CITY OF PAWTUCKET

REQUEST FOR PROPOSALS

Bid # 26-011
Pleasant Street Public Stairway
Construction Phase

May 14 2026

KEVIN M. AGUIAR
No. 6913
REGISTERED
PROFESSIONAL ENGINEER
CIVIL

CITY OF PAWTUCKET
DEPARTMENT OF PLANNING AND REDEVELOPMENT

PLEASANT STREET PUBLIC STAIRWAY

CITY OF PAWTUCKET
COUNTY OF PROVIDENCE
RHODE ISLAND

BID # 26-011

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

May 2026

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Pleasant Street Public Stairway

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1.0 - Bid/Solicitation Information

Schedule

Pre-Bid/Proposal Conference No X Yes

Thursday May 21, 2026 @ 10:00 AM Pre-Bid Meeting

A ***Non-Mandatory*** Pre-Bid Meeting will be held at the following location:

200 Taft Street
Pawtucket, RI 02860

Note Parking is available on site at the T1 Parking Lot located at
11 Tidewater Street
Please enter the Centerville Bank Stadium through the glass doors

No site walk is planned at this time.

*Requests for Further Information Due****: June 11, 2026,*** **by 2:00 PM**

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

Michael Wilcox, Project Engineer mwilcox@pawtucketri.gov
Kevin Aguiar P.E, Project Manager kaguiar@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: June 25, 2026, **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 Department

137 Roosevelt Avenue

Pawtucket RI 02860

Bids will be publicly opened on June 25, 2026, at 4:00 PM during a scheduled Purchasing Board meeting. Please note that the bid opening will be held at 100 Freight Street, Room 204, Pawtucket, RI.

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: **X** 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.

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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 June 11, 2026** 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 upper and lower pedestrian plaza and an interconnecting public pedestrian steel stairway linking Pleasant Street to Taft Street and the City's Waterfront District. Primary elements of the work include cast-in-place (CIP) concrete walls, piers, stairs as well as metal stairs, landings and railing systems. Other work in this project includes a new electrical service, installation of conduit and wiring, furnishing and installing site improvements and installing new curbing as well as resetting existing curbing, installation of new and restoration of sidewalk and limited areas of asphalt paving.

Access to the site and areas of the project interfacing with Taft Street shall be fully coordinated with other projects nearby (Riverwalk West Project) as well work by the Narragansett Bay Commission (NBC) Phase III combined Sewer Overflow Program work underway on Taft Street. The project includes sewer and utility work, as necessary to construct both deep and near-surface sewer improvements, as well as the subsequent street restoration, work that includes site lighting, roadway and bikeway improvements on Taft St. Due to construction sequencing and operational logistics, the NBC project will determine vehicular access and traffic flow on Taft St. For the duration of this project, it is anticipated that Taft Street will remain one way, south-bound.

3.2 Project Background

The purpose of the project is to create waterfront access from Pleasant Street to Taft Street and connect with City improvements being constructed north and south along the Seekonk River.

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

Coastal wetland permits have been obtained from the Rhode Island Coastal Resources Management Council.

The project is funded by the City of Pawtucket, with support from other state agencies. The administration of the construction phase 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 with curb, sidewalk and Upper Plaza work at Pleasant Street /Division Street intersection, with related curb, sidewalk, crosswalk and site improvements at Taft Street.
- Work operations occur on City owned land, City Street Right-Of-Way, and private land with improvements through though special license agreement between the City and the Landowner.
- Work to occur on the following property through special license agreement:
    - # 180 Pleasant Street
    - Assessor's Plat MAP 54 Lot 887

4.2 General Requirements

4.2.1 Project Schedule

- Project Award – July 9, 2026
- Notice to Proceed – July 27, 2026
- Pre-Construction Conference - July 28,2026
- Start of Construction, on or before August 3, 2026
- Substantial Completion – May 30, 2027
- Final Completion – June 30, 2027

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 requires 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 attached as a separate sheet listing the 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. .

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

- Mobilization, Installation of erosion controls
- Clearing and Grubbing Operations
- Site preparation activities: saw-cutting of pavements, removal and legal disposal of asphalt and concrete pavement, salvage & stockpile items designated on the plans
- Line drilling, saw cutting, pneumatic hammering and other methods of rock ledge removal

4.3 Scope Detail, Continued

- Installation and maintenance of site protection fencing
- Soil management activities: excavation, loading, hauling legal disposal of excavated soils.
- Construction of new cast-in-place concrete structures including piers and walls.
- Construction of steel stairs and landings
- Construction of handrails and all railing systems
- Furnishing & Installing granite curb and concrete sidewalks
- Sidewalk restoration and bituminous asphalt roadway.
- Installation of new handholes, conduit, wiring and various types of site lighting.
- Installation of landscape plantings.
- Restoration of any damaged or impacted surfaces.
- Demobilization

4.4 Additional General Requirements

Reference is made to the Appendices, Technical Specifications, 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 $500,000.00.

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:

"Pleasant Street Public Stairway"

BID # 26-011

Name of Bidder: _____

Date of bid opening: June 25, 2026

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. The Subcontractors are required to list their experience performing similar work to that which they will be contracted for in this contract.

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

All Proposals submitted 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.

Evaluation Criteria	Importance
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 Bid, the City will use the price referenced above in Evaluation Criteria as the price noted in Section 11 Bid Form, which will be the Base Bid plus ALL Alternates, if any, and Allowances. The City will select Alternates as the budget allows.

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 # 26-011 Pleasant Street Public Stairway

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.)

_____

_____

_____

Is your company bonded? Yes ____ No ____

Please describe the nature and extent of all insurance coverage:

_____

_____

_____

_____

_____

_____

_____

References

Please list at least four (4) entities 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
_____	_____
_____	_____
_____	_____
_____	_____

Pricing Proposal

Bid 26-011 Pleasant Street Public Stairway

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. (Engineer/Architect) for the above project) and the City of Pawtucket, we, the undersigned, hereby offer to enter into a Contract to perform the Work, **(Pleasant Street Public Stairway)** 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 shall include all BID ITEMS listed 1.0 – 27.0 and all Add Alternates 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.

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.

Substitution Request Language:
The bidder shall identify and document cost implications involved in all substitution requests. Any and all cost savings shall be returned to the Contract.

Part B - Pricing Proposal – Itemized Pricing:

Pleasant Street Public Stair **BID # 26-011**

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 Site Protection and Maintenance of Site – Project Wide

_____($ Figures) 1 LS

_____ Dollars/Cents

Item 4.0 Rock Removal

_____ ($ Figures) 1 LS

_____ Dollars/Cents

Item 5.0 CIP Concrete Walls - Upper

_____ ($ Figures) 1 LS

_____ Dollars/Cents

Item 6.0 CIP Concrete Walls - Lower

_____ ($ Figures) 1 LS

_____ Dollars/Cents

Item 7.0 Concrete Stair Support Column

_____ ($ Figures) 1 LS

_____ Dollars/Cents

Item 8.0 Steel Stair Landings

_____($ Figures) 1 LS

_____Dollars/Cents

Item 9.0 Steel Stairs

_____ ($ Figures) 1 LS

_____ Dollars/Cents

Item10.0 Railing System Type 1

_____ ($ Figures) 1 LS

_____ Dollars/Cents

Item11.0 Railing System Type 2

_____ ($ Figures) 1 LS

_____ Dollars/Cents

Item 12.0 Handrail System Type 1

_____ ($ Figures) 1 LS

_____ Dollars/Cents

Item 13.0 Handrail System Type 2

_____ ($ Figures) 1 LS

_____ Dollars/Cents

Item 14.0 Stormwater Drainage System

_____($ Figures) 1 LS

_____ Dollars/Cents

Item 15.0 HMA Pavement Systems & HMA Berm

_____($ Figures) 1 LS

_____ Dollars/Cents

Item 16.0 Granite Curb

_____ ($ Figures) 1 LS

_____ Dollars/Cents

Item 17.0 Cement Concrete Walkways - All Types

_____ ($ Figures) 1 LS

_____ Dollars/Cents

Item 18.0 Granite Block Seat Wall

_____ ($ Figures) 1 LS

_____ Dollars/Cents

Item 19.0 Site Amenities 1 LS

_____ ($ Figures)

_____ Dollars/Cents

Item 20.0 Site Lighting - All Types 1 LS

_____ ($ Figures)

_____ Dollars/Cents

Item 21.0 Electrical Service Cabinet & Panel 1 LS

_____($ Figures)

_____Dollars/Cents

Item 22.0 Electrical Equipment, Conduit & Wiring - Site 1 LS

_____($ Figures)

_____Dollars/Cents

Item 23.0	**Electrical Equipment, Conduit & Wiring - Stairs**	**1**	**LS**
	_____($ Figures)		
	_____Dollars/Cents		
Item 24.0	Area 1- **Upper Plaza Landscape Plantings**		
	_____ ($ Figures)	1	LS
	_____ Dollars/Cents		
Item 25.0	Area 2 - **Lower Plaza Landscape Plantings**		
	_____ ($ Figures)	1	LS
	_____ Dollars/Cents		
Item 26.0	**Embankment Plantings**		
	_____ ($ Figures)	1	LS
	_____ Dollars/Cents		
Item 27.0	**Yellow and White Pavement Markings**		
	_____ ($ Figures)	1	LS
	_____ Dollars/Cents		

Part C (Pricing Proposal) - Allowances

As part of the Base Bid (Total Bid), the Bidder agrees to carry the 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 which shall 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 Thirty (30) cubic yards of unsuitable material, such as defective fill or gravel, 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, 30 Cubic Yards:

$_____ $ _____
Cost per Cubic Yard In Words Per CY

$_____
Total Cost Removal of 30 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 Twenty (20) 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, 20 Cubic Yards:
$_____ $ _____
Cost per Cubic Yard In Words Per CY

$_____
Total Cost 20 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 Ten (10) 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 10 CY Removal and Disposal of Concrete Footings and Foundations

ALLOWANCE NO. 4 Allowance for Furnishing and Installing Imported Fill: The Base Bid Price listed in the Bid Proposal shall include the loading, hauling, placing compacting and rough grading of clean borrow fill from off-site location. Furnishing and installing the quantity of Twenty (60) cubic yards of imported fill. Proof of clean source certification and certification of quantities actually placed is required. Unused allowances for Imported Fill 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, 60 Cubic Yards:

$_____ $ _____

Cost per Cubic Yard In Words Per CY

$_____

Total Cost 60 CY Imported Fill

ALLOWANCE NO. 5 Permit Fees: A permit allowance of Ten-Thousand Dollars ($10,000.00) 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.

$ 10,000.00 Ten Thousand Dollars

Lump Sum In Words

BID 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

Bid Add Alternate 1- Exposed Aggregate: Omit all Broom Finish on concrete walkways. Change to furnish and install Exposed Aggregate Finish to all walkway surfaces to the limits shown on the plans.

Bid Add Alternate 2 Rapid Flashing Beacons: Furnish and install at Taft St. Crosswalk Rapid Flashing Beacons. Work to include excavation and installation of concrete bases, support posts and Rapid Flashing Beacons, with push-button actuators and all necessary conduit and wiring.

Bid Add Alternate 3 Benches: Furnish and install benches, Work includes furnishing and installing benches at locations shown on the plans.

ADD:

Base Bid Plus Add Alternate 1_____($ Figures)

_____(Dollars/Cents

Base Bid Plus Add Alternate 2_____($Figures)

_____(Dollars/Cents)

Base Bid Plus Add Alternate 3_____($Figures)

_____(Dollars/Cents)

Total Base Bid Add All Alternates_____($Figures)

_____(Dollars/Cents)

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 Pleasant Street Public Stair , 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_____)
) .ss
County of_____)

_____
,
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

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 #: _____

*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.

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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§ 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.

§ 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

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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.

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.

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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 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.

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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 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,

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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.

§ 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

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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.

§ 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.

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

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§ 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.

§ 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

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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.

§ 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.

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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.

§ 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.

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§ 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.

§ 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

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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.

§ 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.

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§ 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.

§ 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.

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§ 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;

.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.

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§ 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 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.

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§ 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 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

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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 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.

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§ 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 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

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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.

§ 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

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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.

§ 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.

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§ 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.

§ 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.

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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.

§ 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,

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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.

§ 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.

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§ 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.

§ 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.

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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.

§ 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.

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§ 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.

§ 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.

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§ 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.

§ 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

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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.

§ 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.

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§ 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.

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

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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 th 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.

§ 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,

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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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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

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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 or 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 of 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 $500.00 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.

Appendix A

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)

ORIGINAL: AUGUST/2001 REVISED: APRIL/2006

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 14.1of 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.

Wage Decision Obtained on 4/23/2026 from SAM.gov

"General Decision Number: RI20260001 01/30/2026

Superseded General Decision Number: RI20250001

State: Rhode Island

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

"General Decision Number: RI20260001 01/30/2026

Superseded General Decision Number: RI20250001

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

Modification Number	Publication Date
0	01/02/2026
1	01/23/2026
2	01/30/2026

ASBE0006-006 09/01/2024

	Rates	Fringes
HAZARDOUS MATERIAL HANDLER (Includes preparation, wetting, stripping, removal scrapping, vacuuming, bagging & disposing of all insulation materials, whether they contain asbestos or not, from mechanical systems)	$ 49.91	36.63

ASBE0006-008 09/01/2024

	Rates	Fringes
Asbestos Worker/Insulator Includes application of all insulating materials, protective coverings, coatings & finishes to all types of mechanical systems.	$ 49.91	36.63

BOIL0029-001 01/01/2025

	Rates	Fringes
BOILERMAKER	$ 50.62	28.82

BRRI0003-001 06/01/2022

	Rates	Fringes
Bricklayer, Stonemason, Pointer, Caulker & Cleaner	$ 46.86	29.14

BRRI0003-002 09/01/2022

	Rates	Fringes

Marble Setter, Terrazzo
Worker & Tile Setter.....$ 46.54 30.34

BRRI0003-003 09/01/2022

	Rates	Fringes
Marble, Tile & Terrazzo Finisher	$ 38.78	29.61

CARP0330-001 06/02/2025

	Rates	Fringes
CARPENTER (Includes Soft Floor Layer)	$ 47.88	30.50
Diver Tender	$ 48.68	30.50
DIVER	$ 60.83	30.50
Piledriver	$ 41.53	29.35
WELDER	$ 48.68	30.50

FOOTNOTES:

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

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

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

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

CARP1121-002 04/21/2025

	Rates	Fringes
MILLWRIGHT	$ 45.72	31.50

ELEC0099-002 06/01/2025

	Rates	Fringes
ELECTRICIAN	$ 56.11	44.10%
Teledata System Installer	$ 42.09	10.45%+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.

ELEV0039-001 01/01/2025

	Rates	Fringes
ELEVATOR MECHANIC	$ 64.52	38.435+a+b

FOOTNOTES:

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

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

ENGI0057-001 12/01/2025

	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	$ 51.30	29.95
GROUP 2	$ 49.30	29.95
GROUP 3	$ 44.92	29.95
GROUP 4	$ 42.07	29.95
GROUP 5	$ 48.35	29.95
GROUP 6	$ 39.15	29.95
GROUP 7	$ 33.15	29.95
GROUP 8	$ 45.00	29.95
GROUP 9	$ 48.92	29.95

a. BOOM LENGTHS, INCLUDING JIBS:

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

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

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

POWER EQUIPMENT OPERATORS CLASSIFICATIONS

GROUP 1: Cranes, lighters, boom trucks and derricks

GROUP 2: Digging machine, Ross Carrier, locomotive, hoist,

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

GROUP 3: Oilers on cranes.

GROUP 4: Oiler on crawler backhoe.

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

GROUP 6: Well-point installation crew.

GROUP 7: Utility Engineers and Signal Persons

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

GROUP 9: Boat & tug operator.

ENGI0057-003 12/01/2025

BUILDING CONSTRUCTION

	Rates	Fringes
Power Equipment Operator		
GROUP 1	$ 50.57	29.95
GROUP 2	$ 48.57	29.95
GROUP 3	$ 48.35	29.95
GROUP 4	$ 44.35	29.95
GROUP 5	$ 41.50	29.95
GROUP 6	$ 47.65	29.95
GROUP 7	$ 47.22	29.95
GROUP 8	$ 44.54	29.95

a.BOOM LENTHS, 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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ENGI0057-005 12/01/2025

	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	$ 46.45	29.95
GROUP 2	$ 44.45	29.95
GROUP 3	$ 39.15	29.95
GROUP 4	$ 25.75	29.95
GROUP 5	$ 33.15	29.95
GROUP 6	$ 39.73	29.95
GROUP 7	$ 43.43	29.95
GROUP 8	$ 38.70	29.95

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

b. 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: Cranes, pile drivers, lighters, boom trucks, hoists, derricks

GROUP 2: Digging machines, excavators, locomotives, John Henry's, directional drilling machines, cold planers, reclaimers, pavers, spreaders, graders, front-end loaders (3yds & over), vacuum truck, drill/boring machine operators, vermeer saw, water blaster, hydraulic-demolition robot, Ross Carriers, concrete pump operators, asphalt/material transfer machines, rotating telehandlers,

SPMT type equipment

GROUP 3: Wellpoint installation and drill/boring machine assistants

GROUP 4: Utility engineers

GROUP 5: Signal persons

GROUP 6: Oilers on cranes and deckhands

GROUP 7: Combination loader / backhoes, front-end loaders (less than 3 yds.), forklift, bulldozers, scrapers, boats, rollers, skid steer loaders (regardless of attachments), street sweepers, mechanics, welders, operators in materials yards, shops and garages

GROUP 8: Gas and electric drive heaters, concrete mixers, light plants, welding machines, pumps and compressors

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IRON0037-001 09/16/2025

	Rates	Fringes
IRONWORKER	$ 43.03	33.53

LABO0271-001 12/03/2023

BUILDING CONSTRUCTION

	Rates	Fringes
LABORER		
GROUP 1	$ 37.00	26.90
GROUP 2	$ 37.00	26.90
GROUP 3	$ 37.00	26.90
GROUP 4	$ 37.00	26.90
GROUP 5	$ 39.00	26.90

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

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	$ 46.00	24.15
Group 2	$ 45.00	24.15
Group 3	$ 42.45	24.15
LABORER		
Group 1	$ 33.05	24.05
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

PAIN0011-005 06/01/2025

	Rates	Fringes
PAINTER		
Brush and Roller	$ 39.57	26.60
Epoxy, Tanks, Towers, Swing Stage & Structural Steel	$ 41.57	26.60
Spray, Sand & Water Blasting	$ 42.57	26.60
Taper	$ 38.82	25.80
Wall Coverer	$ 38.57	25.80

PAIN0011-006 06/01/2024

	Rates	Fringes
GLAZIER	$ 41.63	26.15

FOOTNOTES:

SWING STAGE: $1.00 per hour additional.

PAID HOLIDAYS: Labor Day & Christmas Day.

PAIN0011-011 06/01/2024

	Rates	Fringes
Painter (Bridge Work)	$ 57.85	26.40

PAIN0035-008 06/01/2011

	Rates	Fringes
Sign Painter	$ 24.79	13.72

PLAS0040-001 01/01/2025

BUILDING CONSTRUCTION

	Rates	Fringes
CEMENT MASON/CONCRETE FINISHER	$ 44.75	29.10

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

PLAS0040-002 01/01/2025

HEAVY AND HIGHWAY CONSTRUCTION

	Rates	Fringes
CEMENT MASON/CONCRETE FINISHER	$ 44.75	29.10

PLAS0040-003 01/01/2025

	Rates	Fringes
PLASTERER	$ 45.52	29.43

PLUM0051-002 08/25/2025

	Rates	Fringes
Plumbers and Pipefitters	$ 54.34	34.50

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* ROOF0033-004 12/01/2025

	Rates	Fringes
ROOFER	$ 47.49	31.44

SFRI0669-001 04/01/2025

	Rates	Fringes
SPRINKLER FITTER	$ 53.76	33.44

SHEE0017-002 06/01/2025

	Rates	Fringes
Sheet Metal Worker	$ 44.42	41.94

TEAM0251-001 05/01/2025

HEAVY AND HIGHWAY CONSTRUCTION

	Rates	Fringes
TRUCK DRIVER		
GROUP 1	$ 31.86	34.51+a+b
GROUP 2	$ 32.01	34.51+a+b
GROUP 3	$ 32.06	34.51+a+b
GROUP 4	$ 32.11	34.51+a+b
GROUP 5	$ 32.21	34.51+a+b
GROUP 6	$ 32.61	34.51+a+b
GROUP 7	$ 32.81	34.51+a+b
GROUP 8	$ 32.31	34.51+a+b
GROUP 9	$ 32.56	34.51+a+b
GROUP 10	$ 32.36	34.51+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

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.

Note: Executive Order 13658 generally applies to contracts subject to the Davis-Bacon Act that were awarded on or between January 1, 2015 and January 29, 2022, and that have not been renewed or extended on or after January 30, 2022. Executive Order 13658 does not apply to contracts subject only to the Davis-Bacon Related Acts regardless of when they were awarded. If a contract is subject to Executive Order 13658, the contractor must pay all covered workers at least $13.30 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 2025. The applicable Executive Order minimum wage rate will be adjusted annually. Additional information on contractor requirements and worker protections under Executive Order 13658 is available at www.dol.gov/whd/govcontracts.

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

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

Union Rate Identifiers

A four-letter identifier beginning with characters other than ""SU"", ""UAVG"", ?SA?, or ?SC? denotes that a union rate was prevailing for that classification in the survey. Example: PLUM0198-005 07/01/2024. PLUM is an identifier of the union whose collectively bargained rate 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. The date, 07/01/2024 in the example, is the effective date of the most current negotiated rate.

Union prevailing wage rates are updated to reflect all changes over time that are reported to WHD in the rates in the collective bargaining agreement (CBA) governing the classification.

Union Average Rate Identifiers

The UAVG identifier indicates that no single rate prevailed for those classifications, but that 100% of the data reported for the classifications reflected union rates. EXAMPLE:

UAVG-OH-0010 01/01/2024. UAVG indicates that the rate is a weighted union average rate. OH indicates the State of Ohio. The next number, 0010 in the example, is an internal number used in producing the wage determination. The date, 01/01/2024 in the example, indicates the date the wage determination was updated to reflect the most current union average rate.

A UAVG rate will be updated once a year, usually in January, to reflect a weighted average of the current rates in the collective bargaining agreements on which the rate is based.

Survey Rate Identifiers

The ""SU"" identifier indicates that either a single non-union rate prevailed (as defined in 29 CFR 1.2) for this classification in the survey or that the rate was derived by computing a weighted average rate based on all the rates reported in the survey for that classification. As a weighted average rate includes all rates reported in the survey, it may include both union and non-union rates. Example: SUFL2022-007 6/27/2024. SU indicates the rate is a single non-union prevailing rate or a weighted average of survey data for that classification. FL indicates the State of Florida. 2022 is the year of the 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. The date, 6/27/2024 in the example, indicates the survey completion date for the classifications and rates under that identifier.

?SU? wage rates typically remain in effect until a new survey is conducted. However, the Wage and Hour Division (WHD) has the discretion to update such rates under 29 CFR 1.6(c)(1).

