WITH 3500K COLOR.  
NOTE 3: VERIFY VOLTAGE OF EXISTING LIGHTS.



1. PANEL "A" PRESENTS HAS (3) 100A-3P CIRCUIT BREAKERS WHICH SUPPLY POWER TO THE SITE. THESE CIRCUITS ARE NOT BEING USED AND MUST BE DISCONNECTED. AN EXCAVATOR RECENTLY DUG INTO ONE OF THESE CIRCUITS AND TRIPPED THE CIRCUIT BREAKER. APPARENTLY THERE IS ADDITIONAL LOAD WHICH WAS TRIPPED. IDENTIFY CIRCUITS IN PANEL A AND DISCONNECT CIRCUITS NO LONGER IN OPERATION.
2. PROVIDE SPLICES RATED FOR WET LOCATIONS, SPECIFICALLY DESIGNED FOR DIRECT BURIAL, IN HANDHOLES.
3. INSTALL CONDUITS A MINIMUM OF 12" BELOW GRADE, FROM TOP OF CONDUIT.

PREPARED BY

..\Logos\2017BETA Logo with URL greyscale.jpg

REGISTERED PROFESSIONAL

SUBCONSULTANT

**MC<sup>2</sup>**  
**MCCLANAGHAN**  
**ASSOCIATES, INC.**  
**ELECTRICAL ENGINEERS**  
178 TREASURE ROAD, NARRAGANSETT, RI 02882  
T: 401-524-3457  
RWM@RWMENGINEERING.COM

PROJECT

**BLACKSTONE  
RIVER BIKEWAY**

*CONTRACT 1*

Pawtucket, Rhode Island

**TITLE**

## ELECTRICAL PLAN

[illegible]

NO.	REVISIONS	DATE
DRAWN BY:	AP/BB	
DESIGNED BY:	RM	
CHECKED BY:	AG	
ISSUE DATE:	5/23/2023	
BETA JOB NO.:	6352	

SCALE

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## CONSTRUCTION DOCUMENTS

SHEET NO.

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