State Adopted Rate Identifiers

The ""SA"" identifier indicates that the classifications and prevailing wage rates set by a state (or local) government were adopted under 29 C.F.R 1.3(g)-(h). Example: SAME2023-007 01/03/2024. SA reflects that the rates are state adopted. ME refers to the State of Maine. 2023 is the year during which the state completed the survey on which the listed classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. The date, 01/03/2024 in the example, reflects the date on which the classifications and rates under the ?SA? identifier took effect under state law in the state from which the rates were adopted.

WAGE DETERMINATION APPEALS PROCESS

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

a) a survey underlying a wage determination
b) an existing published wage determination
c) an initial WHD letter setting forth a position on a wage determination matter
d) an initial conformance (additional classification and rate) determination

On survey related matters, initial contact, including requests for summaries of surveys, should be directed to the WHD Branch of Wage Surveys. Requests can be submitted via email to

davisbaconinfo@dol.gov or by mail to:

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

Regarding any other wage determination matter such as conformance decisions, requests for initial decisions should be directed to the WHD Branch of Construction Wage Determinations. Requests can be submitted via email to BCWD-Office@dol.gov or by mail 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 an initial decision has been issued, then any interested party (those affected by the action) that disagrees with the decision can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Requests for review and reconsideration can be submitted via email to dba.reconsideration@dol.gov or by mail 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 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.

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END OF GENERAL DECISION"

Appendix D

City of Pawtucket Standard Form of Agreement (Sample)

CONTRACT AGREEMENT
FOR:

PROJECT_TITLE

SAMPLE

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.

SAMPLE

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:

SAMPLE

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.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 on or before July 1st 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 1st 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;

SAMPLE

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, 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 law; and

12. Comply with all applicable provisions of RIGL §37-13-1, et. seq;

SAMPLE

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.

CERTIFICATION

I hereby certify that I have reviewed this CONTRACT ADDENUM and understand my obligations as stated above.

By: _____

Title: _____

Subscribed and sworn before me this ____ day of _____, 20__.

_____
Notary Public
My commission expires: _____

SAMPLE

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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

The Project is permitted under CRMC Assent A2025-10-028 issued 02/05/2026.

All conditions and requirements of this CRMC Assent apply to the execution of this project.

The CRMC Permit Plan set is available for review at the following location:

City of Pawtucket Public Works
250 Armistice Boulevard
Pawtucket, Rhode Island 02860

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State of Rhode Island
Coastal Resources Management Council
Oliver H. Stedman Government Center
4808 Tower Hill Road, Suite 116
Wakefield, RI 02879-1900

(401) 783-3370
Fax (401) 783-3767

ASSENT

CRMC File No.: 2025-10-028 CRMC Assent No.: A2025-10-028

Whereas
of

City of Pawtucket
137 Roosevelt Avenue
Pawtucket, RI 02860

has applied to the Coastal Resources Management Council for assent to: Construct and maintain public accessway from Pleasant/Division Streets to Taft Street, including stormwater management, restorative planting and earthwork, per the approved plans and represents that they are the owner(s) of the riparian rights attached to the property involved and submitted plans of the work to be done.

Now, said Council, having fully considered said application in accordance with all the regulations as set forth in the Administrative Procedures Act does hereby authorize said applicant, subject to the provisions of Title 46, Chapter 23 of the General Laws of Rhode Island, 1956, as amended, and all laws which are or may be in force applicable thereto: **Construct and maintain public accessway from Pleasant/Division Streets to Taft Street, including stormwater management, restorative planting and earthwork, per the approved plans; located at plat 50, lot 887; 180 Pleasant Street/Division St/Taft St, Pawtucket, RI,** in accordance with said plans submitted to this Council and approved by this Council. All work being permitted must be completed on or before **February 5, 2029**, after which date this assent is null and void, (unless written application requesting an extension is received by CRMC sixty (60) days prior to expiration date).

Applicant agrees that as a condition to the granting of this assent, members of the Coastal Resources Management Council or its staff shall have access to applicant's property to make on-site inspections to ensure compliance with the assent.

Licensee shall be fully and completely liable to State, and shall waive any claims against State for contribution or otherwise, and shall indemnify, defend, and save harmless State and its agencies, employees, officers, directors, and agents with respect to any and all liability, damages (including damages to land, aquatic life, and other natural resources), expenses, causes of action, suits, claims, costs (including testing, auditing, surveying, and investigating costs), fees (including attorneys' fees and costs), penalties (civil and criminal), and response, cleanup, or remediation costs assessed against or imposed upon Licensee, State, or the Property, as a result of Licensee's control of the Property, or Licensee's use, disposal, transportation, generation and/or sale of Hazardous Substances or that of Licensee's employees, agents, assigns, sublicensees, contractors, subcontractors, permittees, or invitees.

Nothing in this assent shall be construed to impair the legal rights of this granting authority or of any person. By this assent the granting authority by no manner, shape, or form assumes any liability or responsibility implied, or in fact, for the stability or permanence of said project; nor by this assent is there any liability implied or in fact assumed or imposed on the granting authority. Further, the granting authority by its representatives or duly authorized agents shall have the right to inspect said

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Permits, licenses or easements issued by the Council are valid only with the conditions and stipulation under which they are granted and imply no guarantee of renewal. The initial application or an application for renewal may be subject to denial or modification. If an application is granted, said permit, license and easement may be subject to revocation and/or modification for failure to comply with the conditions and stipulations under which the same was issued or for other good cause.

ATTENTION: ALL STRUCTURES AND FILLED AREAS IN THE TIDAL, COASTAL, OR NAVIGABLE WATERS OF THE STATE OF RHODE ISLAND ARE SUBJECT TO:

1. The Superior Property Rights of the State of Rhode Island in the Submerged and Submersible Lands of the Coastal, Tidal, and Navigable Waters;
2. The Superior Navigation Servitude of the United States;
3. The Police Powers of the State of Rhode Island and the United States to regulate Structures in the Tidal, Coastal, or Navigable Waters.

THE SUBMERGED AND SUBMERSIBLE LANDS OF THE TIDAL, COASTAL, AND NAVIGABLE WATERS OF THE STATE ARE OWNED BY THE STATE AND HELD IN TRUST FOR THE PUBLIC. CONVEYANCE OF THESE LANDS IS ILLEGAL; TITLES PURPORTING TO TRANSFER SUCH LANDS ARE VOID. ASSENTS THAT INVOLVE THE FILLING OR USE OF THE STATES SUBMERGED LANDS ARE GRANTED WITH THE PROVISO THAT IT IS SUBJECT TO THE IMPOSITION OF A USAGE FEE TO BE ESTABLISHED BY THE COASTAL RESOURCES MANAGEMENT COUNCIL.

The lands adjacent to tidal waters and/or access to these lands may be impacted or rendered unusable in the future due to sea level rise, storm surge, and shoreline erosion. Online resources including STORMTOOLS, Shoreline Change Maps, and Sea Levels Affecting Marshes Model (SLAMM) Maps can be accessed through the CRMC website (www.crmc.ri.gov). The Council recommends the use of these resources to evaluate the flood extent and inundation from sea level rise, storm surge and erosion and damages to land, aquatic life, loss of public access and other natural resources on and near the site of the above assent. The project life may be shortened by these processes and may require additional adaptation measure up to and including relocation of the project. By issuing this assent the granting authority neither explicitly nor implicitly assumes any liability or responsibility for the stability or permanence of said project under future climate and shoreline conditions.

SPECIFIC STIPULATIONS OF APPROVAL

General Stipulations

A. For the purpose of this permit, the coastal feature shall be the revetted coastal bank located across the street.

B. The approved plan shall be those entitled "City of Pawtucket, RI Tidewater Landing Phase 1B Access Stairs, Permitting Submission." dated October 1, 2025, as last revised December 23, 2025, by Kevin M. Aguiar, RPE, 21 sheets. Except as stipulated or modified herein, all details and specifications thereon shall be strictly adhered to. Any and all changes require written approval from this office.

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C. Prior to commencement of site alterations, you shall post the CRMC assent card. This assent card must be maintained at the site in a conspicuous location until such time that the project is complete.

D. As of the date of assent issuance, all vegetation on the bank located outside the approved work area shall remain undisturbed.

E. No alterations (vegetative or otherwise) or activities are allowed on the coastal feature(s) or in the waterway adjacent to the site.

Earthwork Stipulations

A. The Permittee shall construct and maintain all soil erosion, runoff, and sediment control practices in accordance with the CRMC approved site plan (referenced herein).

B. Prior to conducting earthwork and other land disturbing activities, erosion, runoff and sediment control measures shall be installed and maintained in accordance with good engineering practices including the applicable details found in the manufacturer's specifications and/or in the Rhode Island Soil Erosion and Sediment Control Handbook (as amended). These measures must be maintained until the site is stabilized through the establishment of vegetative cover and/or construction of the approved facilities (buildings, roadways, parking areas, etc.) has stabilized soils sufficiently to prevent erosion and sedimentation.

C. There shall be no activities (construction, stockpiling vehicle or equipment access, etc.) beyond the approved Limit of Disturbance (LOD.

D. All excavated material shall be cast on the upslope side of the excavation to minimize sedimentation. No excavated material shall be stockpiled beyond the Limit of Disturbance (LOD) or in unauthorized locations.

E. All areas of disturbed soils which are impacted by construction, site work and related activities shall be temporarily stabilized throughout the site construction period. Soil stabilization may be achieved through appropriate temporary measures as described by the Rhode Island Soil Erosion and Sediment Control Handbook (as amended). Where the season is not conducive to the establishment of vegetative cover, other temporary measures shall be employed including the application of mulch and/or use of fiber rolls (erosion control blankets, etc.). Temporary erosion, runoff and sediment controls shall be employed and maintained until temporary or permanent vegetative cover can be achieved and/or site improvements such as approved buildings, roadways and parking areas are constructed resulting in a lack of exposed soil.

F. Stabilization of disturbed areas must, at a minimum, be initiated immediately whenever any clearing, grading, excavating or other earth disturbance activities have permanently ceased on any portion of the site, or temporarily ceased on any portion of the site and will not resume for a period exceeding 14 calendar days. Stabilization must be completed using vegetative stabilization measures or using alternative measures whenever vegetative measures are deemed impracticable or during periods of drought. All disturbed soils exposed prior to October 15th shall be seeded by that date. Any such areas which do not have adequate vegetative stabilization by November 15th must be stabilized

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through the use of non-vegetative erosion control measures. If work continues within any of these areas during the period from October 15th through April 15th, care must be taken to ensure that only the area required for that day's work is exposed, and all erodible soil must be restabilized within five (5) working days.

G. Construction sites must be inspected by or under the supervision of the owner and operator at least once every seven (7) calendar days and within 24 hours after any storm event which generates at least 0.25 inches of rainfall per 24 hour period and/or after a significant amount of runoff. If an inspection reveals a problem, the operator must initiate work to fix the problem immediately after discovering the problem, and complete such work by the close of the next work day, if the problem does not require significant repair or replacement, or if the problem can be corrected through routine maintenance.

H. The application or use of retaining walls, branch packing, brush layering, brush mattresses, fascines, live crib walls, live staking, and tree revetments, as described by the Rhode Island Soil Erosion and Sediment Control Handbook (as amended), shall not be utilized unless specifically detailed by the site plans approved by this CRMC Assent.

I. There shall be no discharge or disposal of toxic waste, hazardous materials, oil, grease and other lubricants, excess fertilizer, pesticides or other chemicals or controlled materials either on site or in any area which may enter a wetland, watercourse or groundwater. All spills of such materials shall be reported to the RI Department of Environmental Management for appropriate remediation. All used lubricants, excess chemicals, fertilizers, pesticides, etc., shall be removed from the site for transport, handling and disposal in accordance with all applicable state and federal regulations.

J. All excess excavated materials (soils, rock, gravel, etc.), excess construction materials, demolition debris, temporary erosion, runoff and sediment control measures, etc., shall be removed from the site for appropriate re-use and/or proper disposal at a suitable upland location or landfill. All toxic materials and waste shall be properly transported and disposed of in accordance with applicable state and federal regulations.

K. Upon the successful stabilization of exposed soils, all temporary (interim) erosion, runoff and sediment control measures as well as pollution prevention measures shall be appropriately decommissioned and removed from the site for re-use and/or for disposal at a suitable, legal upland location or landfill. All temporary sediment basins, sediment traps and channels, etc., shall be removed and/or restored in accordance with the approved site plans.

Building Stipulations

A. All pertinent requirements of the RI State Building Code as administered by the local building official shall be strictly adhered to.

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In Witness Whereof, said Coastal Resources Management Council has hereto set their hands and seal this **5th day of February in the year two-thousand-twenty-six**.

Laura Miguel, Deputy Director
Coastal Resources Management Council

/jla

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State of Rhode Island

COASTAL RESOURCES MANAGEMENT COUNCIL

NOTICE OF

ASSENT

CRMC Assent No.: A2025-10-028 Date: February 5, 2026

This certifies that **City of Pawtucket**

has permission to Construct and maintain public accessway from Pleasant/Division Streets to Taft Street, including stormwater management, restorative planting and earthwork, per the approved plans.

situated at 180 Pleasant Street/Division St/Taft St

Plat No. 50 Lot No. 887

Said construction operations to be done in accordance with an approved assent on file in the Offices of the Coastal Resources Management Council and subject further to all the provisions of the building ordinances of the:

City/Town of **Pawtucket**

and to all the applicable State, Local and Federal provisions. This assent shall expire three (3) years from the date of this assent.

Official Designee
Coastal Resources Management Council

THIS CARD MUST BE DISPLAYED IN A CONSPICUOUS PLACE ON THE PREMISES.
FAILURE TO DISPLAY WILL RESULT IN LEGAL ACTION.

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Appendix G

Technical Specifications Issued for Bid

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Appendix H

Plans Issued for Bid

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CITY OF PAWTUCKET
DEPARTMENT OF PLANNING AND REDEVELOPMENT

Pleasant Street
Public Stairway
Construction Phase

CITY OF PAWTUCKET, COUNTY OF PROVIDENCE
RHODE ISLAND

BID # 26-011

APPENDIX G
TECHNICAL SPECIFICATIONS
May 2026

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

Kevin Aguiar P.E.
BETA Group, Inc.

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APPENDIX G

PLEASANT STREET PUBLIC STAIRWAY TECHNICAL SPECIFICTIONS

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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 purpose is the construction of public access stairs to the City's Waterfront District. Proposed improvements include the Upper Plaza at Pleasant St., a Pedestrian Stairway, and Lower Plaza at Taft Street. Work includes, but is not necessarily limited to:

1. Coordination with ongoing City and Narragansett Bay Commission Projects in the immediate area for site access and construction sequencing
2. Removal of existing pavements, sidewalks, and raised areas.
3. Removal of rock ledge, boulders and misc. debris
4. Saw-cutting & removal of site features, excess soil, concrete, & pavements.
5. Excavation and hauling of excess soil and materials from the site.
6. Installation of site protection, temporary site fencing and erosion controls.
7. Installation of safety controls & signing for lane & sidewalk closures
8. Installation of sidewalk detours and protections.
9. Construction of cast-in-place concrete retaining walls and foundations
10. Construction of steel stairs and railing systems
11. Installation of loam, landscape plantings, grading, seeding
12. Installation of granite cut stone elements and bollards and railings
13. Installation of underground conduit, wiring and site lighting components
14. Installation of hot mix asphalt pavement, installation of curbing
15. Installation of cement concrete sidewalks and new wheelchair ramps
16. Installation of street and pavement markings
17. 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 on plans and specifications, 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

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. The site is on the corner of Pleasant Street and Division Street extending to Taft Street, to the west of Pawtucket Town Landing.

1.5 ENGINEER

BETA Group, Inc.
701 George Washington Highway
Lincoln, Rhode Island 02865
Telephone: 401-333-2382
Fax: 401-333-9225
Contacts: BETA Group Inc. Kevin Aguiar PE
BETA Group Inc. Benjamin Boynton PE, Project Manager

1.6 WORK SEQUENCE

A. In order that Work may be conducted with minimum inconvenience to the local residents and other stakeholders such as the Narragansett Bay Commission, Varier School and RIFC Stadium, work under this Contract shall be coordinated in regard to daily access and site operations and work 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 stakeholder needs in addition to the needs of the general public.

B. Work operations shall be sequenced in succession generally as follows:

1. Installation of Erosion Controls, Clearing and Grubbing

2. Rock Ledge Removal, Excavation
3. Cast in Place Concrete structures
4. Steel Stair Structures
5. Drainage System and Electrical Service Pedestal
6. Curb re-alignment, drainage system, plaza and sidewalk improvements
7. Landscape Plantings
8. New lighting, signage and pavement markings.

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 area indicated across from the site of the Pawtucket Town Landing.

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 may be allowed to use a portion of the City owned Taft St. on a temporary basis as well as to execute site improvements. 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 any materials, equipment and other objects within 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 to the private residences and on-street parking lot shall be kept operational at all times with the exceptions of parking spaces identified. Pleasant St. roadway 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 coordinated with and 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 values 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. R&D Unsuitable Materials
2. Allowance No. 2. R&D Boulders encountered
3. Allowance No. 3. R&D Foundations encountered
4. Allowance No. 4. Imported Clean Fill
5. Allowance No. 5. Permit Fees
6. Allowance No. 6. Police Details for Traffic Protection

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

1.1 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. Appendix G Technical Specifications
5. Appendix H Plans
6. Section 01020 - Allowances
7. Section 01026 - Schedule of Values

1.2 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.

1.3 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.

1.4 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.)

1.5 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.

1.6 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.

1.7 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.

1.8 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. Regular coordination with the Owner and Owner's Stakeholders identified by the Owner such as the Narragansett Bay Commission (NBC) their Contractors regarding the work sequence and operations of this project with that of other adjacent projects already under construction. Coordination shall proactively address anticipated work-flow, project schedule, hours of operation, site access locations, delivery schedule for equipment and materials, etc.

   c. Costs, exclusive of the cost of materials, for mobilizing all machinery, tools, and other equipment necessary to carry out and complete the work;

   d. Coordinating and scheduling the use of uniformed traffic persons including tracking or verifying hours worked by traffic persons;

   e. Requirements for and payment provisions for material testing and quality control testing are addressed under Section 01410 and Bid Allowances.

   f. Costs for demobilizing all machinery, plant, tools, and other equipment used to perform the work upon completion of the project;

   g. Costs for preparing, maintaining and updating the project schedule on a regular basis for submission to and approval by the Owner

h. Performance of final cleanup and any necessary restorations of site features within the project area, exclusive of specific restoration to be paid for under other items.

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 percentage 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, installation of erosion controls, clearing and grubbing, of vegetation, pruning of trees, saw-cutting of roadway and sidewalk pavement, removal and disposal of asphalt and concrete pavements, removal, salvage and stockpiling of items indicated as such,, the removal and stockpiling of all types of light fixtures, including terminating electrical wiring, removal and stockpiling of concrete barriers, landscape wall boulders, all types of railings and 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 NO. 3.0 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 protect the site such that the Contractor may conduct various site preparation work in advance of construction activities, complete in place, but not limited installation of temporary chain-link gates and fencing, protection of asphalt surfaces to remain.

2. Furnishing and installing, as well as moving and placing any and all traffic cones, plastic pipe barriers and drum barrels and related signage including moving and re-setting all temporary pedestrian and traffic control devices from their initial locations, all handling, maintaining, transporting, and relocating traffic control devices to storage areas or to subsequent intermediate locations, as well as any and all re-deployment of control devices to protect vehicles and pedestrians as jobsite conditions warrant over the duration of the project. .

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. Maintaining all erosion controls and site protections for the duration of the Project.

   b. Fabricating, furnishing, erecting, maintaining, removing and relocating the traffic management devices for the overall project, anticipated to be located on both Pleasant and Taft Street, complete-in-place, as show on the plans, or as directed by the Engineer and in coordination with the City;

   c. Providing additional traffic management devices to provide clear and visible vehicular, bicycle and pedestrian traffic controls and detours through the project area, also 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. 4.0 ROCK REMOVAL

A. METHOD OF MEASUREMENT

1. This quantity of this item shall not be measured separately but rather by an evaluation of the progression of work activities that comprise this item, determined as a percentage of the rock removal 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 for Rock Removal as follows:

2. Survey, layout and field delineation of areas of rock be removed.

3. Boring, drilling, cutting, hammering and controlled blasting of rock to be removed.

4. Excavation and removal of rock and ledge formations to the limits indicated on the Plans, and or to the extents determined and as directed in the field by the Owner's Representative.

5. All hammering, extracting, loading, hauling and legal disposal of rock extracted

6. No separate payment will be made for saw-cutting, de-densification, crushing hammering or re-sizing and handling of rock as required to conduct the work.

7. Other work, whether direct or incidental, associated with the excavation of rock materials to the limits shown and not specifically included for payment under other bid items shall be included herein.

BID ITEM 5.0 CIP CONCRETE WALLS - UPPER

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 percentage 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 6.0 CIP CONCRETE WALLS – LOWER

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 percentage 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 to construct all concrete walls including excavation, gravel borrow, backfilling, as well as compacting, 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 plan, as well as furnishing, installing, placing and finishing all cast-in-place concrete work and any adjoining pre-cast concrete elements, inclusive of any and all work considered incidental and not specifically identified, complete and accepted, in place.

2. This item shall include all work required to furnish and install Precast Concrete Stairs between the Lower Concrete Walls as shown on the plans.

BID ITEM 7.0 CONCRETE STAIR SUPPORT COLUMN

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 percentage of the work 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 any conduit, junction boxes, recessed panels, or raceways shown, as well as crushed stone base as shown on the plans. Furnishing, installing, placing and finishing all cast-in-place columns inclusive of any and all work considered incidental and not specifically identified, complete and accepted, in place.

2. The Schedule of Values for this item shall list and appropriately reflect the size and relative proportional values of the concrete support columns C-1 through C-7.

BID ITEM 8.0 STEEL STAIR LANDINGS

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 percentage of the work 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) any temporary supports, bracing, and all anchorage, attachments, all steel work including steel beams, support channel, grating, and any all incidentals for the stair landings as shown on the plans. Furnishing, installing, placing, anchoring and finishing all steel stair landings P-1 through P-7 inclusive of any and all related work considered incidental and not specifically identified, complete and accepted, in place.

BID ITEM 9.0 STEEL STAIRS

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 percentage of the work 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) supports, bracing, and all steel work including anchorage, and connections to landings, support channels, grating, nosings, closed tread risers, as shown on the plans. Furnishing, installing, placing and finishing all steel stair components elements, inclusive of any and all related work considered incidental and not specifically identified, complete and accepted, in place.

2. The Schedule of Values for this item shall list and appropriately reflect the size and relative proportional values of the steel stairs S-1 through S-7.

BID ITEM 10.0 RAILING SYSTEM – PEDESTRIAN RAIL - TYPE 1 - ON STAIRS & LANDINGS

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 percentage of the work 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, shop drawings, layout, equipment, materials and incidentals necessary to install the work including furnishing, constructing and installing (and removing) any temporary supports, bracing, and all steel work required to construct the pedestrian railings on stairs and landings as shown on the plans and specifications, including all posts, channels, rails, pickets, brackets, angles and related components and hardware required for fastening, as well as any and all related work considered incidental and not specifically identified, complete and accepted, in place.

BID ITEM 11.0 RAILING SYSTEM – PEDESTRIAN RAIL -TYPE 2 – ON CONCRETE

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 percentage of the work 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, shop drawings, layout, equipment, materials and incidentals necessary to install the work including furnishing, constructing and installing (and removing) any temporary supports, bracing, and all steel work required to construct the pedestrian railings on stairs and landings as shown on the plans and specifications, including all posts, channels, rails, pickets, brackets, angles and related components and hardware required for fastening, as well as any and all related work considered incidental and not specifically identified, complete and accepted, in place.

BID ITEM 12.0 HANDRAIL SYSTEM TYPE -1 MOUNTED TO PEDESTRIAN RAIL 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 percentage of the work 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, shop drawings, layout, equipment, materials and incidentals necessary to install the railings including furnishing, fabricating and finishing the item inclusive of any and all incidentals necessary to install the railing including installing (and removing) any temporary supports, bracing, and all finished steel work required to construct the handrail system (grabrails) as shown on the plans and specifications, with work to include all support brackets, anchors, tube steel, sleeves, any other railing provisions necessary to secure the railings and create a fully code compliant handrail system, inclusive of any and all work considered incidental to the railing system but not specifically identified, complete and accepted, in place.

2. Mounting and attaching Handrail System Type 1 to the Pedestrian Railing System Type 1, inclusive of all attachment hardware, all bolt assemblies, drilling, welding, finishing, passivating, setting, grouting and installing the railings as required and any and all related components shall be included in price paid for this system.

BID ITEM 13.0 HANDRAIL SYSTEM TYPE -2 MOUNTED ON CONCRETE

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 percentage of the work 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, shop drawings, layout, equipment, materials and incidentals necessary to install the railings including furnishing, fabricating and finishing the item inclusive of any and all incidentals necessary to install the railing including installing (and removing) any temporary supports, bracing, and all finished steel work required to construct the handrail system (grabrails) as shown on the plans and specifications, with work to include all support brackets, anchors, sleeves tube steel and other railing provisions necessary to secure the railings and create a fully code compliant handrail system, inclusive of any and all work not specifically identified, complete and accepted, in place.

2. Mounting the Handrail System Type 2 (All configurations) includes attachment to Railing System Type 2 as well to concrete walls and concrete stairs as shown on the plans and shall include all attachment hardware, bolt assemblies, drilling, welding, finishing, passivating, setting, grouting, and installing the railing as required, inclusive of all related components, and shall be included in price paid for this system.

BID ITEM 14.0 STORMWATER DRAINGE SYSTEM

A. METHOD OF MEASUREMENT

1. This quantity of this item shall not be measured separately but rather by an evaluation of the progression of work activities that comprise this item, determined as a percentage of the work completed 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 needed and as follows: The price for this item shall include full compensation for furnishing and installing all drainage structures shown including Trench Drain TD-1 with frame and bolt-down ADA-Compliant grates, as well was all connections necessary including pipes of any and all sizes and materials, as well as all sealants, cements, mortar, pipe fittings, and any associated excavation required to install all pipe and storm drainage structures, as well as setting pipes and structures, all backfilling, compacting, setting frame to the proper interim grade if so required as well as setting to finish grade, and installing structures, frames and grates, resulting in a complete and functional drainage system, inclusive of any and all incidentals required to install complete and accepted, in place.

BID ITEM 15.0 HMA PAVEMENT SYSTEMS & HMA ASPHALT BERM

A. METHOD OF MEASUREMENT

1. The quantity of this item shall not be measured separately but rather by an evaluation of the progression of work activities that comprise this item, determined as a percentage of the work completed 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 complete and accepted in place, including any and all base preparation, all liquid asphalt emulsion, all tack coats, bond breaker, as well as furnishing and installing all lifts or layers of pavement required, all cape cod berm and transitions including mechanical and hand compaction techniques, 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.

2. Trimming, Fine Grading and Compaction of base materials shall be considered incidental to the item and will not be measured separately for payment.

BID ITEM 16.0 GRANITE CURB

A. METHOD OF MEASUREMENT

1. This quantity of this item shall not be measured separately but rather by an evaluation of the progression of work activities that comprise this item, determined as a percentage of the work completed 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.

2. Trimming, fine grading and compaction of gravel base materials shall be considered incidental to the item and will not be measured separately for payment.

3. Any saw cutting, re-butting, re-aligning, re-setting of any adjacent curb as required to install new granite curbing shall be considered incidental to the item.

BID ITEM 17.0 CEMENT CONCRETE WALKWAYS – ALL TYPES

A. METHOD OF MEASUREMENT

1. The quantity of this item shall not be measured separately but rather by an evaluation of the progression of work activities that comprise this item, determined as a percentage of the work completed 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 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.

2. Trimming, fine grading and compaction of gravel base materials shall be considered incidental to the item and will not be measured separately for payment.

3. Where shown, ADA compliant Detectable Warning Panels shall be considered incidental to this item.

BID ITEM 18.0 GRANITE BLOCK SEAT WALL

A. METHOD OF MEASUREMENT

1. The quantity of this item shall not be measured separately but rather by an evaluation of the progression of work activities that comprise this item, determined as a percentage of the work completed 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 furnish and install granite seat blocks including all lay out, furnishing base, as well as the lay-out cutting, setting, joining and related work required for installing all brick pavers as shown on the plans, including all work considered incidental and not specifically identified herein, complete and accepted in place.

2. Trimming, fine grading and compaction of gravel base materials shall be considered incidental to the item and will not be measured or paid for separately.

BID ITEM 19.0 SITE AMENITES

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 percentage installed, complete and accepted, in place.

2. Bollard all configurations.

3. Chain-link fencing of all types is included under this item.

4. Signs of all types are included under this item.

5. Skate Stops are included under this item.

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 signage and chain-link fence including any and all base materials, footings, posts and and associated installation hardware, including any and all work considered incidental and not specifically identified herein, complete and accepted in place.

2. Trimming, fine grading and compaction of gravel base materials shall be considered incidental to the item and will not be measured or paid for separately.

BID ITEM 20.0 SITE LIGHTING – ALL TYPES

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 percentage of the work installed, complete and accepted in place.

B. BASIS OF PAYMENT

1. The Lump Sum unit price paid shall include compensation for all labor, equipment, materials, and all incidentals necessary to furnish and install all lighting indicated, including Lights Type 1, Type 2, Type 3, as shown on the Plans and in the 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, conduit, anchor bolts, fittings, wiring, grounding, wiring connections, lamps, assembly and installation, and testing and all incidentals required to finish the work, complete in place and accepted by the Engineer.

2. The Schedule of Values for the Site Lighting shall show pricing for each light type and the quantity of each light type represented.

BID ITEM 21.0 ELECTRICAL SERVICE CABINET & PANEL

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 percentage 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 equipment and 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.

2. All enclosures, panels, all types of connectors, lugs, fasteners, fuse and required connections.

3. Work shall include all excavation, furnishing and installing all base materials, grading, compacting, furnishing, forming and placing all reinforcing and placing and finishing all concrete required to support electrical service cabinet

4. Permit fees for the Electrical Service shall be paid under Allowances No. 1 Permit Fees.

BID ITEM 22.0 ELECTRICAL EQUIPMENT, CONDUIT & WIRING – SITE

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 percentage 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 equipment and 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.

2. Work includes all excavation, trenching, backfilling and related earthwork necessary to install the conduits shown.

3. Work includes all types of conduit, grounding equipment, wiring, connectors, handholes, accessories, lugs, fasteners, connectors etc. as required to provide a fully functional system.

BID ITEM 23.0 ELECTRICAL EQUIPMENT, CONDUIT & WIRING – STAIRS

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 percentage 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 equipment and components necessary to support the proposed stair lighting, 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.

2. Work includes all layout, drilling, cutting setting all types of conduit, all anchors, hangers, all wiring, connectors, handholes, pull boxes, junction boxes, accessories, lugs, fasteners, connectors etc. as required to complete the Work and provide a functional system.

3. Work includes all excavation, trenching, backfilling and related earthwork necessary to install the conduits, pole foundations, and bases shown.

BID ITEM 24 .0 AREA 1 (Upper 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:

2. Furnishing and Installing loam in areas noted for seeding and in areas to receive trees and shrubs.
3. Trimming & Fine Grading shall be considered incidental to the item and will not be measured separately for payment.
4. Layout of plant bed area.
5. Excavation of plant bed areas.
6. Removal and legal disposal of material generated from excavation.
7. Furnishing all plant material and lay out of all plant material for approval, making necessary adjustments to layout, as directed.
8. Installing plant material and loam soil backfilling, watering, and mulching.
9. Care and establishment of plants in plant bed identified.
10. Planting of plant bed shall be conducted efficiently and completely.
11. Seeding and grass establishment

BID ITEM 25.0 AREA 2 (LOWER 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:
2. Furnishing and Installing loam in areas noted for seeding and in areas to receive trees and shrubs.
3. Trimming & Fine Grading shall be considered incidental to the item and will not be measured separately for payment
4. Layout of plant bed area.
5. Excavation of plant bed areas.
6. Removal and legal disposal of material generated from excavation.
7. Furnishing all plant material and lay out of all plant material for approval, making necessary adjustments to layout, as directed.
8. Installing plant material and loam soil backfilling, watering, and mulching.
9. Care and establishment of plants in plant bed identified.
10. Planting of plant bed shall be conducted efficiently and completely.
11. Seeding and Grass establishment.

BID ITEM 26.0 EMBANKMENT 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 planting area indicated, including:
2. Furnishing and Installing loam in areas noted for seeding and in areas to receive trees and shrubs.
3. Trimming & Fine Grading shall be considered incidental to the item and will not be measured separately for payment.
4. Layout of plants.
5. Excavation of plant bed areas.
6. Removal and legal disposal of rubble, rock, debris, soil, any and all misc. material generated from excavation.
7. Furnishing all plant material and lay out of all plant material for approval, making necessary adjustments to layout, as directed.
8. Installing plant material and loam soil, backfilling, watering, and mulching.
9. Care and establishment of plants in plant bed identified.
10. Planting of plant bed shall be conducted efficiently and completely.
11. Seeding and grass establishment.

BID ITEM 27.0 YELLOW AND WHITE PAVEMENT MARKINGS

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 percentage installed, complete and accepted, in place.

B. BASIS OF PAYMENT

1. The Lump Sum price shall include compensation for all labor, equipment, materials, and incidentals necessary for field lay-out, templating, furnishing, priming, painting and any finishing or similar related work to install and complete the markings including all work considered incidental and not specifically identified herein, complete and accepted in place.

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 shall be submitted under Section 01300 – Submittals. All materials 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 or Field Order, 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 the Contractor 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 on-site work operations schedule with operations of nearby ongoing construction projects including Narragansett Bay Commission work on Taft St.

C. Coordinate site deliveries with operations of nearby ongoing construction projects including Narragansett Bay Commission work on Taft St.

D. Coordinate work with all utility companies as well as the City as necessary for completion of work under this contract.

E. Coordinate any utility work in the Taft St. and Pleasant St. ROW with the operations of nearby on-going construction projects including Narragansett Bay Commission work on Taft St.

F. Coordinate work operations to minimize disruption of vehicular traffic on the adjacent streets as well as pedestrian foot traffic on the sidewalks and crosswalks.

G. Coordinate sidewalk closures with the Owner. Sidewalks and Crosswalks must be left in a functional and safe condition at the end of each workday or clearly marked pedestrian detours shall be established. Notify the Owner’s Representative of all planned sidewalk closures one (1) week in advance of the proposed work activity for Owner review and concurrence.

H. Coordinate planned construction operations and related site access with the Owner in a manner that does not disproportionately disrupt nearby schools or residences adjacent site. Utilize caution with all operations and secure the site perimeter daily to restrict public access.

I. Coordinate completion and cleanup of Work in preparation for Substantial Completion.

J. After Owner occupancy of premises, if determined necessary, coordinate with the Owner for access to site for correction of defective Work. Work not in accordance with Contract Documents, to minimize disruption of Owner's activities.

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 including but not limited to all concrete columns, piers, walls and stairs, and the establishment of lines and grades within the project limits.

B. Establish elevations, lines, levels, reference marks, batter boards, local benchmarks, etc., as 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. Notify the Engineer /Owner's Representative of any discrepancies.

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

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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. Electrical Permit – City of Pawtucket
3. Building Permit – City of Pawtucket
4. 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. CRMC Assent #A2025-10-028 Issued 02/05/2026

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:

1. All Federal, State and Municipal Laws
2. Rhode Island State Building Codes, National Building Code Regulation SBC-1
3. Rhode Island State Building Codes, Electrical Code Regulation SBC-5
4. Any prevailing rules and regulations pertaining to adequate protection and/or guarding of any moving parts or otherwise hazardous locations.

1.5 FEES

A. The cost of all permits to be 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

A. SECTION INCLUDES

1. RHODE ISLAND SALES AND USE TAX
2. HISTORICAL ARTICLES
3. PREVAILING MINIMUM WAGE RATES
4. EXCERPTS FROM RHODE ISLAND LAWS
5. REQUIREMENTS FOR MINORITY BUSINESS ENTERPRISE, EQUAL OPPORTUNITY AND NONDISCRIMINATION

B. 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 statues 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.
Title, Chapter, Section EXCERPT

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 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 of 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 condition's 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 condition's 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 against 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.
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 16th 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 47th Street
New York, NY 10017

ASHRAEAmerican 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 15th 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

StI. WG U.S. Steel Wire Washburn and Moen, American Steel and Wire
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

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, product and manufacturers' data, 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 performed.

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. The Owner will conduct testing for purposes of verifying conformance of the Work.

B. Re-Testing

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 in regard to scheduling and the cost of the testing 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 for 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.

C. 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. The Contractor shall comply with pertinent provisions of Section 01600 - Materials and Equipment.

B. The Contractor shall promptly process and distribute, to the Engineer, required copies of test reports and instructions received to ensure 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 analyses 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 is 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 Hydocarbons (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.
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 manufacturers 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.

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.

C. Equip air compressors with Silencers and power equipment with mufflers.

D. 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.

B. No soil, sediment, debris or rubbish of waste matter of any kind will be allowed to discharge into the river.

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. 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 due to construction impacts over a 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

A. 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.

1. 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.
2. 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

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 any 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 City.

PART 3 - EXECUTION

3.1 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.

3.2 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.

3.3 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.

3.4 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.

3.5 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

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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 conditions 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 ensure 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 qualified people 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 Contract or 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

1.1 SECTION INCLUDES

A. General administrative and procedural requirements for warranties required by the Contract Documents, including manufacturers' standard warranties on products and special warranties.

1.2 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.

1.3 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 that are 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.

1.4 DEFINITIONS

A. Standard Product Warranties are preprinted with 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

A. SECTION INCLUDES

B. 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 it 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

1.1 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, roadways 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.

1.2 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

1.3 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.

1.4 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.

1.5 TESTING

A. Not Used.

1.6 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.

E. 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 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

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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

B. Install erosion and sediment controls prior to starting the Work.

C. 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.

B. 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 larger trees. Saplings, brush, and vines shall be cut off close to the ground.

C. 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 02160

EXCAVATION SUPPORT

PART 1 - GENERAL

1.1 DESCRIPTION

A. The Contractor shall properly design and furnish all labor and materials necessary and shall construct complete, all sheeting, bracing supports, and appurtenances required to perform the Work including sheet piling for construction of structures and buildings, trench support and cofferdams, permanent and temporary alike, as indicated on the Drawings and specified or as otherwise directed by the Engineer or required by agencies having jurisdiction over the Work.

B. Wood timber or steel sheeting shall be used except where otherwise indicated, specified or directed by the Engineer and agencies having jurisdiction over the work.

1.2 DESIGN RESPONSIBILITY

A. The Contractor shall be fully responsible for providing complete and adequately designed sheeting as required and/or directed by the Engineer in accordance with the provisions set forth herein. The sheeting shall be designed to resist hydrostatic pressures in accordance with the Contractor’s dewatering design.

B. The Contractor shall engage, at his own expense, the services of a fully competent and qualified Professional Engineer, hereinafter referred to as the "Contractor's Engineer", registered in the State in which the Work is being constructed, for the design of all sheeting requirements to accomplish the Work specified, and for supervising the proper on-site installation associated therewith. The Contractor's Engineer shall be acceptable to the Engineer and demonstrate a minimum of ten (10) years documented experience in the field of sheeting design and implementation. Prior to the actual employment of the Contractor's Engineer, the Contractor shall submit to the Engineer, to the full extent deemed necessary, a detailed resume stating the Contractor's Engineer's professional qualifications, related experience and references, and if requested, examples of work similar to that required for the Work specified, for a general review by the Engineer and a means of documenting the requisite experience hereinbefore specified. Only after a satisfactory review of the Contractor's Engineer's overall qualifications by the Engineer in fulfillment of the requisite experience hereinbefore specified shall the Contractor finalize such employment and begin the design aspects of the Work.

C. The Contractor's attention is directed to the fact the acceptance of the Contractor's Engineer and/or his/her qualifications by the Owner and/or Engineer shall not be an overall approval of the Contractor's Engineer nor the sheeting designs and methods of installation employed during the Work. It being understood that all sheeting requirements necessary to accomplish the Work specified and/or indicated on the Drawings shall be designed by and installed under the direct supervision of the Contractor's Engineer who shall ultimately and fully bear the responsibility for that Work.

1.3 QUALITY ASSURANCE

A. The Contractor's Engineer shall provide and maintain throughout the sheeting installation and/or Work sufficient supervision and technical guidance to the Contractor for proper sheeting materials, equipment, operations and methods to the extent necessary to assure strict compliance with the Contractor's Engineer's design, all safety procedures and standard requirements for such Work, and the successful completion of the Work. Failure to provide and/or maintain such supervision and/or technical guidance during the Work shall in no way relieve the Contractor's Engineer and/or the Contractor from their overall responsibilities and obligations under the Contract, nor shall it be a basis for any claim by either against the Owner and/or Engineer.

B. The Contractor and Contractor's Engineer shall fully indemnify and save harmless the Owner and Engineer and their agents, employees and representatives, from and against any and all claims as stipulated under the Agreement, whether directly or indirectly arising out of, relating to or in connection with the Work.

C. Quality assurances and proper safety procedures must be maintained at all times and be in strict accordance with the Contractor's Engineer's requirements and consistent with all federal, state and local regulatory agencies having jurisdiction over the Work. Should any conflict in requirements, regulations, restrictions or codes exist between that which is specified by the Contractor's Engineer and any federal, state or local agency, the more stringent application shall prevail.

1.4 PRODUCTS AND DESIGN CRITERIA

A. The overall sheeting design, quality of materials and methods of installation for all sheeting applications necessary to accomplish the Work specified shall be consistent with the established standards of the construction industry and must, as a minimum, comply with the requirements for earth support systems for excavations as defined by current US Department of Labor, Occupational Safety and Health Act (OSHA) regulation applicable thereto, and any other federal, state and local agencies having jurisdiction and/or requirements pertaining thereto including Building Code requirements for the State in which the work is being performed. The design and implementation thereof shall be in accordance with sound engineering practice and modern accepted principles of soil mechanics and shall include the effects of hydrostatic forces and all surcharge loads which may be reasonably anticipated. The methods employed shall be to the extent necessary to permit the proper and satisfactory installation and construction of the Work specified; to withstand all loads and forces encountered; to provide soil restraint and control of water as required; to insure the safety of the workers and all other personnel on or near the site; to prevent injurious caving or erosion, or loss of ground; to maintain at all times proper and safe pedestrian, vehicular traffic on public and private streets, property and rights-of-way; and to stabilize unforeseen areas of work encountered during the execution of the Work as deemed necessary by the Owner and/or Engineer.

B. The Contractor and Contractor's Engineer's attention is directed to the fact that should any additional investigations, subsurface explorations and/or other appurtenant information be required to fulfill the needs of this design, as determined by the Contractor's Engineer above and beyond that which is already provided under these Contract Documents, the Contractor shall obtain all such information and data required at his own expense.

1.5 SHOP DRAWINGS AND/OR DESCRIPTIVE LITERATURE

A. Prior to the installation of any sheeting, the Contractor shall submit to the Engineer for documentation ONLY, complete sheeting layout and detail drawings and sheeting descriptions bearing the Contractor's Engineer's State of [Connecticut] [Massachusetts] [Rhode Island] Professional Seal and signature. Said submission shall be for informational purposes only as a means of documenting the work to be performed and will not be considered an approval or disapproval of the design and/or the implementation thereof. This submission will not relieve the Contractor of the sole responsibility for the adequacy of the system, nor shall it be construed as an approval or guarantee that the Contractor's proposed equipment, materials and methods for the sheeting, bracing or appurtenances will be adequate for the work required at the locations of and for the Work required by this Contract.

B. Included as part of this submission, the Contractor's Engineer must provide a complete listing of all references, codes and specifications used by the Contractor's Engineer and required by any federal, state or local agency having jurisdiction, and to which the sheeting design conforms.

C. Specific design calculations are not to be submitted to the Engineer. In the event design calculations are submitted to the Engineer, they shall be returned to the Contractor without review nor checking by the Engineer.

1.6 CERTIFICATE OF DESIGN

A. The Contractor's special attention is directed to the required "Certificate of Design", the form of which is provided at the end of this Section. The Contractor and Contractor's Engineer shall complete this "Certificate" in its entirety for each location of work to be done, and any revisions associated there with, and submit it simultaneously with, as an integral part thereof, the sheeting submission. Any submission made without the completed "Certificate", appropriately signed and sealed, shall be returned to the Contractor. The Owner and/or Engineer hereby reserves the right to delay sheeting work and/or any work associated with, or dependent upon, the proper implementation of sheeting, without cause for claim against the Owner or Engineer, until a complete and appropriate submission is rendered. This Certification shall indicate that the sheeting, bracing and all appurtenances related thereto are designed to withstand the required loads, forces to be encountered, and to provide soil and water control, and are in compliance with these specifications and all federal, state or local agencies having jurisdiction over the Work to be performed.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Timber sheeting and bracing:

1. Timber sheeting and bracing may be of any species of wood which will satisfactorily withstand all driving and construction stresses and the loads to which the members will be subjected. Sheeting shall not be less than 3 inches nominal thickness and shall be provided with continuous interlocks. All timber sheeting and bracing shall be free from worm-holes, windshakes, loose knots, decayed or unsound portions or other defects which might impair its strength or tightness.

B. Steel sheeting:

1. The shapes, sizes, and lengths of steel sheeting to be utilized are optional with the Contractor, providing they are satisfactory to withstand all driving and construction stresses and provided with continuous interlocks.

C. Bracing, Hardware and Fastenings:

1. Bracing and other supports whether of steel or of timber, shall be of the strength and dimensions necessary to satisfactorily withstand the loads to which they will be subjected. All bracing and other supports shall be free from any defects which might impair this strength. The Contractor shall provide all necessary hardware and fastenings necessary in connections with satisfactory installation of all sheeting and bracing.

PART 3 - EXECUTION

3.1 INSTALLATION

A. The Contractor shall be fully responsible for ensuring adequate safety measures are provided at all times and shall comply with all safety requirements of federal, state and local agencies having jurisdiction over the Work. Installation of the sheeting including all bracing, supports and appurtenances, shall be adequate to permit the performance of the Work and be in accordance with the requirements of the Contractor's Engineer and the sheeting design associated therewith.

B. Any movements of sheeting and/or appurtenances which prevent the proper completion of the work shall be corrected at the expense of the Contractor.

C. Sheeting shall be installed in a manner which will prevent the disturbance of the surrounding surface, subsurface conditions and/or structures. Any such disturbances shall be corrected at the Contractor's expense and to the satisfaction of the Engineer.

3.2 REMOVAL

A. No sheeting shall be removed except with specific written approval by the Engineer.

B. Sheeting shall be cut-off as directed by the Engineer.

C. All sheeting shall be removed except as shown on the Contract Drawings or directed by the Engineer.

D. All sheeting approved for removal by the Engineer shall become the property of the Contractor.

E. All restoration and clean up shall be as indicated and as specified.

Sheet 1 of 3
CERTIFICATE OF DESIGN

_____(Owner)

Contract Reference:_____

_____, dated _____.

In accordance with the provisions of the above referenced Contract, as the designated Contractor,

_____

_____
(Contractor's Name and Address)

hereby certifies that _____

_____
(Contractor's Engineer's Name and Address)

(1) Is properly licensed and currently registered as a Professional Engineer in the State (or Commonwealth) of _____;

(2) Is fully qualified to design and supervise the _____

_____
(Item of work and location)

In accordance with the provision specified under the appropriate Section and/or Subsections of the Contract Documents:

(3) Has successfully designed and supervised _____

_____
(Item of work)

before and demonstrates a minimum of ten (10) documented years of proven experience in such field;

(4) Has personally examined the type(s) and locations(s) of the Work required under this Contract, and the overall conditions associated therewith, to the extent necessary to fully satisfy his or her professional responsibilities for designing and supervising the above referenced work;

(5) Has prepared the attached design in full compliance with the applications and requirements of the Contract Documents, sound engineering practice, modern accepted principles of construction, and all applicable federal, state and local laws, regulations, rules and codes having jurisdiction over the Work;

(6) Will provide sufficient supervision and technical guidance to the Contractor throughout the Work to ensure compliance with the design and all quality assurances necessary to successfully complete the Work;

(7) Hereby indemnifies and holds harmless the_____

and BETA Group, Inc.,
(name of owner)

and their agents, employees and representatives, from and against any and all claims, whether directly or indirectly, arising out of, relating to or in connection with the Work; and

(8) This "Certificate of Design" together with all applicable designs, drawings, details, specifications on other related documents necessary to complete the Work as specified, have been signed and sealed pursuant to applicable state law.

In recognition and observance of the above referenced statements, the undersigned parties hereby acknowledge and accept the responsibilities and obligations associated therewith.

contractor:	Contractor's engineer:
_____	_____
(Contractor's Name)	(Engineer's Name)
_____	_____
By: _____	By: _____
_____	_____
(Name and Title)	(Name and Title)
Date: _____	Date: _____

(SEAL) (P.E. STAMP)

(Note: Contractor to fully reference all attachments below)

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SECTION 02200

EARTH EXCAVATION, BACKFILL, FILL AND GRADING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes

1. Requirements for excavating in earth for trenches and structures; backfilling excavations; furnishing necessary material; compaction; constructing embankments and fill miscellaneous earth excavations and miscellaneous grading.

B. Related Sections

1. Section 01025 - Measurement and Payment
2. Section 01410 - Testing Laboratory Services
3. Section 02160 – Excavation Support
4. Section 02215 - Aggregate Materials
5. Section 03300 - Cast-In-Place Concrete

1.2 REFERENCES

A. 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/ft3 (2,700 kN-m/m3)).

1.3 MEASUREMENT AND PAYMENT PROCEDURES

A. Sheeting

1. As specified in SECTION 01025, Contractor paid only for certain sheeting left in place.

B. Test Pits

1. Where determination of the exact location of pipe or other underground structure 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 as specified in SECTION 01025.

1.4 QUALITY ASSURANCE

A. Field Samples

1. Provide samples of materials as requested by the Engineer, to the Quality Control Engineer hired by the Owner, prior to delivery of materials on site, in order to facilitate field testing of compaction operations and material properties.

1.5 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.

1.6 MAINTENANCE

A. Maintain all work in accordance with SECTION 01800.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Suitable Aggregate

1. The nature of materials will govern both acceptability for backfill and methods best suited for placement and compaction.
2. All material whether from excavations or from borrow pits, after being placed and properly compact, will make a dense stable fill and containing no vegetation, masses of roots, individual roots more than 18 inches long, or more than 1/2 inch in diameter, stones over 6 inches in diameter, or porous matter.
3. Organic matter to be well distributed and not to exceed minor quantities.

B. Trench and Excavation Backfill

1. In general, and unless other material is indicated on drawings or specified, material used for backfilling trenches and excavations shall be suitable material which was removed in the course of making the construction excavations. If sufficient suitable material is not available from the excavations, the backfill material shall be crushed stone, gravel borrow or select borrow as directed by the Engineer, in according to respective Specification Sections.

C. Structure Backfill

1. Unless otherwise indicated or specified, all fill and backfill under structures and pavement adjacent to structures shall be compacted gravel borrow containing not more than 10 percent material passing a 200 sieve. When coarse aggregate and fine aggregate are indicated or specified for use under structures, they shall conform to the requirements for coarse and fine aggregate specified in SECTION 03300.

D. Filling and Embankment Backfill

1. Suitable selected materials available from the excavations and not required for backfill around pipes or against structures may be used for filling and building embankments, except as otherwise specified. Material needed in addition to that available from construction

operations shall be obtained from suitable gravel banks or other suitable deposits. The Contractor shall furnish, at his own expense, all borrow material needed on the work.

E. Additional materials

1. Concrete: In accordance with SECTION 03300.
2. Crushed stone: In accordance with SECTION 02215.
3. Gravel borrow: In accordance with SECTION 02215.
4. Select borrow: In accordance with SECTION 02215.

2.2 EQUIPMENT

A. Well Points

1. Designed to drain soil and prevent saturated soil from flowing into excavation.

B. Pumping Units

1. Designed for use with the wellpoints, capable of maintaining a high vacuum and handling large volumes of air and water at the same time.

C. Underdrain Pipe

1. HDPE pipe enclosed in crushed stone encased in filter fabric.
2. Sewer pipe of quality know as "seconds".

2.3 SOURCE QUALITY CONTROL

A. Provide Engineer with access to location of off-site sources of materials.

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 with substantial wooden boxes of 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 and neat without splitting or crushing.
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 by suitable means 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 injure paved surfaces.
2. All surfaces which have been injured 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. Pavement Removal

1. Remove only existing pavement as necessary for the prosecution of the work.
2. Engineer may require that pavement be cut with pneumatic tools or saws without extra compensation to Contractor, where in the opinion of the Engineer it is necessary to prevent damage to the remaining road surface.
3. Dispose large pieces of broken pavement before proceeding with excavation.

B. 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; or, if the Contractor prefers not to separate surface materials, he shall furnish, as directed, loam and topsoil at least equal in quantity and quality to that excavated.

C. Subgrade

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.

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 which 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 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 which 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.

3.5 SHEETING AND BRACING

A. Provide in accordance with specification Section 02160.

3.6 DEWATERING

A. Ensure proper conditions at all times during construction, provide and maintain ample means and devices (including spare units kept ready for immediate use in case of breakdowns) 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.

B. Disposed 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.

C. 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.

D. Underdrains

1. Temporary underdrains, if used, shall be laid in trenches beneath the grade of the structure. 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 with open joints wrapped in cheesecloth or filter fabric approved by the Engineer, and entirely surrounded by graded gravel, or crushed stone 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 in. unless otherwise permitted. The space between the underdrain and the pipe or structure shall be filled with graded gravel or crushed stone which shall be rammed if necessary and left with a surface suitable for laying the pipe or building the structure.

E. Drainage Wellpoint System

1. 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.

3.7 EXCAVATION

A. Execute operation of dewatering, sheeting and bracing without undermining or disturbing foundations of existing structures or of work previously completed under this contract.

B. Excavate to widths that provide suitable room for:

1. Building structures or laying and jointing piping.
2. Placing all sheeting, bracing, and supports.
3. Cofferdamming, pumping and draining.

C. Render bottom of excavations firm, dry and acceptable in all respects.

D. Do not plow, scrap 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.

E. Make all excavations open, except as otherwise specified or permitted.

F. Excavation Near Existing Facilities

1. 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.

G. 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, if the excavation was for a pipeline, or with Class B concrete, if the excavation was for a masonry structure.

H. 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, crushed stone, gravel borrow, fine aggregate or concrete as directed.

3.8 TRENCHING

A. Trench Excavation

1. Where pipe is to be laid in specified bedding material 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.

2. Excavate trenches with approximately vertical sides between the elevation of the center of the pipe and an elevation 1 ft. above the top of the pipe.

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 ft. 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.

3.9 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 layers not exceeding 6 in. in thickness. Unless otherwise indicated or specified, each layer shall be compacted to 95 percent in accordance with ASTM D1557.

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 ft. 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 90 percent in accordance with ASTM D1557 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 12 in. in greatest dimension 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 ft. 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 90 percent by tamping.

5. Remainder of Trench

a. Compact by water-jetting, or tamping, in accordance with the nature of the material to 95 percent in accordance with ASTM D1557. Water-jetting may be used wherever the material does not contain so much clay or loam as to delay or prevent satisfactory drainage. However, tamping shall be used if water-jetting does not compact the material to the density required.

6. Excavated material which is acceptable to the Engineer for surfacing or pavement subbase 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. 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. Layers shall not exceed 12 in. 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 in accordance with ASTM D1557. The top 2 ft. of an embankment below a pavement base shall be compacted to 95 percent. All other embankments shall be compacted to 90 percent in accordance with ASTM D1557.

3.10 METHODS OF COMPACTION

A. Water-Jetting

1. Saturate backfill material throughout its full depth and at frequent intervals across and along the trench until all slumping ceases.

2. Furnish one or more jet pipes, each of sufficient length to reach the specified depth and of sufficient diameter (not less than 1-1/4 in.) to supply an adequate flow of water to compact the material.

3. Equip jet pipe with a quick-acting valve, supply water through a fire hose from a hydrant or a pump having adequate pressure and capacity to achieve the required results.

B. Tamping and Rolling

1. Deposit backfill material and spread in uniform, parallel layers not exceeding 8 in. thick before compaction. Before the next layer is placed, each layer shall be tamped to obtain a thoroughly compacted mass. Care shall be taken that the material close to the bank, as well as in all other portions of the trench, is thoroughly compacted. When the trench width and the depth to which backfill has been placed are sufficient to make it feasible, and it can be done effectively and without damage to the pipe, backfill may, on approval, be compacted by the use of suitable rollers, tractors, or similar power equipment instead of by tamping. For compaction by tamping (or rolling), the rate at which backfilling material is deposited in the trench shall not exceed that permitted by the facilities for its spreading, leveling, and compacting.
2. If necessary to ensure proper compaction by tamping (or rolling), the backfill material shall first be wet by sprinkling. However, no compaction by tamping (or rolling) shall be done when the material is too wet either from rain or too great an application of water to be compacted properly; at such times the work shall be suspended until the previously placed and new materials have dried out sufficiently to permit proper compacting, or such other precautions shall be taken as may be necessary to obtain proper compaction.

C. Miscellaneous Requirements.

1. Whatever method of compacting backfill is used, care shall be taken that stones and lumps shall not become nested and that all voids between stones shall be completely filled with fine material. Only suitable quantities of stones and rock fragments shall be used in the backfill; the Contractor shall, as part of the work done under the items involving earth excavation and rock excavation as appropriate, furnish and place all other necessary backfill material.
2. All voids left by the removal of sheeting shall be completely backfilled with suitable materials, and thoroughly compacted.

3.11 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.

B. Surplus excavated materials suitable for backfill shall be used to backfill normal excavations in rock or to replace other materials unacceptable for use as backfill; shall be neatly deposited and graded so as to make or widen fills, flatten side slopes, or fill depressions; or shall be neatly deposited for other purposes within a haul of 1 mile from the point of excavation; all as directed or permitted and without additional compensation.

C. Surplus excavated materials not needed as specified above shall be hauled away and dumped by the Contractor, at his expense, at appropriate locations, and in accordance with arrangements made by him.

3.12 DISPOSAL OF SPECIAL WASTES

A. The Contractor's attention is directed to the requirements set forth by the State of Rhode Island, Department of Environmental Management, (RIDEM) regarding "Special Hazardous Wastes" and the proper disposal thereof. All waste materials and debris, as designated by the Owner and/or Engineer, including but not limited to any sewers, storm drains, catch basins, and combined system pipelines and associated structures, or any portions thereof, including but not limited to sludge, grit, sediment, dirt, sand, rock, grease, roots and other liquid, solid or semi-solid materials

contained therein, shall be considered "Type 5 - Rhode Island Special Hazardous Waste (005)" In addition, any excavated soils contaminated in any manner, as designated by the Owner and/or Engineer, shall also fall under this category and shall be handled the same. When so encountered, all such materials and debris shall be removed to the extent so ordered by the Engineer and properly disposed of in strict compliance with the requirements of the RIDEM, Division of Waste Management, Rules and Regulations for Hazardous Waste Management, amended 4/19/92. and other regulating authorities to an approved and certified waste disposal site. It shall remain the sole responsibility of the Contractor to apply for and obtain all required permits, bonds and/or insurance relative to such disposal. The Contractor shall also pay all costs associated with the disposal, required permits, bonds and insurance with no additional expense to the Owner. All handling of such "Special Hazardous Waste" shall be done in strict compliance with the RIDEM requirements and/or any other federal, state or local agency having jurisdiction or authority over the same. Under no circumstances shall sewage, solids or other "Special Hazardous Wastes" removed from the sewer lines be dumped or spilled onto the streets or into ditches, catch basins or storm drains. The Contractor must use watertight and State approved vehicles in transporting any wastes as hereinbefore designated.

B. The Contractor shall indemnify and save harmless the Owner and Engineer and all persons acting for or on behalf of the Owner and Engineer from all claims and liability of any nature or kind, and all damages, costs and expenses, including attorney's fees and penalties, arising from the improper handling, transportation or disposal of "Special Hazardous Wastes" as determined by the RIDEM and/or any other federal, state or local agency having jurisdiction or authority over the same.

3.13 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.

3.14 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.

3.15 FIELD QUALITY CONTROL

A. Site Tests

1. In accordance with SECTION 01410

3.16 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.

END OF SECTION

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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 00500-Agreement
2. Section 00800- Supplementary Conditions
3. Section 02200-Earth Excavation, Backfill, Fill and Grading

1.2 DEFINITIONS

A. Rock-as defined in SECTION 00500.

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. 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 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 SHATTERING ROCK

A. Shattering rock at ends of pipe and elsewhere as indicated on the drawings, shall be done by mechanical methods. Shattering shall be completed before any pipe or fitting is placed within 50 ft. of rock to be shattered.

3.3 SHATTERED ROCK

A. If the rock below normal depth is shattered due to rock removal 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.

3.4 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.

3.5 REMOVAL OF BOULDERS

A. Remove piles of boulders and loose rock encountered within the limits of earth embankments and dispose in a suitable place.

3.6 DISPOSAL OF EXCAVATED ROCK

A. 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 in. of the surface of the finish grade.

B. Surplus excavated rock shall be disposed of as specified for surplus excavated material as specified in SECTION 02200.

3.7 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

1.1 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 generating 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.
6. Section 02200 - Earth Excavation, Backfill and Grading
7. Section 02370 - Stormwater Pollution Prevention

1.2 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.

1.3 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.

1.4 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.

1.5 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.

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

2.1 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.

2.2 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

3.1 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.

3.2 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.

3.3 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.

3.4 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 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.

3.5 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.

3.6 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.

3.7 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 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.

3.8 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 re-commencing 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.

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.

1. The Contractor shall perform analyses on stockpiles or in situ as necessary to fulfill any disposal testing requirements of the approved facilities.

2. The Contractor shall perform sampling and analyses for those tests required by the facilities in excess of those previously performed by the Engineer.
3. 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.
4. The Contractor shall provide disposal facility letters of final waste acceptance, addressed to RIDEM, based on the stockpile or in situ sample analysis.

K. The Contractor shall provide 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.

L. 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

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SECTION 02215

AGGREGATE MATERIALS

PART 1 - GENERAL

1.1 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 - Paving

1.2 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/ft3 (2,700 kN-m/m3)).

1.3 DEFINITIONS

A. The term Screened Gravel as used in the Contract Documents shall mean Crushed Stone.

1.4 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.

1.5 QUALITY ASSURANCE

A. Field Samples

1. The attention of the Contractor is directed to the fact that under Specification SECTION 00700, 1.03 Materials and Equipment, 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.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Storage and Protection

1. In accordance with Specification SECTION 00700, 1.03 Materials and Equipment.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Crushed Stone

1. For 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.
2. For bedding and pipe zone material for plastic pipe 3 inches diameter and less, maximum particle size shall be 3/8 inches.
3. 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.
4. Screened Stone of similar size and grading to this specification may be used instead of Crushed Stone.

B. Crushed Stone Under Structures

1. Crushed stone hall be in accordance with the Table in RIDOT Standard Specifications, Subsection M.01.09, Column II.

C. Gravel Borrow

1. Shall be in accordance with the Table in RIDOT Standard Specifications, Subsection M.01.09, Column I (Ia) or (IIb).

D. 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.

E. Gravel Base Course

1. In accordance with SECTION 02500.

F. Pervious Fill

1. Shall be in accordance with the Table in RIDOT Standard Specifications, Subsection M.01.09, Column IV.

G. Filter stone

1. Shall be in accordance with the Table in RIDOT Standard Specifications, Subsection M.01.09, Column V.

2.2 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

3.1 INSTALLATION

A. Crushed Stone

1. Spread in layers of uniform thickness not greater than 6 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.

3.2 FIELD QUALITY CONTROL

A. Material and compaction testing

1. In accordance with SECTION 01410.

END OF SECTION

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SECTION 02220

RIPRAP

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes

1. Requirements for the installation of riprap, including: loading, hauling, placing, spreading, grading and other related and incidental work.

B. Related Sections

1. Section 02215 - Aggregate Materials
2. Section 02200 - Earth Excavation, Backfill and Grading
3. Section 02272 - Geotextile Materials

PART 2 - PRODUCTS

2.1 MATERIAL

A. All riprap used shall be sound, tough and durable stone, not lumpy or frozen, and free from slag, cinders, ashes, rubbish or other deleterious materials. All riprap will be of the size required for each specific application, as shown on the Drawings.

B. The material for riprap shall consist of broken stone produced from sound ledge or large boulders with at least three fractured faces on each particle and shall be free from overburden, spoil, shale or organic material. The stone shall have a minimum density of 160 pounds per cubic foot. It shall be angular in shape with its minimum dimension not less than one third of the maximum dimension.

C. Stone for placed riprap shall have one flat face and shall be roughly square or rectangular to facilitate laying up.

D. Riprap shall conform to the following gradation and shall be well graded within the size required:

National Stone Association Modified NSA No.	Size Inches (square opening) Maximum	Average	Minimum
R-1	2	1	No. 4
R-2	4	2	1
R-3	8	4	2
R-4	14	7	4
R-5	20	10	6
R-6	26	13	8
R-7	34	18	14
R-8	50	24	18

E. "Average size" is that size exceeded by at least 50 percent of the total weight of the tonnage shipped; i.e., 50 percent of the tonnage shall consist of pieces larger than the "average" size (normally half the specified nominal top size).

F. Pieces smaller than the minimum size shown shall not exceed 15 percent of the tonnage shipped.

G. Geotextile material in accordance with SECTION 02272.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Preparation

1. Areas to receive riprap shall be free of brush, trees, stumps, and other objectionable material and be dressed to a smooth surface. All soft or spongy material shall be removed to the depth shown on the plans or as authorized and replaced with gravel borrow conforming to SECTION 02215. Filled areas will be compacted as specified in SECTION 02200.

2. Install Geotextile material at locations indicated on the Contract Drawings in accordance with SECTION 02272.

B. Dumped Riprap

1. Stone for riprap shall be paced on the prepared area in a manner, which will produce, and evenly graded mass of stone with the minimum practical percentage of voids. The entire mass of stone shall be placed so as to conform with the lines, grades, and thicknesses shown on the plans. Riprap shall be placed to its full course thickness at one operation and in such a manner as to avoid displacing the underlying material. Placing of riprap in layers, or by dumping into chutes, or by similar methods likely to cause degradation will not be permitted.

2. All riprap shall be placed and distributed with no large accumulations of either the larger or smaller size of stone.

3. It is the intent of these specifications to produce a compact riprap installation in which all sizes of material are placed in their proper proportions. Hand placing or rearranging of individual stones by mechanical equipment may be required to the extent necessary to secure the results specified.

4. When riprap and bedding material are dumped under water, thickness of the layers shall be increased as shown on the Drawings.

C. Placed Riprap

1. Stone for placed riprap shall be placed on a prepared surface in a pattern that contains minimum voids. Top surface of riprap shall conform to a true and even plane with a tolerance of plus or minus 4-inches.

2. Joints shall be broken as much as practicable, chocking openings with smaller stones.

3. Larger stones placed near base of slopes, stones laid to rest on the prepared surface and not on other stones, Stones placed on slopes shall be done from the top down.

D. Riprap placed outside the specified limits will not be measured or paid for, and the Contractor may be required to remove and dispose of the excess riprap without cost to the Owner.

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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 of 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. SandBag Erosion Dikes: This work shall consist of the placement of sandbags 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 materials 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. Sandbag Erosion Dikes: The sandbags 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 sandbags 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. Sandbags 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 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 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.

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. Sandbag Erosion Dikes: Sandbags will be placed a minimum of four layers high. Over the center of the ditch the top layer of sandbags will have a weir opening equal to one half the bottom ditch width. The sandbags shall be extended such a length that the bottom of the end sandbags are higher in elevation than the top of the lowest middle sandbag. When the sandbag 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 ensure 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 sandbags, 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) Sandbag 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 through 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:

	Perimeter Controls	Height
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) Sandbag 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 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: Sandbag 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

1.1 SUMMARY

A. Section Includes

1. Requirements for installation of geotextile filter fabric in trenches and under riprap.

B. Related Sections

1. Section 02100 - Site Preparation
2. Section 02200 – Earthwork
3. Section 02215 – Aggregate Materials

1.2 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.
9. D6241, Standard Test Method for the Static Puncture Strength of Geotextiles and Geotextile-Related Products Using a 50-mm Probe

1.3 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.

1.4 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.

1.5 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.

1.6 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

2.1 ACCEPTABLE MANUFACTURER/MATERIAL

A. The geotextile fabric shall be nonwoven polypropylene designated as MIRAFI 140N as manufactured by US Fabrics, Cincinnati, Ohio; or acceptable equivalent and shall meet the following minimum requirements:

Property (Unit)	Unit	Test Method	Minimum Requirements
Weight	oz/sy	ASTM D5261	4.5
Grab Tensile Strength	lbs	ASTM D4632	120
Grab Tensile Elongation	%	ASTM D4632	50
CBR Puncture Strength	lbs	ASTM D6241	310
Trapezoid Tear Strength	lbs	ASTM D4533	50
Apparent Opening Size (AOS)	US Std. Sieve (mm)	ASTM D4751	70 (0.21)
Permittivity	sec -1	ASTM D4491	1.7

Permeability	cm/sec	ASTM D4491	0.22
Flow Rate	gal/min/sf	ASTM D4491	135
Ultraviolet Resistance (strength retained at 500 hrs)	%	ASTM D4355	70

B. To keep the number of overlay joints to a minimum, fabric shall be provided in sections not less than fifteen (15) feet in width unless otherwise approved by the Engineer prior to delivery to the site.

PART 3 - EXECUTION

3.1 SUBGRADE PREPARATION

A. For Riprap

1. Prepared areas to receive geotextile 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 area as smooth as possible and compact in accordance with SECTION 02200, with a vibratory 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 recompact prior to the placement of geotextile.

3.2 FABRIC INSTALLATION

A. For Riprap

1. Place at the locations shown on the Contract Drawings.
2. Unroll directly onto the prepared slope in a continuous manner. Join adjacent sections by overlapping the fabric a minimum of 12-inches. Join end sections by overlapping the fabric a minimum of 2-feet with field-sewn joints or as recommended by the manufacturer.
3. Place fabric on slopes creating a “shingled” effect in the direction of anticipated water flow.
4. Lay fabric smooth, maximizing surface contact with the prepared subbase, free of tension, stress, folds, wrinkles, or creases.
5. Securely anchor fabric sections at the top of the slope as recommended by the manufacturer. Use anchoring pins, nails, staples or other such means to secure fabric to the subbase surface to prevent fabric movement caused by wind uplift, and/or placement of cover material.
6. Maintain sufficient amount of cover material (minimum depth of 6-inches) to protect fabric during placement of riprap. Dozer buckets or blades, or other heavy or damaging equipment shall not be in direct contact with the fabric.
7. Minimize the height from which cover material is dumped and/or dropped directly onto the fabric material in order to avoid fabric damage or movement. Equipment used for spreading and compacting the cover material shall be of the type and size to avoid damage or movement to the underlying geotextile fabric.

8. Spread cover material in the direction of fabric overlap and in a manner that avoids creating undue tension, stress, sagging, buckling and/or other movement of the underlying fabric.

B. 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.

3.3 PROTECTION

A. Protect the work before, during and after installation, and protect the installed work covered by other Sections.

3.4 REPAIR

A. Geotextile fabric damaged during installation shall be repaired by a piece of geotextile material cut, placed and adequately anchored over the damaged area, subject to a 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 damage 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

SECTION 02370

STORMWATER POLLUTION PREVENTION

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, 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

1.2 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. 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. Sandbag 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.

1.3 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.

1.4 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).

1.5 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. 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

2.1 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. Sandbag Erosion Dikes. The sandbags 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 sandbags 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. Sandbags 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

3.1 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. 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. Sandbag Erosion Dikes. Sandbags will be placed a minimum of four layers high. Over the center of the ditch the top layer of sandbags 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 sandbags are higher in elevation than the top of the lowest middle sandbag. When the sandbag 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 ensure 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 sandbags, 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 access shall be constructed as detailed in Section 211 of the Standard Specifications.

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.

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) Sandbag 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 through 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:

a. Perimeter Controls	Height
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) Sandbag 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

e. Baled Hay Catch Basin Inlet Protection 1/2 Bale Height

1) Stilling Basins 1/2 Depth Below 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.

3.4 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. Sandbag Erosion Dikes. Sandbag 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. Construction access 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

1.1 SUMMARY

A. Section Includes

1. Traffic signs & sign supports (posts).
2. Removing and resetting existing signs & sign supports.
3. Removing and stockpiling existing signs.

1.2 RELATED SECTIONS

A. None

1.3 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

2.1 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 R9-6: Standard 12”x18” Yield to Peds Sign. Sign face layout and content shall be in accordance with the MUTCD.

3. R7-1R: Standard 12”x18” No Parking Any Time (Right). Sign face layout and content shall be in accordance with the MUTCD.
4. R7-1L: Standard 12”x18” No Parking Any Time (Left). Sign face layout and content shall be in accordance with the MUTCD.

2.2 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.

2.3 SIGN BASES

A. Sign support posts that cannot be driven into grade may be supported by surface mount bases.

B. Sign support posts shall be paired with a compatible sign base and surface mounted as indicated on the Plans. Signposts 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.

C. 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

D. Or approved equal.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Installation of signs and sign supports shall conform to the requirements of Section T15 of the RIDOT Standard Specifications.

B. 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.

C. 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.

D. 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.

E. 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.

F. Locations of signs shall be in accordance with the MUTCD and the applicable requirements of the ADA.

G. 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 signpost is set plumb. Post shall be within ¼" of vertical when measure at the top.

3.2 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: Full Depth Construction

   Type: Hot Mix Bituminous Asphalt

   Full Width Paving

   Requirements: 12-inch Gravel Borrow Base Course,

   4-inch Bituminous Hot Mix Asphalt Base Course HMA 19.5

   2-inch Bituminous Hot Mix Asphalt Intermediate Course HMA 12.5

   2-inch Bituminous Hot Mix Asphalt Surface Course HMA 12.5

2. Location: Shared Use Path

Type: Hot Mix Bituminous Asphalt
Full Width Paving

Requirements: 8-inch Gravel Borrow Base Course,
2.5-inch Bituminous Hot Mix Asphalt Intermediate Course HMA 12.5
1.5-inch Bituminous Hot Mix Asphalt Surface Course HMA 9.5

3. Location: Driveway and Parking

Type: Hot Mix Bituminous Asphalt
Full Width Paving

Requirements: 8-inch Gravel Borrow Base Course,
2.5-inch Bituminous Hot Mix Asphalt Intermediate Course HMA 12.5
1.5-inch Bituminous Hot Mix Asphalt Surface Course HMA 12.5

PART 2 - PRODUCTS

PART 3 - MATERIALS

3.1 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. 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. Shall be in accordance with the Table in RIDOT Standard Specifications, Subsection M.01.09, Column I (Ia) or (IIb).

3.2 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 4 - EXECUTION

4.1 PREPARATION

A. Maintain Traffic Control in accordance with SECTION 01570

B. Prior to placing pavement, all backfill shall be 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.

4.2 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 finish 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 l0 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 recompacted 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

1.1 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

1.2 REFERENCES

A. 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).

1.3 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

2.1 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.

2.2 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

3.1 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 wheelchair 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 of 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

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SECTION 02535

CONCRETE SIDEWALK FINISHES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes

1. Requirements for finished 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.

1.2 REFERENCES

A. American Concrete Institute (ACI)

1. ACI 318, Building Code Requirements for Structural Concrete.
2. ACI 347R, Guide to Formwork for Concrete.

1.3 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.

1.4 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 panels 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

2.1 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”.

2.2 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

3.1 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.

3.2 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.

3.3 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

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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.

F. REMOVAL OF EXISTING PAVEMENT MARKINGs

G. Removal of existing pavement markings shall be in accordance with Section T20 of the RIDOT Standard Specification.

H. 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 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 02720

CATCH BASINS & GUTTER INLETS

PART 1 - GENERAL

1.1 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

1.2 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.

1.3 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

2.1 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.

2.2 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.

2.3 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.

2.4 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 bricks shall be immediately removed from the work.

2.5 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.

2.6 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.

2.7 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.

2.8 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

3.1 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.

3.2 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. Unbounded 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.

3.3 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.

3.4 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.

3.5 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, assemble all tools, materials, and construction equipment required to complete the work in the shortest possible time.

END OF SECTION

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SECTION 02871

SITE AMENITIES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes

1. Requirements for site amenities are shown in the plans and specified herein.
2. Site Amenities include:
    a. Bike Racks
    b. Bollard
    c. Bench
    d. Skate Stops

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 – Miscellaneous Metals

1.2 REFERENCES

A. American Concrete Institute (ACI)

1.3 SUBMITTALS

A. Submit in accordance with Section 01300.

B. Manufacturer’s Data Sheets and Shop Drawings:

1. Bike Racks
2. Bollard
3. Bench
4. Skate Stops

C. Quality Control Submittals:

1. Manufacturer’s Data Sheets
2. Scale shop drawings

1.4 QUALITY ASSURANCE

A. Qualifications:

1. Utilize Manufacturer regularly engaged in the manufacture of site amenities.
2. All products shall be supported by manufacturer's shop drawings with full dimensions shown.
3. All work shall be performed by certified welders and machine operators.
4. Provide all components with the Manufacturer's stated warranty.
5. 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

2.1 BIKE RACKS

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
Product: Bollard Bike Rack Item # 509-9159

Dero
42 Northern Stacks Drive
Minneapolis, MN 55421
(888) 337-6729 (NY Office)
Product: Bike Hitch

2.2 BOLLARD

1. Round, ornamental steel bollard system, 44-inch height measured above finished grade.
2. Interior crash rated bollard, 6' diameter x 66'' long configured to accommodate exterior bollard cover, approximately 11" finished exterior diameter.
3. Interior Halvard C40 R-1040-C40 crash rated bollard system with decorative cover. ASTM F2656-20 SC40 P1 certified crash rated fixed bollard system, Concrete embedment mount.
4. Conforming to the following standards:
    a) ASTM G 53, ASTM B 117, ASTM D 2247, ASTM B 2794, ASTM D 2240, ASTM D 4060, ASTM D 522, and ASTM D 638.
5. Hot dipped galvanized finish, black, textured, semi-gloss polyester powder coat paint, Premium IronArmor with 5-year warranty against cracks, peeling and discoloration.
6. Approximately 11" outer decorative ornamental diameter with architectural fluting, fenestration and detailing.
7. A product that meets these requirements is Bollard R-7743 with Halvard C40 as manufactured by Reliance Foundry, 6450 148th Street, Unit 207, Surrey, BC Canada (877)789 3245 – online at https://www.reliance-foundry.com

2.3 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. The finish is to be polyester powder-coated black.

2.4 SKATE STOP

A. Skate Stop shall be "D 90-12" by SkateStoppers, 1547 N Cyamaca Street, El Cajon, California, 92020, or approved equal.

B. Skate Stop shall be 316 Stainless Steel with a Brushed Finish.

PART 3 - EXECUTION

3.1 BIKE RACKS

A. Bike racks shall be installed per manufacturers' surface mount requirements.

3.2 BOLLARD

A. Coordinate layout and confirm final locations of bollard (s). Utilize templates and measurements to ensure accurate placement. Place the bollard in position as shown on the plans. Confirm the location with the Engineer prior to proceeding.

B. Before excavating, confirm bollard location and measure to verify clearances. Positively verify that there are no utilities present in conflict with the excavation. Inspect all abutting conditions and confirm the final line and grade before starting work.

C. Excavate to the required depth and width. Remove and dispose of any unsuitable materials. Form and install reinforcing and place and finish concrete. Install the embedded crash rated bollard per the manufacturer's recommendations at locations as shown on the drawings. Install plumb and level. Repair minor damage to finish in accordance with the manufacturer's instructions and as approved by the Engineer.

D. Remove and replace any damaged or defective components that cannot be successfully repaired. Clean promptly after installation per the manufacturer's instructions using materials that will not damage the finish.

3.3 BENCH

A. Benches shall be installed per manufacturers' surface mount requirements.

B. Lay out benches for approval by the Engineer.

C. Drill and set anchor bolts. Secure bench in place.

3.4 SKATE STOP

A. Skate stops shall be installed at the following locations:

1. On cast-in place concrete walls where the edges of the walls may be susceptible to skateboarding activities.

2. On or adjacent to joints between all Type A and Type B Granite Blocks.

B. Consult and confirm location with the Engineer.

C. Install Skate Stops per manufacturer's requirements.

END OF SECTION

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

2.1 DETECTABLE WARNING PANELS

A. 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 ½" 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

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 ½" 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

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 ½” 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

D. 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

1.1 SECTION INCLUDES

A. Requirements for loaming, fertilizing, seeding, and related work in areas disturbed in the process of performing the Work under this contract.

1.2 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.

1.3 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

2.1 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.

2.2 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

3.1 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.

3.2 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.

3.3 LIME, FERTILIZER AND SEEDING

A. Apply lime by mechanical means at rate of 2,000 pounds per acre.

B. Apply fertilizer at a 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.

3.4 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.

3.5 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.

3.6 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

1.1 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.

1.2 RELATED WORK:

A. Section 02100 - Site Preparation

B. Section 02200 – Earth Excavation, Backfill, Fill and Grading

C. Section 02950 – Landscape Plantings

1.3 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).

1.4 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.

1.5 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.

1.6 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.

1.7 QUALITY ASSURANCE:

A. Work of this section shall be completed by a professional Arborist licensed in the State of Rhode Island with a minimum of 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.

1.8 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.

1.9 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

2.1 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 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."

2.2 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.

2.3 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 materials. 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

3.1 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.

3.2 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.

3.3 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.

3.4 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 I 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.

3.5 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.

3.6 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.

3.7 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 materials shall be disposed of promptly end shall not be left until final cleanup of site.

3.8 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

1.1 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. Antidessicant Application
10. Tags and Labels
11. Maintenance
12. Plant Replacement Guarantee

1.2 REFERENCES

A. ANSI Z-60.1 - Nursery Stock, latest edition (American Association of Nurserymen, Inc.).

B. SPN: “Standardized Plant Names,” latest edition, by the American Joint Committee on Horticultural Nomenclature.

C. AOAC: Association of Official Agricultural Chemist.”

D. Pruning Standards: ANSI A300 Practices for Trees, Shrubs &Other Woody Plant Maintenance: Secretariat, National Arborist Association, P. O. Box 1094 Amherst, MA.

1.3 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.

1.4 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.

1.5 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.

C. Keep plants moist, fresh, and protected against exposure to sun, wind, and freezing temperatures whether in the receiving yard, in transit, while being handled, or at the job site awaiting planting.

D. Deliver trees, shrubs and groundcover after preparations for planting have been completed and plant immediately.

E. Planting Dates: Contractor shall provide a proposed planting schedule. Schedule dates for each type of landscape work during normal seasons for such work. Once accepted, revise dates only as approved in writing, after documentation of reasons for delays.

Planting Window:	Spring –	April 30 to June 30
	Fall -	August 15 to October 15

F. Those species known to be fall digging hazards shall be dug during the spring season only. Fall planting of these species shall be permitted only with certification, from the nursery, of the time of digging and at the discretion of the Engineer.

G. Correlate planting schedule with specified maintenance periods to provide maintenance to date of acceptance.

H. Coordination with Lawns: Plant trees, shrubs, and groundcover after final grades are established and prior to planting of lawns, unless otherwise acceptable to Engineer. If planting of trees and shrubs occurs after lawn work, protect lawn areas and promptly repair damage to lawns resulting from planting operations.

I. Coordination with Irrigation: The contractor shall fully coordinate installation of plants and irrigation. The Contractor must establish and maintain the plants.

1.6 SPECIAL CONDITIONS

A. Should discrepancies exist between plant quantities or plant sizes as shown in the Planting Schedule and on the Planting Plan, quantities and sizes shown on the Planting Plan shall govern. Contractor shall install all plants as shown on the plan at no additional cost to the Owner.

1.7 WARRANTY

A. Provide a warranty for plant material for a minimum of one year including one continuous growing season. Commence warranty on date identified in the Certificate of Final Acceptance.

B. Warranty: Include coverage of plants from death or unhealthy conditions.

C. Replacements: Plants of same size and species as specified, planted as soon as possible in the next growing season, with a new warranty and an extended maintenance service commencing on date of replacement.

1.8 MAINTENANCE

A. Maintenance of all plant material to be performed by installer includes:

- Watering, weeding, cultivating and mulching
- Tightening, guy webbing and repairing stakes
- Replacing of dead material
- Re-setting plants to proper grades, or to upright position

PART 2 - PRODUCTS

2.1 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.

2.2 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.

2.3 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.

2.4 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 ¾ 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.

2.5 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.

2.6 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.

2.7 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.

2.8 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

3.1 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.

3.2 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 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.

3.3 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.

3.4 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.

3.5 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.

3.6 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.

3.7 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.

3.8 TRUNK WRAPPING

A. Remove all trunk wrap and trunk protection devices prior to staking and guying operations unless otherwise directed by the Engineer.

3.9 ANTIDESSICANT SPRAYING

A. Spray anti-desiccants as directed by the manufacturer's recommendation and as approved by the Engineer.

3.10 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.

3.11 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.

3.12 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 reasonably be considered to be beyond Contractor's reasonable control, as determined by the Engineer.

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SECTION 03100

CONCRETE FORMWORK

PART 1 - GENERAL

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.

1.2 REFERENCES

A. American Concrete Institute (ACI)

1. ACI 318, Building Code Requirements for Structural Concrete.
2. ACI 347R, Guide to Formwork for Concrete.

1.3 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)

1.4 QUALITY ASSURANCE

A. Qualifications: Formwork, falsework, and shoring designs prepared by an engineer licensed in the State of Rhode Island.

PART 2 - PRODUCTS

2.1 FORM MATERIALS

A. 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.

B. 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.

C. 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.

D. 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.

E. 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.

F. Wall Forms and Underside of Slabs and Beams:

1. Materials: Plywood, hard plastic finished plywood, overlaid waterproof particle board, or steel in “new and undamaged” condition, of sufficient strength and surface smoothness to produce specified finish. Use in combination with form liners where required.

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.

2.2 FORM TIES

A. Form ties to be encased in concrete shall not be made of through-bolts or commonwire, 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 striped.
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

3.1 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.

3.2 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 tolerance.

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.

3.3 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.

3.4 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.

3.5 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.

3.6 MANUFACTURERS' SERVICES

A. Provide form manufacturer's representative at site for installation assistance, and inspection.

END OF SECTION

SECTION 03200

CONCRETE REINFORCEMENT

PART 1 - GENERAL

1.1 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.

1.2 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.

1.3 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.

1.4 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.

1.5 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

2.1 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. ASTMA706, 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 site 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.

2.2 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 place don 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 shared 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.

2.3 FABRICATION

A. Follow CRSI Manual of Standard Practice.

B. Bend all bars cold.

PART 3 - EXECUTION

3.1 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.

3.2 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 write 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.

3.3 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 provided 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.

3.4 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

1.1 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

1.2 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,

1.3 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.

B. Samples: Splice, joint, and fabricated cross of each size, shape, and fitting of water stop(s) proposed for use.

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.

1.4 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.

1.5 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

2.1 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. 0.90 pound for 3/16 inch by 4 inch.
2. 1.62 pounds for 3/8 inch by 6 inch.
3. 2.30 pounds for 3/8 inch by 9 inch.

I. Manufacturers and Catalog Numbers:

1. Vulcan Metal Products, Inc., Construction Materials Division, Birmingham, AL; Catalog No. 3/81-15M: Type 8067 (4 inch by 3/16 inch), Type 8069 (6 inch by 3/8 inch), and Type 8070 (9 inch by 3/8 inch).
2. Vinylex Corp., Knoxville, TN; Catalog No. 03250/VIN (1987): No. RB6-38H (6 inch by 3/8 inch) and No. RB9-38H (9 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) and Style 735 (9 inch by 3/8 inch).
4. A.C. Horn, Inc., Beltsville, MD; Catalog No. CSP-162 (1987): Type 3 (4 inch by 3/16 inch), Type 9 (6 inch by 3/8 inch), and Type 10 (3/8 inch by 9 inch).

2.2 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.

2.3 BOND BREAKER

A. Tape for Expansion Joints: Adhesive-backed glazed butyl or polyethylene tape, same width as the joint, that will not adhere to the pre-molded joint material.

B. Use either bond breaker tape or a bond prevention material as specified in SECTION 03300, except where a tape is specifically called for.

2.4 PREMOLDED 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.

2.5 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.

2.6 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.

2.7 STEEL EXPANSION JOINT DOWELS

A. Dowels: ASTM A36 round smooth steel bars.

B. Bar Coating: Two-coat system, fusion bonded, steel dowel coating, with a factory-applied lubricating coating.

2.8 ACCESSORIES

A. Joint Sealants: As specified in SECTION 07900.

B. Nonshrink Grout:

1. As specified in SECTION 03600.

2. Compatible with joint sealant.

C. Roofing Felt: ASTM D226, Type II, 30-pound asphalt-saturated or equal weight of ASTM D227 coal-tar saturated felt.

D. Reinforcing Steel: As specified in SECTION 03200.

E. Nails: As required for securing bituminous type premolded joint filler.

F. Masking Tape: As required to temporarily adhere to concrete at each side of joint to receive filler.

PART 3 - EXECUTION

3.1 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.

3.2 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.

3.3 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.

3.4 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 beformed 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.

3.5 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.

3.6 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 unspliced pieces.

D. Steel Strip Type with Preformed Groove: Brace to withstand pressure of concrete during and after placement.

END OF SECTION

SECTION 03252

WATERSTOPS

PART 1 - GENERAL

1.1 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.

1.2 RELATED SECTIONS

A. Section 03250 – Expansion, Construction and Control Joints

B. Section 03000 – Cast-In-Place Concrete

1.3 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

1.4 SUBMITTALS

A. Submit shop drawings in accordance with Section 01300.

B. 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

1.5 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.

1.6 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

2.1 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).

B. Vulcan Metal Products, Birmingham, AL; Type 8069 (3/8 inch by 6 inch).

C. Or approved equal.

2.2 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

3.1 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.

3.2 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

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SECTION 03300

CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Requirements for furnishing and installing forms, reinforcing steel, concrete and expansion and/or construction joints

1.2 REFERENCES

A. American Society for Testing and Materials (ASTM)

1. A185, Specification for Steel Welded Wire Fabric, Plain, for Concrete Reinforcement.
2. A615, Specification for deformed and Plain Billet-Steel Bars for Concrete Reinforcement.
3. C31, Practice for Making and Curing Concrete Test Cylinders in the Field.
4. C33, Specification for Concrete Aggregates.
5. C39, Test Method for Compressive Strength of Cylindrical Concrete Specimens.
6. C42, Test Method for Obtaining and Testing Drilled Cores and Sawed Beams of Concrete.
7. C94, Specification for ready Mixed Concrete.
8. C143, Test Method for Slump of Hydraulic Cement Concrete.
9. C150, Specification for Portland Cement.
10. C172, Practice for Sampling Freshly Mixed Concrete.
11. C231, Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method.
12. C260, Test Method for Air-Entraining Admixtures for Concrete.
13. C494, Specification for Chemical Admixtures for Concrete.
14. C920, Specification for Elastomeric Joint Sealants.
15. D994, Specification for Preformed Expansion Joint Filler for Concrete (Bituminous Type)
16. D1056, Specification for Flexible Cellular Materials-Sponge or Expanded Rubber.
17. D1751, Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types).

B. American Concrete Institute (ACI):

1. ACI 301, Specification for Structural Concrete for Buildings.
2. ACI 304, Recommended Practice for Measuring, Mixing, Transporting, and Placing Concrete.
3. ACI 305, Recommended Practice for Hot Weather Concreting.
4. ACI 306, Recommended Practice for Cold Weather Concreting.

5. ACI 315, Building Code Requirements for Reinforced Concrete.
6. ACI 347, Guide to Formwork for Concrete.

C. Concrete Reinforcing Steel Institute (CRSI):
1. Manual of Standard Practice.

1.3 SUBMITTALS

A. Submit Shop Drawings in accordance with SECTION 01300 for the following:
1. Reinforcing Steel
a. Furnish in detail and completeness that all fabrication and placement at the site can be accomplished without the use of contract drawings for reference.
b. Include number of pieces, sizes, and grade of reinforcing steel, accessories, and any other information required for fabrication and placement.
c. Show joint layout and design
d. Check structural and site drawings for anchor bolts, anchors, inserts, conduits, sleeves, and any other items which are required to be embedded in concrete, and make necessary provisions as required so that reinforcing steel will not interfere with the placement of such embedded items.
2. Concrete mix designs.
3. Grout manufacturer/design mix (if included in this section)
4. Manufacturer’s data for ancillary materials such as joint fillers and sealants, epoxy bonding compound.

1.4 QUALITY ASSURANCE

A. Selection of testing laboratory in accordance with SECTION 01410.

B. Sample and Test Concrete as follows:
1. Test Specimens: Make, cure and have tested, a minimum of one set of four test specimens from the concrete of each day's pour and for each fifty cubic yards of concrete cast in accordance with ASTM C172, C31 and C39. One cylinder shall be broken after seven days and three cylinders after twenty-eight day.
2. Slump: A slump test shall be made for each truckload of concrete in accordance with ASTM C143. Slumps greater than design mix limit will be grounds for rejection of the concrete.
3. Air Content: An air content test shall be made from each day's pour of concrete by the pressure method in accordance with ASTM C231. Air contents above or below the limits specified will be grounds for rejection of the concrete.
4. In the event the compressive strength of the cylinders, when tested, is below the specified minimum, the Engineer may require test cores of the hardened structure to be taken by the Testing Laboratory in accordance with ASTM C42. If such test indicates that the core specimen is below the required strength, the concrete in question shall be removed and replaced without cost to the Owner. Any other work damaged as a result of this concrete

removal shall be replaced with new materials to the satisfaction of the Engineer at no additional cost to the Owner. The cost of coring will be deducted from the contract amount. Where the Testing Laboratory has taken core cylinders and the concrete proves to be satisfactory, core holes shall be filled in a manner satisfactory to the Engineer at no additional cost to the Owner.

5. The Contractor shall coordinate the date and location of tests with the Engineer before any concrete work is started.

1.5 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Reinforcing steel.

1. Transport to the site, store, and cover in a manner which will ensure that no damage shall occur to it from moisture, dirt, grease, or any other cause that might impair bond to concrete or chip protective epoxy coating.
2. Store on the site at all times, a supply of approved reinforcing steel to ensure that there will be no delay of the work.
3. Identification of steel shall be maintained after bundles are broken.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Portland Cement.

1. In accordance with ASTM C150, Type II of U.S. manufacture.
2. Only one brand of cement shall be used on the project.

B. Aggregates.

1. Fine aggregate, in accordance with ASTM C33, clean and graded from 1/4 inch to fines.
2. Coarse aggregate, in accordance with ASTM C33, clean and graded from 1/4 inch to maximum sizes hereinafter specified.

C. Air Entraining Agent.

1. In accordance with ASTM C260.

D. Water Reducing Agent.

1. In accordance with ASTM C494 Type A.

E. Microsilica Admixture.

1. Packaged in easily dispersing form.

F. Water.

1. Clean and potable,
2. Free of impurities detrimental to concrete.

G. Reinforcing Bars.

1. New, deformed billet steel bars, in accordance with ASTM A615, Grade 60.

H. Welded Wire Fabric

1. In accordance with ASTM A185.

I. Accessories.

1. Reinforcement accessories, consisting of spacers, chairs, ties, and similar items shall be provided as required for spacing, assembling, and supporting reinforcement in place.
2. All accessories shall be dielectric coated steel or approved plastic accessories, conforming to the applicable requirements of the CRSI Standards.

J. Tie wire.

1. 16 gauge or heavier black annealed wire.

K. Form Ties and Spreaders.

1. Standard metal form clamp assembled and plastic cone, of type acting as spreaders and leaving no metal within 1 inch of concrete face.
2. Provide form tie with water stop for all walls to be in contact with earth or liquid.
3. Inner tie rod shall be left in concrete when forms are removed.
4. No wire ties or wood spreaders will be permitted. Use ½" x 1" C.T. plastic cones for sinkages.

L. Form Coatings.

1. Non-grain raising and non-staining type that will not leave residual matter on surface of concrete or adversely affect proper bonding of subsequent application of other material applied to concrete surface.
2. "Nox-Crete Form Coating" as manufactured by Nox-Crete Company, or approved equal.
3. Coatings containing mineral oils or the non-drying ingredients will not be permitted.

M. Grout.

1. High-strength, non-shrink grout with saltwater resistance.
2. Five Star Special Grout 120 or equivalent.

2.2 CONCREATE STRENGTHS AND PROPORTIONS

A. Cast-in-place concrete shall have the minimum compressive strength at 28 days as indicated on the Drawings.

B. The exact proportions for the mix, including amounts admixture (if any), and water, shall be determined by the concrete supplier.

C. The proportions of aggregate to cement for any concrete shall be such as to produce a mixture which will work readily into the corners and angles of the forms and around reinforcement with the method of placing employed not the work, but without permitting the materials to segregate or excess free water to collect on the surface.

D. Air-Entrainment: The air content in all concrete shall be maintained at 5 to 7 percent.

2.3 PREMOLDED JOINT FILLER

A. Bituminous Type.

1. In accordance with ASTM D994 or D1751.

B. Sponge Rubber Type.

1. Neoprene, closed-cell, expanded in accordance with ASTM D1056, Type 2C5, with a compression deflection, 25 percent deflection (limits), 17 to 24 psi (119 to 168 kPa) minimum.

2.4 POURABLE JOINT FILLERS

A. Filler for Nonpotable Water Structures

1. Specific Gravity: Greater than 1.0 for cured, in-place filler.
2. Vertical and Sloped Joints: Furnish gun grade material that will remain as placed in joints and will not run down slope.
3. Suitable for continuous immersion and exposure to liquid being contained in the structure.

2.5 JOINT SEALANTS

A. In slabs.

1. In accordance with ASTM C920 for poured 2-component polyurethane sealant.
2. Sikaflex-2c, as manufactured by Sika Corporation or approved equivalent.

B. In walls.

1. Type II, Class A, compound conforming to Interim Federal Specification TT-S-00227E (3) (COM-NBS) for Sealing Compound; Elastomeric Type, Multi-Component (for Caulking, Sealing, and Glazing in Buildings and Other Structures).
2. Sikaflex-1a, as manufactured by Sika Corporation or approved equivalent.

2.6 EPOXY BONDING COMPOUND

A. The epoxy bonding compound shall be a three-component, solvent-free, moisture-tolerant, epoxy modified, cementitious product specifically formulated as a bonding agent and anti-corrosion coating. The product shall have suitable contact time, fluidity, and application temperature for this type of application.

PART 3 - EXECUTION

3.1 FORMWORK

A. Falsework for Forms

1. Build and maintain necessary false work for the forms.

B. Construction of Forms

1. General

a. Construct in accordance with ACI 347.

b. Construct of sound material, to the correct shape and dimensions, mortar tight, of sufficient strength, and so braced and tied together that the movement of men, equipment, materials, or placing and vibrating the concrete will not throw them out of line or position.

2. Embedded Items

a. Make provisions for pipes, sleeves, anchors, inserts, reglets, anchor slots, nailers, water stops, and other features.

b. Do not embed wood, other than necessary nailing blocks, in concrete.

c. Extended complete cooperation to suppliers of embedded items in their installation.

d. Secure information for embedded items from other trades as required.

e. Securely anchored embedded items in correct location and alignment prior to placing concrete.

3. Openings for Items Passing Through Concrete

a. Establish exact locations, sizes, and other conditions required for openings and attachment of work specified under other sections.

b. Coordination work of this nature in order that there will be no unnecessary cutting and patching of concrete.

c. Cutting and repairing of concrete as a result of failure to provide for such openings shall be paid for by the Contractor at no additional expense to the Owner.

4. Removing Forms and False work

a. Forms shall not be removed for at least 72 hours after concrete has been placed.

b. Forms shall not be removed until the concrete has attained sufficient strength to insure stability.

3.2 REINFORCING STEEL

A. General

1. Place reinforcing steel in accordance with the drawings and approved shop drawings and the applicable requirements of the CRSI, Manual of Practice.

2. Install reinforcement accurately and secure against movement, particularly under the weight of workmen and the placement of concrete.

B. Reinforcing Steel Supports

1. Support bars on approved plastic or dielectric-coated metal chairs or spacers, accurately placed and securely fastened to forms or steel reinforcement in place.

2. Supply additional bars, whether specifically shown on the drawings or not, where necessary to securely fasten reinforcement in place.

3. Support legs of accessories in forms without embedding in form surface.

4. Spacing of chairs and accessories shall conform to CRSI, Manual of Standard Practice. Accurately space hoops and stirrups and wire to the reinforcement.
5. Permit no lose wood inside forms.
6. Lifting of welded wire fabric into proper position while concrete is being poured rather than supporting fabric on chairs will not be permitted.

C. Placing and Tying

1. Set in place, space, and rigidly and securely tie or wire with tie wire at all splices and at all crossing points and intersections in the positions shown, or as directed.
2. Rebending of bars on the job to accommodate the job to accommodate existing conditions will not be permitted without the written approval of the Engineer
3. Points ends of wire ties away from forms.

D. Spacing

1. Minimum center to center distance between parallel bars shall be in accordance with the details on the drawings, or, where not shown, the clear spacing shall be 2 times the bar diameter but in no case less than 1½ inches or less than 1½ times the maximum size aggregate.

E. Splices

1. Maximum 50% of steel spliced occurring within lap length.
2. Top bars shall be 1.3 times values given in 3.01.D.5.c.
3. Splice lengths.
   a. #6 bars and smaller: 50-bar diameter
   b. #7 bars and larger: 60-bar diameter

F. Concrete Covering

1. In accordance with ACI 315, except where shown otherwise on drawings.

3.3 CONCRETE

A. Mixing of Concrete

1. All concrete shall be ready-mixed concrete and shall be mixed and delivered in accordance with ASTM C 94. The batch plant of the concrete producer shall be certified for compliance with the standards established by the National Ready-Mixed Concrete Association.
2. In the event concrete is mixed at a central batching plant, the delivery shall be arranged so that intervals between batches are kept to a minimum, and in any event not more than thirty (30) minutes. Trucks shall be in first class condition and kept in constant rotation during delivery.
3. Concrete shall be placed within 90 minutes after cement has been mixed with aggregate or 45 minutes after addition of water and admixtures.
4. No admixtures, except those mentioned in paragraph 2.1 shall be used. Calcium chloride will not be permitted.

5. Truck delivery slips of all concrete delivered to the job shall indicate the quantity and quality of concrete, additives, date and time of batching and delivery, and the location of placement. Delivery slips shall be forwarded to the Engineer at the end of each pour.

B. Cold Weather Concreting.

1. In accordance with ACI 306.
2. Concrete shall not be mixed or placed when the temperature is below 40 degrees F, or when conditions indicate that the temperature will fall below 40 degrees F within 72 hours unless precautions are taken to protect the concrete.
3. Concrete temperature shall be maintained, when deposited, at not less than 60 degrees F. Reinforcement, forms, and ground which concrete will contact must be completely free of frost.
4. Concrete and formwork must be kept at a temperature of not less than 50 degrees F. for not less than 96 hours after placing.
5. Calcium chloride shall not be used.

C. Hot Weather Concreting.

1. In accordance with ACI 305.
2. The maximum temperature of the concrete, when deposited, shall be 85 degrees F. If the weather causes the placing temperature to exceed 85 degrees F., the mix shall be cooled by methods approved by the Engineer.
3. No concrete shall be deposited when the air temperature is greater than 90 degrees F.

D. Conveying and Placing Concrete.

1. In accordance with ACI 304.
2. Notification: Before placing concrete, forms shall be thoroughly inspected. All chips, dirt, etc., shall be removed, all temporary bracing and cleats taken out, all openings for pipes, etc., properly boxed, all forms properly secured in their correct position and made tight, all reinforcement, anchors, and embedded items secured in their proper places. Concrete which may be on the forms or reinforcement, and which is set and dry, shall be cleaned off, and the forms and steel washed off before proceeding. Remove all foreign matter from forms and excavations.
3. Water shall be removed from place of deposit before concrete is placed unless otherwise permitted by the Engineer. Any flow of water into an excavation shall be diverted through proper side drains into a sump or shall be removed by other approved methods which will avoid washing away the freshly deposited concrete.
4. Soil on which concrete will be poured shall be thoroughly wetted (except in freezing weather).
5. Anchors and Embedded Items: Anchors, bolts, sleeves, inserts, wood blocking, and any other items to be embedded in concrete shall be accurately secured in position before the concrete is placed. Aluminum shall not be embedded in concrete.

E. Handling and Depositing

1. Before any concrete is placed, notify all whose work is in any way connected with or influenced by the concrete work, and give them reasonable time to complete all portions of their work that must be completed before concrete is deposited.
2. Immediately before concrete is placed, inspect all forms to ensure that they are in proper position, sufficiently rigid, thoroughly clean, properly oiled and free from foreign materials, and that all reinforcement is in proper position.
3. Concreting, once started, shall be carried on as a continuous operation until the section of approved size and shape is completed.
4. Concrete shall be conveyed as rapidly as practicable from the mixer to the place of final deposit by methods that prevent the separation or loss of ingredients. It shall be deposited, as nearly as practicable, in its final position to avoid rehandling or flowing.
5. Concrete shall not be dropped freely where reinforcement will cause segregation, nor shall it be dropped freely more than six (6) feet. Concrete shall be deposited to maintain a plastic surface approximately horizontal.
6. Concrete that has partially hardened shall not be deposited in the work.

F. Pumping

1. Concrete may be placed by pumping if first approved in writing by the Engineer for the location proposed.
2. Equipment for pumping shall be of such size and design as to ensure a practically continuous flow of concrete at the delivery end without separation of materials.
3. The concrete mix shall be designed to the same requirements as herein before specified and may be richer in lubricating components in order to allow proper pumping.
4. Concrete shall not be pumped through aluminum pipes.

G. Vibrating and Compacting

1. All concrete shall be thoroughly consolidated and compacted by suitable means during the operation of placing, and shall be thoroughly worked around reinforcement, embedded items, and into the corners of the forms. All concrete against forms shall be thoroughly spaded. Internal vibrators shall be used under experienced supervision and shall be kept out of contact with reinforcement and wood forms. Vibrators shall not be used in a manner that forces mortar between individual form members.
2. Vibrators shall be flexible electric type or approved compressed air type, adequately powered and capable of transmitting to the concrete not less than seven thousand (7,000) impulses per minute. Vibration shall be sufficiently intense to cause the concrete to flow or settle readily into place without separation of the ingredients. A sufficient number of vibrators shall be employed so that complete compaction is secured throughout the entire volume of each layer of concrete. At least one (1) vibrator shall be kept in readiness as a spare for emergency use. Vibrators shall be such that the concrete becomes uniformly plastic with their use.
3. Vibration shall be close to the forms but shall not be continued at one spot to the extent that large areas of grout are formed or the heavier aggregates are caused to settle. Care shall be taken to not disturb concrete that has its initial set.

4. Where conditions make compacting difficult, or where the reinforcement is congested, batches of mortar containing the same proportions of cement to sand as used in the concrete shall first be deposited in the forms, to a depth of at least one inch.
5. The responsibility for providing fully filled out, smooth, clean, and properly aligned surfaces free from objectionable pockets shall rest entirely with the Contractor.

3.4 CONSTRUCTION JOINTS

A. Construction joints shall be located a maximum of 40 feet apart. If, for any reason, the contractor feels a change is necessary, he shall prepare a placing plan and submit it to the Engineer for approval.

B. Where a joint is to be made, the surface of the concrete shall be sandblasted or thoroughly picked, thoroughly cleaned, and all laitance removed. In addition to the foregoing, joints shall be thoroughly wetted, but not saturated, and slushed with a coat of grout immediately before the placing of new concrete.

C. Approved keys shall be used at all joints, unless detailed otherwise. Forms shall be retightened before placing of concrete is continued. There shall be an interval of at least 48 hours between adjacent pours.

D. Bonding Concrete at Construction Joints

1. To new concrete construction joints:
    a. Thoroughly clean and saturate joint with water.
    b. Cover horizontal wall surfaces as specified in this Section and immediately place concrete.
    c. Limit concrete lift placed immediately on top of bonding compound to 12 inches thick.
    d. Thoroughly vibrate to mix and consolidate bonding compound and concrete together.

3.5 BONDING NEW CONCRETE TO OLD CONCRETE:

A. 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.

B. Saturate surface with water for 24 hours, cover with epoxy bonding compound and place concrete as specified for new concrete.

3.6 EXPANSION JOINTS

A. Expansion joints shall be located as shown on contract drawings.

B. The joint shall include a joint filler, a bond breaker and joint sealant and installed as indicated on contract drawings.

3.7 JOINT SEALANTS.

A. Prepare surface in accordance with manufacturer's directions.

B. Apply primer as recommended by sealant manufacturer.

C. Install sealant with the proper tools and methods as directed by the sealant manufacturer.

3.8 PATCHING

A. Immediately after stripping forms, patch minor defects, form-tie holes, honeycombed areas, etc., before concrete is thoroughly dry.

B. Repair gravel pockets by cutting out to solid surface, form key, and thoroughly wet before placing patching mortar consisting of 1 part cement to 2 parts fine sand; compact into place and neatly finish. Honeycombed areas or gravel pockets which, in the Engineer's opinion are too large and unsatisfactory for mortar patching as described above, shall be cut out to solid surface, keyed, and packed solids with matching concrete to produce firm bond and surface.

C. The Contractor shall do all the cutting as required by himself or other trades. All such work shall be of the minimum size required. No excessive cutting will be permitted, or shall any structural members or reinforcement be cut.

D. The Contractor shall do all patching after work by other trades has been installed, where required, using Portland Cement Mortar 1:2 mix.

3.9 PROTECTION AND CURING

A. Protect concrete from injurious action of the elements and defacement of any nature during construction operations.

B. Keep concrete in a thoroughly moist condition from the time it is placed until it has cured, for at least (7) days.

C. Carefully protect exposed concrete corners from damage.

D. Allow no slabs to become dry at any time until curing operations are complete. In general, slabs shall be cured with non-staining curing paper, hosing or fog spray; vertical surfaces shall be curing with Burlene or fog spray or an approved curing compound.

E. Protect fresh concrete from drying winds, rain, damage, or spoiling. Curing paper shall be lapped 4 inches minimum at joints and sealed with waterproof tape.

3.10 CONCRETE FINISHES

A. Unexposed Surfaces: All unexposed surfaces shall have any form finish, at the Contractor's option.

B. 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 slab.

C. Addition of Material: The addition of cement, sand, water, or mortar to slab surfaces while finishing concrete is strictly prohibited.

3.11 DEFECTIVE WORK

A. The following concrete work shall be considered defective and may be ordered by the Engineer to be removed and replaced at Contractor's expense:

1. Incorrectly formed.
2. Not plumb or level.
3. Not specified strength.
4. Containing rock pockets, voids, honeycomb, or cold joints.
5. Containing wood or foreign matter.
6. Otherwise not in accordance with the intent of the Drawings and Specifications.

END OF SECTION

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 90oF, 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.

E. (LBF) Light Broom Finish for equipment pads): while plastic draw a soft-bristled broom, over the concrete in long even strokes with downward pressure.

F. 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 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 50oF and 70oF 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 90oF. 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 featheredges 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. "V" 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 number 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 racks averaging 1/64th-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

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SECTION 03415

STRUCTURAL PRECAST CONCRETE - PLANT CAST

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes

1. Requirements for structural precast concrete units, plant cast, including but not limited to the following:

    a. Precast Concrete Stairs

B. Related Section:

1. Section 03300 - Cast-in-Place Concrete".

1.2 REFERENCES

A. American Society for Testing and Materials (ASTM)

1. A36, Standard Specification for Carbon Structural Steel.
2. A47, Standard Specification for Ferritic Malleable Iron Castings.
3. A82, Standard Specification for Steel Wire, Plain, for Concrete Reinforcement.
4. A123, Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
5. A153, Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
6. A185, Standard Specification for Steel Welded Wire Reinforcement, Plain, for Concrete.
7. A307, Standard Specification for Carbon Steel Bolts and Studs, 60 000 PSI Tensile Strength.
8. A325, Standard Specification for Structural Bolts, Steel, Heat Treated, 120/105 ksi Minimum Tensile Strength.
9. A497, Standard Specification for Steel Welded Wire Reinforcement, Deformed, for Concrete.
10. A615, Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement.
11. A666, Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar.
12. A706, Standard Specification for Low-Alloy Steel Deformed and Plain Bars for Concrete Reinforcement.
13. C33, Standard Specification for Concrete Aggregates.
14. C42, Standard Test Method for Obtaining and Testing Drilled Cores and Sawed Beams of Concrete.

15. C94, Standard Specification for Ready-Mixed Concrete.
16. C150, Standard Specification for Ready-Mixed Concrete.
17. C260, Standard Specification for Air-Entraining Admixtures for Concrete.
18. C309, Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete.
19. C330, Standard Specification for Lightweight Aggregates for Structural Concrete.
20. C618, Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete.
21. C404, Standard Specification for Aggregates for Masonry Grout.
22. C494, Standard Specification for Chemical Admixtures for Concrete.
23. C567, Standard Test Method for Determining Density of Structural Lightweight Concrete.
24. C881, Standard Specification for Epoxy-Resin-Base Bonding Systems for Concrete.
25. C1077, Standard Practice for Laboratories Testing Concrete and Concrete Aggregates for Use in Construction and Criteria for Laboratory Evaluation.
26. C1107, Standard Specification for Packaged Dry, Hydraulic-Cement Grout.
27. E119, Standard Test Methods for Fire Tests of Building Construction and Materials.
28. E329, Standard Specification for Agencies Engaged in Construction Inspection and/or Testing.

B. American Association of State Highway and Transportation Officials (AASHTO)
   1. Standard Specification for Roads and Bridges, 17th Edition, Section 5.

C. American Concrete Institute (ACI)
   1. 211-1, Standard Practice for Selecting Proportions for Normal, Heavyweight, and Mass Concrete.
   2. 211-2, Standard Practice for Selecting Proportions for Structural Lightweight Concrete.
   3. 301, Specification for Structural Concrete for Buildings.
   4. 304R, Guide for Measuring, Mixing, Transporting, and Placing Concrete.
   5. 305R, Hot Weather Concreting.
   6. 306R, Cold Weather Concreting.
   7. 309R, Guide for Consolidation of Concrete.
   8. 318, Building Code Requirements for Reinforced Concrete.

D. American Welding Society (AWS)
   1. D1.1, Structural Welding Code-Steel.
   2. D1.4, Structural Welding Code-Reinforcing Steel.

E. Concrete Reinforcing Steel Institute (CRSI)

1. Manual of Standard Practice.

F. Precast Prestressed Concrete Institute (PCI)

1. MNL-116, Manual for Quality Control for Plants and Production of Precast and Prestressed Concrete Products.
2. MNL-120, Design Handbook.
3. MNL-124, Design for Fire Resistance of Precast Prestressed Concrete.
4. MNL-127, Recommended Practice for Erection of Precast Concrete.

G. Society for Protective Coatings (formally Steel Structures Painting Council) (SSPC)

1. SP-3, Power Tool Cleaning.
2. PA-1, Shop, Field, and Maintenance Painting of Steel.
3. Paint 20, Zinc-Rich Coating, Type I-Organic and Type II-Inorganic.

H. Military Specification

1. DOD-P-21035A, Paint High Zinc Dust Content, Galvanizing Repair.

I. Federal Specification

1. FS-TT-P-664, Primer Coating, Alkyd, Corrosion Inhibiting, Lead and Chromate Free, VOC-Compliant.

1.3 PERFORMANCE REQUIREMENTS

A. Structural Performance: Engineer, fabricate, and install structural precast concrete to withstand design loadings indicated within limits and under conditions required.

1. Stairs shall be designed for a 90 PSF pedestrian live load.
2. The walls slab shall be designed to resist the lateral loads established by the AASHTO LRFD Bridge Design Specifications, 10th Edition. The lateral earth pressure shall be as a minimum at rest (Ko).

B. Engineering Responsibility: Engage a fabricator who assumes undivided responsibility for engineering structural precast concrete structures by employing a qualified professional engineer to prepare design calculations, fire-resistance calculations, shop drawings, and other structural data.

1.4 SUBMITTALS

A. Submit in accordance with Section 01300

1. Product data and instructions for manufactured materials and products.
   a. Certification by paint and curing compound manufacturers that products supplied comply with local regulations controlling use of volatile organic compounds (VOCs).
2. Shop drawings prepared by or under the supervision of a qualified professional engineer detailing fabrication and installation of precast concrete units. Indicate member dimensions

and cross-sections; locations, sizes, and types of reinforcement, including special reinforcement; and lifting devices necessary for handling and erection.

a. Indicate layout and dimensions, and identify each precast concrete unit corresponding to sequence and procedure of installation. Indicate welded connections by AWS standard symbols. Detail loose, cast-in, and field hardware, inserts, connections, and joints, including accessories and construction at openings in precast units.

b. Indicate locations and details of anchorage devices that are to be embedded in other construction. Furnish templates, if required, for accurate placement.

c. For precast concrete indicated to comply with design loadings or calculated fire-resistance requirements, include structural analysis data sealed and signed by the qualified professional engineer responsible for their preparation.

d. Welder certificates signed by Contractor certifying that welders comply with requirements specified under the "Quality Assurance" Article.

e. Design mixes for each concrete mix. Submit revised mix proportions when characteristics of materials, project conditions, weather, test results, or other circumstances warrant adjustments.

f. Material test reports from a qualified independent testing agency evidencing compliance with requirements of the following based on comprehensive testing of current materials:

1) Concrete materials.

2) Reinforcing materials.

3) Admixtures.

g. Material certificates in lieu of agency test reports, when permitted by Engineer, signed by fabricator certifying that each material item complies with requirements.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: Engage an experienced Installer who has completed structural precast concrete work similar in material, design, and extent to that indicated for this Project and with a record of successful in-service performance.

B. Fabricator Qualifications: Firm experienced in producing structural precast concrete units similar to those indicated for this Project and with a record of successful in-service performance as well as sufficient production capacity to produce required units without delaying the Work.

1. Fabricator must participate in the PCI Plant Certification Program and be designated a PCI Certified Plant for the following product group and category:

2. Product Group and Category: Group C, Category C1.

C. Professional Engineer Qualifications: A professional engineer legally authorized to practice in the jurisdiction where Project is located and experienced in providing engineering services of the kind indicated that have resulted in the installation and successful in-service performance of precast concrete units similar to this Project in material, design, and extent.

D. Testing Agency Qualifications: To qualify for acceptance, an independent testing agency must demonstrate to Engineer's satisfaction, based on evaluation of agency-submitted criteria conforming to ASTM C1077 and ASTM E329, that it has the experience and capability to satisfactorily conduct the testing indicated without delaying the Work.

E. PCI Design Standard: Comply with recommendations of PCI MNL-120 applicable to types of structural precast concrete units indicated.

F. PCI Quality-Control Standard: Comply with requirements of PCI MNL-116 including manufacturing and testing procedures, quality-control recommendations, and camber and dimensional tolerances for types of units required.

G. ACI Publications: Comply with the following ACI publications applicable to types of structural precast concrete units indicated:

1. ACI 301 "Specifications for Structural Concrete for Buildings."
2. ACI 318 (ACI 318M) "Building Code Requirements for Reinforced Concrete."

H. Welding Standards: Comply with applicable provisions of AWS D1.1 and AWS D1.4.

1. Certify that each welder has satisfactorily passed AWS qualification tests for welding processes involved and, if pertinent, has undergone recertification.

I. Calculated Fire-Test-Response Characteristics: When fire-resistance-rated assemblies are indicated, provide structural precast concrete units whose calculated fire resistance has been determined according to ASTM E119 and PCI MNL-124 and is acceptable to authorities having jurisdiction.

J. Fire-Test-Response Characteristics: Where applicable provide structural precast concrete units that comply with the following requirements:

1. Fire-response tests are performed by a qualified testing and inspecting agency. A qualified testing and inspecting agency includes UL or another agency that is acceptable to authorities having jurisdiction and performs testing and follow-up services.
2. Fire-resistance-rated assemblies indicated are identical in materials and construction to those tested for fire resistance per ASTM E119.
3. Fire-resistance-rated assemblies are indicated by design designations listed in the UL "Fire Resistance Directory" or in the listings of another qualified testing and inspecting agency.
4. Products are identified with appropriate markings of applicable testing and inspecting agency.

K. Product Options: The drawings indicate size, profiles, and dimensional requirements of precast concrete.

L. Preinstallation Conference: Conduct conference at Project site to comply with requirements of Division 1 Section "Project Meetings".

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver precast concrete to the Project site in such a manner and time to ensure continuity of installation. Store structures at the Precaster yard to prevent cracking, distorting, warping, staining, or other physical damage, and so that markings are visible.

B. Lift and support unit only at designated lifting or supporting points as shown on final shop drawings.

C. Deliver anchorage items that are to be embedded in other construction before starting such work. Provide setting diagrams, templates, instructions, and directions, as required, for installation.

PART 2 - PRODUCTS

2.1 PRECAST CONCRETE FABRICATORS

A. Fabricators: Subject to compliance with requirements, suggested fabricators offering products that may be incorporated in the Work include, but are not limited to, the following:

1. CSI Concrete Systems, Hudson, N.H.
2. Chase Precast, N. Brookfileld, MA.
3. Oldcastle Precast, Avon, CT.

2.2 FORMWORK

A. Forms: Provide forms and, where required, form facing materials of metal, plastic, wood, or another acceptable material that is nonreactive with concrete and will produce required finish surfaces.

2.3 MATERIALS AND COMPONENTS

A. Reinforcing

1. Reinforcing Bars: ASTM A615, Grade 60 (ASTM A615M, Grade 400), deformed.
2. Low-Alloy-Steel Reinforcing Bars: ASTM A706, Grade 60 (ASTM A706M, Grade 400).
3. Steel Wire: ASTM A82, plain, cold drawn.
4. Steel-Welded Wire Fabric: ASTM A185, plain, cold drawn.
5. Deformed-Steel-Welded Wire Fabric: ASTM A497, cold drawn.
6. Supports for Reinforcement: Provide supports for reinforcement, including bolsters, chairs, spacers and other devices for spacing, supporting and fastening reinforcing, complying with CRSI recommendations.
    a. For exposed-to-view concrete surfaces, legs of supports shall not be in contact with forms. Exposure of support, legs, or reinforming on exposed-to-view surface is prohibited.

B. Concrete

1. Portland cement: ASTM C150, Type I or Type III.
    a. Use only one brand and type of cement throughout Project, unless otherwise acceptable to Architect.
2. Fly Ash: ASTM C618, Class C or F.
3. Normal-Weight Aggregates: ASTM C33, Class 5S. Provide aggregates from a single source.
4. Lightweight Aggregates: ASTM C330.
5. Water: Potable.
6. Admixtures, General: Provide admixtures for concrete that contain not more than 0.1 percent chloride ions by mass of Portland cement or cementitious material.
7. Air-Entraining Admixture: ASTM C260, certified by manufacturer to be compatible with other required admixtures.
8. Water-Reducing Admixture: ASTM C494, Type A.
9. Water-Reducing and Accelerating Admixture: ASTM C494, Type E.
10. Water-Reducing and Retarding Admixture: ASTM C494, Type D.

C. Connections and Finishes

1. Steel Shapes and Plates: ASTM A36 (ASTM A 36M).
2. Malleable Iron Castings: ASTM A47 (ASTM A 47M).
3. Plate Stainless Steel: ASTM A666, Type 304, of grade suitable for application.
4. Bolts and Studs: ASTM A307, Grade A (ASTM F 568, Property Class 4.6); carbon-steel, hex-head bolts and studs; carbon-steel nuts; and flat, unhardened steel washers.
5. High-Strength Bolts and Nuts: ASTM A325 (ASTM A325M), Type 1, heavy hex steel structural bolts, heavy hex carbon-steel nuts, and hardened carbon-steel washers.
6. Welded Headed Studs: AWS D1.1, Type B headed studs, cold-finished carbon-steel bars.
7. Deformed-Steel Wire Bar Anchors: ASTM A497.
8. Welding Electrodes: Comply with AWS standards.
9. Accessories: Provide clips, hangers, shims, and other accessories required to install precast concrete units.
10. Hot-Dip Galvanized Finish: For exterior steel items and items indicated for galvanizing, apply zinc coating by the hot-dip process, complying with the following requirements:
11. ASTM A123 for galvanizing rolled, pressed, and forged shapes, plates, bars, and strips.
12. ASTM A153 for galvanizing iron and steel hardware.
13. Galvanizing Repair Paint: High-zinc-dust-content paint with dry film containing not less than 94 percent zinc dust by weight, and complying with DOD-P-21035A or SSPC-Paint 20.

14. Shop-Primed Finish: Prepare surfaces of interior steel items, except those with galvanized finish or those surfaces to be embedded in concrete, according to requirements of SSPC-SP 3 and shop-apply primer according to SSPC-PA 1.

    a. Primer: Fast-curing, lead- and chromate-free, VOC-conforming, universal modified-alkyd primer with good resistance to normal atmospheric corrosion, complying with performance requirements of FS TT-P-664.

D. Grout

1. Cement Grout: Portland cement, ASTM C150, Type I, and clean, natural sand, ASTM C404. Mix at ratio of 1 part cement to 2-1/2 parts sand, by volume, with minimum water required for placement and hydration.

2. Nonmetallic, Nonshrink Grout: Premixed, nonmetallic, noncorrosive, nonstaining grout containing selected silica sands, portland cement, shrinkage-compensating agents, plasticizing and water-reducing agents, complying with ASTM C1107, with fluid consistency and an extended working time.

3. Epoxy Grout: ASTM C881, 2-component epoxy resin, of type, grade, and class to suit requirements.

E. Curing Materials

1. Clear, Solvent-Borne, Liquid, Membrane-Forming Curing Compound: ASTM C309, Type I, Class A or B, wax free.

2. Clear, Waterborne, Membrane-Forming Curing Compound: ASTM C309, Type I, Class B.

    a. Provide material that has a maximum volatile organic compound (VOC) rating of 350 g/L.

2.4 CONCRETE MIXES

A. Prepare design mixes for each type of concrete required.

1. Limit use of fly ash to not exceed, in aggregate, 25 percent of the Portland cement by weight.

B. Design mixes may be prepared by a qualified independent testing agency or by qualified precast manufacturing plant personnel at precast fabricator's option.

C. Normal-Weight Concrete: Proportion mixes by either laboratory trial batch or field test data methods according to ACI 211.1 and ACI 301, using materials to be used on the Project, to provide normal-weight concrete with the following properties:

1. Compressive Strength (28-Day): 5000 psi (34.5 MPa).

2. Maximum Water-Cementitious Materials Ratio at Point of Placement: 0.40.

D. Add air-entraining admixture at manufacturer's prescribed rate to result in normal-weight concrete at point of placement having an air content as follows, with a tolerance of plus or minus 1-1/2 percent:

1. Severe exposure conditions where the concrete will be exposed to freezing.

a. Air Content: 6 percent for 1-inch (25-mm) maximum aggregate.

b. Air Content: 6 percent for 3/4-inch (19-mm) maximum aggregate.

c. Air Content: 7 percent for 1/2-inch (13-mm) maximum aggregate.

2. Mild exposure conditions where the concrete will NOT be exposed to freezing.

a. Air Content: 2.5 to 4.5 percent.

E. Lightweight Concrete: Proportion mixes by either laboratory trial batch or field test data methods according to ACI 211.2 and ACI 301, using materials to be used on the Project, to provide lightweight concrete with the following properties:

1. Compressive Strength (28-Day): 5000 psi (34.5 MPa).

2. Unit Weight: Calculated equilibrium unit weight of 115 lb/cu. ft. (1842 kg/cu. m), plus or minus 3 lb/cu. ft. (48 kg/cu. m), according to ASTM C567.

F. Add air-entraining admixture at manufacturer's prescribed rate to result in lightweight concrete at point of placement having an air content as follows:

1. Severe exposure conditions where the concrete will be exposed to freezing.

a. Air Content: 4 to 6 percent for 3/4-inch (19-mm) maximum aggregate.

b. Air Content: 4.5 to 7.5 percent for 3/8-inch (10-mm) maximum aggregate.

2. Mild exposure conditions where the concrete will NOT be exposed to freezing.

a. Air Content: 4 percent, minimum.

G. Other Admixtures: Use water-reducing, water-reducing and accelerating, or water-reducing and retarding admixtures according to manufacturer's directions.

H. Concrete-Mix Adjustments: Concrete-mix design adjustments may be proposed when characteristics of materials, project conditions, weather, test results, or other circumstances warrant.

2.5 FABRICATION

A. Formwork: Accurately construct forms, mortar tight, of sufficient strength to withstand pressures due to concrete placing operations, temperature changes, and for pretensioning and detensioning operations. Maintain formwork to provide completed precast concrete units of shapes, lines, and dimensions indicated, within fabrication tolerances specified in PCI MNL-116.

1. Coat surfaces of forms with bond-breaking compound before reinforcement is placed. Provide commercial-formula, form-coating compounds that will not bond with, stain, or adversely affect concrete surfaces and that will not impair subsequent treatments of concrete surfaces requiring bond or adhesion. Apply in compliance with manufacturer's instructions.

2. Unless forms for precast, prestressed concrete units are stripped prior to detensioning, design forms so that stresses are not induced in precast units due to deformation of concrete under prestress or movement during detensioning.

B. Built-In Anchorages: Accurately position built-in anchorage devices and secure to formwork. Locate anchorages where they do not affect the position of the main reinforcement or placing of concrete. Do not relocate bearing plates in units, unless acceptable to Architect.

C. Cast-in openings larger than 8 inches (200 mm) in diameter or 8 inches (200 mm) square according to final shop drawings. Other smaller holes may be field cut by trades requiring them, as acceptable to Engineer.

D. Reinforcement: Comply with the recommendations of CRSI's "Manual of Standard Practice" for fabricating, placing, and supporting reinforcement.

1. Clean reinforcement of loose rust and mill scale, earth, and other materials that reduce or destroy the bond with concrete.

2. Accurately position, support, and secure reinforcement against displacement by formwork, construction, or concrete placement operations. Locate and support reinforcement by metal chairs, runners, bolsters, spacers and hangers, as required.

3. Place reinforcement to obtain at least the minimum coverages for concrete protection. Arrange, space, and securely tie bars and bar supports to hold reinforcement in position while placing concrete. Set wire ties so ends are directed into concrete, not toward exposed concrete surfaces.

4. Install welded wire fabric in lengths as long as practicable. Lap adjoining pieces at least one full mesh and lace splices with wire. Offset laps of adjoining widths to prevent continuous laps in either direction.

E. Concrete Mixing: Comply with requirements and with ASTM C94. Following concrete batching, no additional water may be added.

F. Concrete Placement: Place concrete in a continuous operation to prevent seams or planes of weakness from forming in precast units. Comply with requirements of ACI 304R for measuring, mixing, transporting, and placing concrete.

1. Thoroughly consolidate placed concrete by internal and external vibration without dislocating or damaging reinforcement and built-in items. Use equipment and procedures complying with ACI 309R.

2. Comply with ACI 306R procedures for cold-weather concrete placement.

3. Comply with ACI 305R procedures for hot-weather concrete placement.

G. Identify pickup points of precast concrete units and orientation in structure with permanent markings, complying with markings indicated on final shop drawings. Imprint casting date on each precast unit on a surface that will not show in the finished structure.

H. Cure concrete according to the requirements of PCI MNL-116 by moisture retention without heat or by accelerated heat curing, using low-pressure live steam or radiant heat and moisture.

I. Finish formed surfaces of precast concrete as indicated for each type of unit, and as follows:

1. Standard Finish: Normal plant-run finish produced in forms that impart a smooth finish to concrete. Small surface holes caused by air bubbles, normal color variations, form joint marks, and minor chips and spalls will be tolerated. Major or unsightly imperfections, honeycombs, or structural defects are not permitted.

J. Finish unformed surfaces by trowel, unless otherwise indicated. Consolidate concrete, bring to proper level with straightedge, float, and trowel to a smooth, uniform finish.

K. Stairway walking surface shall receive a Wearing Surface Finish in accordance with Section 03346.

2.6 EXTERIOR COATING

A. The material shall be:

1. TREMproof 260 Spray-Applied Waterproofing Membrane made by Tremco Incorporated, 3735 Green Road, Beachwood, Ohio 44122; or

2. TREMproof 201/60 Fluid-Applied Waterproofing Membrane made by Tremco Incorporated, 3735 Green Road, Beachwood, Ohio 44122; or

3. Or product deemed acceptable by the Engineer.

2.7 SOURCE QUALITY CONTROL

A. The Owner may employ an independent testing agency to evaluate precast fabricator's quality control and testing methods.

1. Allow Owner's testing agency access to material storage areas, concrete production equipment, concrete placement, and curing facilities. Cooperate with Owner's testing agency and provide samples of materials and concrete mixes as may be requested for additional testing and evaluation.

B. Quality-Control Testing: Test and inspect precast concrete according to PCI MNL-116 requirements.

C. Strength of precast concrete units will be considered potentially deficient when precast concrete units fail to comply with requirements, including the following:

1. Fail to meet compressive-strength test requirements.

2. Reinforcement does not conform to fabrication requirements.

3. Concrete curing and protection of precast units against extremes in temperature fail to meet requirements.

4. Precast units are damaged during handling and erecting.

D. Testing: When there is evidence that the strength of precast concrete units may be deficient or may not meet requirements, the Owner will employ an independent testing agency to obtain, prepare, and test cores drilled from hardened concrete to determine compressive strength according to ASTM C42.

1. A minimum of 3 representative cores will be taken from precast concrete units of suspect strength, from locations directed by Engineer.

2. Cores will be tested, following immersion in water, in a wet condition per ACI 301 when precast concrete units will be wet under service conditions.

3. Cores will be tested in an air-dry condition per ACI 301 when precast concrete units will be dry under service conditions.

4. Strength of concrete for each series of 3 cores will be considered satisfactory if the average compressive strength is at least 85 percent of the 28-day design compressive strength and no core compressive strength is less than 75 percent of the 28-day design compressive strength.
5. Test results will be made in writing on the same day that tests are made, with copies to Engineer, Contractor, and precast fabricator. Test reports will include the Project identification name and number, date, name of precast concrete fabricator, name of concrete testing agency; identification letter, name, and type of precast concrete unit or units represented by core tests; design compressive strength, compressive strength at break and type of break, corrected for length-diameter ratio, and direction of applied load to core with respect to horizontal plane of concrete as placed.

E. Patching: Where core test results are satisfactory and precast concrete units meet requirements, solidly fill core holes with patching mortar and finish to match adjacent concrete surfaces.

F. Dimensional Tolerances: Units having dimensions smaller or greater than required and not meeting tolerance limits may be subject to additional testing.

1. Precast units having dimensions greater than required will be rejected if the appearance or function of the structure is adversely affected or if larger dimensions interfere with other construction. Repair or remove and replace rejected units, as required, to meet construction conditions.

G. Defective Work: Precast concrete units that do not conform to requirements, including strength, manufacturing tolerances, and finishes, are unacceptable. Replace with precast concrete units that meet requirements.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions for compliance with requirements, including installation tolerances, true and level bearing surfaces, and other conditions affecting performance of precast concrete units. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Welding: Perform welding in compliance with AWS D1.1 and AWS D1.4, with qualified welders.

1. Protect precast concrete units from damage by field welding or cutting operations and provide noncombustible shields as required.
2. Repair damaged metal surfaces by cleaning and applying a coat of galvanizing repair paint to galvanized surfaces.
3. Repair damaged metal surfaces by cleaning and repriming damaged painted surfaces.

B. Erection Tolerances: Install precast units level, plumb, square, and true, without exceeding the recommended erection tolerances of PCI MNL-127.

C. Shore and brace precast concrete units to maintain location, stability, and alignment until permanent connections are installed.

D. Grouting Connections and Joints: After precast concrete units have been placed and secured, grout open spaces at keyways, connections, and joints using suitable grout approved by the Engineer.

1. Provide forms or other acceptable method to retain grout in place until hard enough to support itself. Pack spaces with stiff grout material, tamping until voids are completely filled. Place grout to finish smooth, plumb, and level with adjacent concrete surfaces. Keep grouted joints damp for not less than 24 hours after initial set. Promptly remove grout material from exposed surfaces before it hardens.

3.3 CLEANING

A. Clean exposed surfaces of precast concrete units after erection to remove weld marks, other markings, dirt, and stains.

1. Wash and rinse according to precast concrete fabricator's recommendations. Protect other work from staining or damage due to cleaning operations.

2. Do not use cleaning materials or processes that could change the appearance of exposed concrete finishes.

3.4 ASSEMBLY

A. Assembly of this precast concrete will include all the mechanical equipment installed and tested. The equipment will be installed at the yard of the precaster and shipped as a completed unit. The precaster will be required to cooperate with the equipment installer by supplying a safe work area, sufficient electrical power, and water. Sanitary facilities will be the responsibility of the equipment installer.

END OF SECTION

SECTION 03600

EPOXY BONDING COMPOUND/GROUT

PART 1 - GENERAL

1.1 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.

1.2 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.

1.3 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

2.1 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.

2.2 MATERIAL

A. The epoxy material shall conform to the following requirements:

1. Component A shall be a modified epoxy resin of the Epichlorohydrin Pisphenol 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 hall 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 (Brokfield 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 x 105 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 x 105 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 x 105 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

3.1 GENERAL

A. Mix and apply the epoxy compound in accordance with the manufacturer's instructions.

3.2 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.

3.3 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:

F. Do not thin the epoxy bonding compound, as solvents will prevent proper cure.

1. Use only oven-dry aggregate to avoid encapsulation of moisture.

END OF SECTION

SECTION 04850

GRANITE CUT STONE

PART 1 - GENERAL

1.1 SUMMARY

A. The work included in this section includes the furnishing of fully fabricated Granite dimensional cut stone components and the installation of all furnished components as required for the full completion of the Granite Block Seat Wall installations as indicated by the Contract Drawings and these specifications.

1.2 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)

C. Specifications for Architectural Granite.

D. For Anchorage: ASTM Standards C-882, D-570, D-638,D-695,D-732, D-790.

1.3 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 03300 Cast-in-Place Concrete
3. Section 03600 Epoxy Grout

1.4 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 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 downward 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

1.5 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. Sufficient samples (Minimum of one (1) 12” long piece of the proposed granite shall be submitted to the Owner’s Representative to show the texture, finish, and anticipated range of color to be supplied.

C. The granite supplier shall submit copies of all full shop drawings to the Owner’s Representative for approval where applicable. These drawings shall show all sizes, dimensions, layout, finishes, bedding, bonding, stone jointing, and anchoring details, and identify 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 the material proposed for use. Submit reports from a qualified testing agency, indicating and interpreting test results for compliance based on comprehensive testing of materials.

1.6 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.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Packing and Loading

B. 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.

C. Delivery

1. Written Notice shall be provided to the Owner and Owner's Representative 48 hours prior to 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's Representative.

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.

D. 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.

E. If material is damaged in the unloading process, immediately notify the

F. Engineer for a determination on responsibility, suitability for reuse or rejection. If rejected the Contractor shall take charge and replace the stone pieces identified at no charge. Back charges to the supplier shall be if made only with prior notification.

1.8 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 of otherwise documented evidence to this effect to the Owner and Owners Representative.

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:

Plymouth Quarries
410 Whiting Street
Hingham, MA 02043
781.335.3686
www.plymouthquarries.com

Granites of America
15 Branch Avenue
Smithfield RI 02917
401.232.2040
www.granitesofamerica.com

JC Stone
539 Rockland Avenue
Jefferson, ME 04348
207.549.4729
www.jcstoneinc.com

PART 2 - PRODUCT

2.1 GRANITE BLOCK:

A. GENERAL: 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.

B. The Granite provided shall be 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.

1. Some granite types that may meet this criterion are Woodbury Gray and Chelmsford Gray.

C. 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 the overlapping of the torch.

2.2 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. Thermaled: 3/16 inch.

C. Back variation: ¼ inch on any piece under 12" thick, ½" 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

F. approved in the shop drawings. Where exposed, all corners shall be eased.

2.3 FLATNESS TOLERANCES

A. A 4' dimension in any direction on the surface shall determine variation from the true plane, or flat surfaces. Such variations on polished, 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 the 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

2.4 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 designed for stone cutting. 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.

PART 3 - EXECUTION

3.1 INSTALLATION: GENERAL

A. General:

1. Layout 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.
2. Careless handling of the granite will not be allowed. Damaged pieces will be rejected and shall not be installed.
3. 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.

3.2 INSTALLATION: SPECIFIC

A. Granite Placement. Before placing granite, the Contractor shall verify that all conditions are ready for the placement of granite. Verify that all layout and grade information is accurate and complete.

B. Ensure that during all granite installation and before placement of any vertical concrete, all reinforcement and any embedded items are 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.

D. Set stones level unless otherwise noted. Shim as necessary. Set granite pieces to obtain the reveals, angles, and orientations shown in the plans.

E. 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.

F. Set granite cut stones as shown on drawings.

G. All work involving epoxy, cement base coating and protective coating to ad-here 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 manufacturer's shelf-life limitations.

H. 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 the approved anchor bolt system Manufacturer’s recommendations.

I. Utilize anchor bolts, threaded dowels, and pins as per plans.

J. Mortar joints between Granite Blocks as shown 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 completely filled during the setting of the granite. After pointing the joints, carefully clean all joints and stone faces. Pointed joints shall have smooth, shallow concave surfaces.

K. Relieve all exterior corners and ease edges of permanently exposed Granite where occurring. Address any area of concern if so directed by the Owner's Representative.

L. Skate Stops shall be installed at all blocks between Granite Blocks. Refer to 02871 for Skate Stops.

3.3 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 05500

METAL FABRICATIONS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes

1. Requirements to fabricate, furnish, erect, set, fasten and install miscellaneous metalwork as indicated on the Drawings and as specified.

B. Related Sections

1. Section 03300 – Cast In Place Concrete
2. Section 03600 – Grout
3. Section 05520 – Metal Handrails and Railings
4. Section 05530 – Metal Grating
5. Section 09900 – Painting
6. Section 15050 – Pipe Penetrations

1.2 REFERENCES

A. American Society for Testing and Materials (ASTM)

1. A36, Specification for Carbon Structural Steel.
2. A48, Specification for Gray Iron Castings.
3. A53, Specification for Pipe, Steel, Black and Hot-Dipped, Zinc Coated, Welded Seamless.
4. A123, Specification for Zinc (Hot-Dipped Galvanized) Coatings on Iron and Steel Products.
5. A153, Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
6. A167, Specification for Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet, and Strip.
7. A276, Specification for Stainless Steel Bars and Shapes.
8. A307, Specification for Carbon Steel Bolts and Studs, 60,000 PSI Tensile Strength.
9. A325, Specification for Structural Bolts, Steel, Heat Treated, 120/105 ksi Minimum Tensile Strength.
10. A489, Specification for Carbon Steel Lifting Eyes.
11. A500, Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes.
12. A501, Specification for Hot-Formed Welded and Seamless Carbon Steel Structural Tubing.
13. B209, Specification for Aluminum and Aluminum-Alloy Sheet and Plate.

14. B221, Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.
15. B308, Specification for Aluminum-Alloy 6061-T6 Standard Structural Profiles.
16. B429, Specification for Aluminum-Alloy Extruded Structural Pipe and Tube.
17. B632, Specification for Aluminum-Alloy Rolled Tread Plate.
18. B660, Standard Practices for Packaging/Packing of Aluminum and Magnesium Products.
19. F436, Specification for Hardened Steel Washers.
20. F468, Specification for Nonferrous Bolts, Hex Cap Screws, Studs for General Use.
21. F593, Specification for Stainless Steel Bolts, Hex Cap Screws and Studs.
22. F594, Specification for Stainless Steel Nuts.
23. F844, Specification for Washers, Steel, Plain (Flat), Unhardened for General Use.

1.3 SUBMITTALS

A. In accordance with Section 01300 submit the following:

1. Manufacturer's technical data sheets for the following:
    a. Bitumastic coating.
    b. Grout.
    c. Chemical Anchors
2. Shop Drawings:
    a. Details of the fabrication and erection of each metal fabrication indicated on the Drawings.
    b. Plans, elevations, sections, and details of metal fabrications and their connections.
    c. Anchorage and accessory items.
    d. The shop drawings shall furnish the required information in sufficient detail and completeness that the work may be accomplished without the use of the Contract Drawings as a reference.
3. Welding Certificates: Copies of certificates for welding procedures and personnel.
4. Qualification Data: Firms and persons specified in the "Quality Assurance" Article shall demonstrate their capabilities and experience. Firms shall include a list of at least three (3) recently completed projects with project names and addresses. The name, address, and phone number of a contact (architect, engineer, or owner) shall be provided for each project in the list, as well as any other required information hereinafter or hereinbefore specified.

1.4 QUALITY ASSURANCE

A. Fabricator Qualifications:

1. Fabrication Company to be experienced in the production of metal fabrications similar to those indicated for this Project, with a record of successful in-service performance.
2. Fabrication Company possesses sufficient production capacity to produce the work required and complete the work within the duration of the contract.

B. Welding:

1. Procedures and personnel shall be qualified according to the latest revisions of the following American Welding Society designation:
   a. AWS D1.1, Structural Welding Code - Steel.
   b. AWS D1.2, Structural Welding Code - Aluminum.
   c. AWS D1.6, Structural Welding Code - Stainless Steel.
   d. Certification shall be provided stating that each welder has passed the AWS qualification tests for the welding processes involved and has maintained that certification as required by AWS.

1.5 DELIVERY STORAGE AND HANDLING

A. Aluminum to be delivered to the fabricator in accordance with ASTM B 660, complying with the commercial packing and preservation requirements.

B. Epoxy Adhesive

1. Store epoxy cartridges on pallets or shelving in a covered storage area.
2. Control temperature above 60 degrees F and dispose of cartridges if shelf life has expired.

C. Vinyl Ester Products

1. Store components on pallets or shelving in a covered storage area with locking door.
2. Control temperature within 41 to 77 degrees F and dispose of product if shelf life has expired.

1.6 PROJECT CONDITIONS

A. Field Measurements: Where metal fabrications are indicated to fit within reinforced concrete walls and other construction, dimensions shall be verified by field measurements before fabrication. The fabrication schedule shall be coordinated with the Construction Progress Schedule to avoid delaying the Work.

1. Established Dimensions: Where field measurements cannot be made without delaying the Work, proceed with fabricating metal fabrications upon receipt of Engineer reviewed and approved shop drawings, without field measurements. Allowance shall be made for trimming and fitting.

1.7 SCHEDULING

A. Installation of anchorages for metal fabrications shall be coordinated with the Contractor. Setting drawings, templates, and instructions for installing anchorages, including sleeves, concrete inserts, anchor bolts, items with integral anchors, and any items that are to be embedded in concrete shall be provided to the Contractor. Items to be embedded in concrete shall be delivered

to Project site sufficiently in advance to allow time for installation, as determined by the Contractor.

PART 2 - PRODUCTS

2.1 MATERIALS

1. Steel, in accordance with the following ASTM Designations unless otherwise indicated:
2. Steel plates and structural shapes — ASTM A36.
3. Steel Pipe — A501 or A53, Type E or S, Grade B
4. Structural Steel Tubing — A500, Grade B
5. Steel Bolts and Nuts:
   a. Carbon Steel — A307 or A36
   b. High-Strength — A325, Type 3
   c. Galvanized Steel Bolts and Nuts — A307 or A36, with A153 Zinc Coating, and ANSI B1.1
   d. Eyebolts — A489
   e. Threaded Rods — A36
   f. Flat Washers (Unhardened) — F844; use A153 for Zinc Coating
   g. Flat Washers (Hardened) — F436

B. Stainless Steel, Type 316 and in accordance with the following ASTM designations unless otherwise indicated:

1. Bars and Shapes — A276, AISI Type 316
2. Plate, Sheet, and Strip — A167, AISI Type 316
3. Bolts and Threaded Rods — F593, AISI Type 316,
4. Nuts — F594, AISI Type 316,
5. Welding Rods and Bare Electrodes: Compatible with the material to be welded per the AWS D1.6 specifications.
6. Passivation shall be in accordance with ASTM A380 and A 967. Nitric Acid passivation solutions will not be permitted.

C. Aluminum, in accordance with the following ASTM designations and alloy and temper designations of The Aluminum Association:

1. Structural shapes — B 308, 6061-T6 mill finish.
2. Extruded shapes — B 221, 6061-T6 mil finish
3. Structural Plates — B 209, 6061-T6 mil finish
4. Sheets — Alclad 3003-H14 and 3003

5. Bolts and nuts F468, 2024-T4
6. Aluminum Tread Plate:
   a. In accordance with ASTM B 632, 6061-T6.
   b. Provide a clear, Class II, anodized finish in accordance with Aluminum Association Designation AA-A31, 0.4 mils thick minimum.
7. Structural Aluminum Tubes ASTM B 429, 6063-T52, mill finish.
8. Welding Rods and Bare Electrodes:
   a. Compatible with the material to be welded per the AWS D1.2 specifications.
   b. Aluminum items to be anodized shall not be welded using 4043 weld rod.

D. Cast Iron
1. In accordance with ASTM A48, Class 35.

2.2 GROUT

A. In accordance with SECTION 03600.

2.3 FASTENERS

A. Provide Stainless steel fasteners for all connections unless indicated otherwise

B. Bolts:
1. Stainless steel in accordance with ASTM F 593, Alloy Group 2, Type 316,
2. CW with hexagonal heads shall be provided for connections.

C. Nuts:
1. Stainless steel in accordance with ASTM F 594, Alloy Group 2, Type 316,
2. CW with hexagonal heads, and thread designation to match stainless steel bolts shall be provided for connections.

D. Washers:
1. In accordance with ASTM F 436, except that the material shall be Type 316 stainless steel in accordance with ASTM A 276.

E. Stainless steel fasteners for framing connections
1. Provide bolts, nuts, and washers of the size and quantity as indicated on the Drawings. One nut shall be provided per each bolt unless otherwise indicated on the Drawings. A washer shall be provided at the contact surface between framing members or clips and the heads of bolts and nuts, minimum two (2) washers per bolt.

F. Machine Screws:
1. Stainless steel in accordance with ASME B18.6.3, Type 316.

2.4 ALUMINUM COVERS

A. Composed of aluminum tread plate, thickness as specified on the Drawings.

2.5 ALUMINUM FRAMING AND SUPPORTS FOR COVERS AND GRATING

A. Fabricated from structural aluminum shapes, structural aluminum tubes, and aluminum extrusions, of the size and quantity as indicated on the Drawings.

2.6 METAL STAIRS AND LADDERS

A. In accordance with SECTION 05510.

2.7 METAL HANDRAILS AND RAILINGS

A. In accordance with SECTION 05520.

2.8 METAL GRATINGS

A. In accordance with SECTION 05530

2.9 ABRASIVE NOSINGS

A. Aluminum.
   1. In accordance with ASTM B221 for extrusions.
   2. Class 30 for cast aluminum tread plate.
B. Abrasive, Two (2) part Epoxy combined with aluminum oxide grit.
C. [Two component] [Single component] as detailed on the Drawings.
D. Manufactured by Balco Inc, Wichita, KS or equal.

2.10 PIPE BOLLARDS

A. Fabricated from Schedule 40, welded, galvanized steel pipe in accordance with ASTM A53
B. Provide size and quantity indicated on the Drawings.

2.11 ALUMINUM ACCESS HATCH

A. General
   1. Provide size and quantity indicated on the Drawings. The door leaf shall be 1/4-inch aluminum diamond pattern plate to withstand a live load of 300 pounds per square foot and an AASHTO HS20 loading unless specified or indicated otherwise on the Contract Drawings.
B. Construction
   1. Channel frame shall be 1/4-inch aluminum with an anchor flange around the perimeter.

2. Door(s) shall be equipped with heavy forged brass hinges, stainless steel pins, compression spring operators for easy operation, and automatic hold-open arm with release handle. A slam lock with removable handle shall be provided. Provide recessed hasp for pad lock on all exterior hatches.
3. A 1 1/2-inch drainage coupling shall be located in the front right corner of the channel frame. Drainage piping as detailed on the drawing.
4. Hardware shall be [zinc plated and chromate sealed] [stainless steel].
5. Factory finish shall be mill finish with bituminous coating applied to exterior portions of the frame which will be in contact with concrete.

C. Warrantee

1. Manufacturer shall guarantee against defects in materials and/or workmanship for five years.

D. Manufacturer

1. The access hatch shall be type J-5AL as manufactured by the Bilco Company, New Haven, Connecticut, or be an acceptable equivalent product.

E. Supply two (2) removable key wrenches with each hatch provided under this contract.

2.12 ALUMINUM PLATE COVERS AND FRAMES

A. General

1. The plate covers and frames shall be of the sizes indicated on the Drawings.
2. The frames shall be aluminum angles of the sizes indicated with welded strap anchors for securing the frames in the concrete.
3. The frames shall have mitered corners with welded joints ground smooth where exposed.

B. Plate Cover:

1. Aluminum in accordance with ASTM B209, Alloy 6061-T6, tread plate,
2. Thickness minimum 1/4 inch with acceptable nonskid surface, reinforced with aluminum bars welded to the underside of the cover in accordance with the details.
3. The covers shall be made to fit neatly and accurately in the frames.
4. Plate covers shall have 1-in. diameter finger holes to facilitate removal. All edges of holes cut in the plate covers shall be ground smooth.

C. Hinged Plate Cover:

1. Furnished with heavy duty stainless steel, plain bearing hinges with stainless-steel pins.
2. Fastened to the covers and frames with stainless-steel machine screws.
3. Provided with flush lift handles fabricated from 1/2-in. diameter aluminum rod, alloy 6061-T6511.

D. Gasketed Plate Cover:

1. Continuous, compressible neoprene seals between the cover and frame at the perimeter.

2. Secured to the frames with countersunk, flathead, stainless-steel machine screws spaced approximately 6 in. on centers.

2.13 WALL SLEEVES

A. In accordance with SECTION 15050.

2.14 ANCHOR BOLTS

A. To be Stainless Steel.

B. Configuration and specific type as specified, as listed in the associated equipment specifications and as detailed on the Contract Drawings.

C. Provide Antiseizing Lubricant for all stainless steel threads.

D. Anchor Bolt Sleeves

1. High Density Polyethylene Plastic:

a. Single unit construction with deformed sidewalks such that the concrete and grout lock in place.

b. The top of the sleeve shall be self-threading to provide adjustment of the threaded anchor bolt projection.

c. Material requirements:

1) Plastic: High density polyethylene.

2) Density: ASTM D 1505

d. Manufacturer:

1) Sinco West, Simi Valley, CA

2) Or equal

2. Fabricated Steel Sleeve

a. A 36 steel.

E. Neoprene Gasket

1. ASTM D 1056 RE-41-E, soft, closed-cell, neoprene gasket material, suitable for exposure to sewage and sewage gases, unless otherwise shown.

2. Thickness: Minimum 1/4 inch.

3. Furnish without skin coat.

4. Furnish two spare gaskets for each location shown requiring neoprene gaskets, and furnish one roll of 4-inch wide by 50-foot long neoprene gasket material with 1 pint of manufacturer's recommended adhesive.

5. Manufacturers and Product:

a. Rubatex Division of Great American Industries, Bedford, VA; Rubatex No. R-411-N.

b. Garlock Manufacturing, San Francisco, CA.

c. Or equal.

2.15 CHEMICAL ANCHORING SYSTEMS

A. Epoxy Anchors

1. Anchor Rod: Stainless steel threaded rod free of grease, oil or other deleterious material with a 45-degree chisel point.
2. Epoxy Adhesive:
   a. ASTM C 881, Type 1, Grade 3, Class A, B, or C.
   b. Two-component, 100 percent solids, nonsag, paste, insensitive to moisture, designed to be used in adverse freeze/thaw environments and gray in color.
   c. Cure Temperature, Pot Life, and Workability: Compatible for intended use and environmental conditions.
3. Mixed Epoxy Adhesive: Nonsag paste consistency, with ability to remain in a 1-inch diameter overhead drilled hole without runout, having the following properties:
   a. Slant Shear Strength, ASTM C 881, No Failure In Bond Line, Dry/Moist Conditions: 5,000 psi.
   b. Compressive Strength, ASTM D 695; 14,000 psi, minimum.
   c. Tensile Strength, ASTM D 695: 4,500 psi.
   d. Heat Deflection Temperature, ASTM D 648 E2: 135 degrees F, minimum.
4. Epoxy Adhesive Packaging:
   a. Disposable, self-contained cartridge system capable of dispensing both epoxy components in the proper mixing ratio and fit into a manually or pneumatically operated caulking gun.
   b. Cartridge Markings: Include manufacturer's name, batch number, mix ratio by volume, product expiration data, ANSI hazard classification, and appropriate ANSI handling precautions.
5. Manufacturers and Products:
   a. Adhesives Technology Corp.; Anchor-It Fastening Systems, HS 200 Epoxy Resin.
   b. ITW Ramse/Red Head; Epcon Ceramic 6 Epoxy Anchor System.
   c. Covert Operations; CIA Epoxy Anchors with viscosity to suit application.
   d. Rawplug Co., Inc.; Rawl/Sika Foil Fast Epoxy Injection Gel System.

B. Adhesive Anchors

1. Two-component vinyl ester adhesive, insensitive to moisture, designed to be installed in adverse freeze/thaw environments.

2.16 LOOSE LINTELS

A. Provide loose lintels as indicated on the Drawings. Fabricated from structural steel shapes and plates. Provide lintels hot-dip galvanized after fabrication.

B. Provide galvanized steel loose lintels for wall openings up to 5'-0" wide. Provide galvanized steel lintels and anchor to precast concrete inner lintels for wall openings over 5'-0" wide. Space anchors at maximum 4'-0" on centers with minimum of 2 anchors per lintel.

2.17 GUARD CHAINS

A. Provide removable guard chains at openings in railings and double leaf access hatches.

B. Chain to be proof coil steel chain made from open hearth basic steel, hot-dip galvanized after fabrication and contain twelve ¼ inch welded links per foot.

C. Provide galvanized steel eyes and hooks for securing the chain at openings.

2.18 WHEEL GUARDS

A. 12 inch diameter, 20 inches high, cone shaped, with grout hole near top of guard.

B. Cast Iron construction.

C. Type R-4983B, manufactured by Neenah Foundry, Neenah, WI or equal.

D. Provide with matching corner guards.

2.19 LIFTING HOOKS

A. Supported from concrete:

1. Fabricated of 3/4-inch diameter steel rod bent in U shape and threaded at ends to receive nuts.
2. Fasten hook to 1/2-inch by 4-inch by 11-inch steel anchor plate.
3. Provide hooks hot-dip galvanized after fabrication.

B. Supported from steel:

1. Fabricated of 3/4-inch diameter steel rod bent in U shape and threaded at both ends to receive nuts.
2. Provide hooks hot-dip galvanized after fabrication.

2.20 TRENCH DRAIN COVERS

A. Gray cast iron trench drain solid covers and frames where indicated on the Drawings in accordance with ASTM A48, class 35 heavy duty use. Provide castings of uniform quality, free from blow holes, shrinkage defects, swells, cracks or other defects. Casting to be free of fins, burrs and slag.

1. Covers: Solid with checkered pattern top.
2. Bolt trench drain covers to frames with stainless steel cap screws.

3. Trench drain cover assembly to support AASHTO H20 rated load.

2.21 MISCELLANEOUS ITEMS

A. Provide hangers, supports, brackets, anchors, bolts and other miscellaneous metalwork not previously specified, of the shape, size, material and detail indicated on the Drawings for the purpose intended.

2.22 FABRICATION

A. General

1. Metals shall be sheared and punched cleanly and accurately. Burrs shall be removed.
2. Exposed edges shall be rounded to a radius of approximately 1/32 inch, unless otherwise indicated. Bent-metal corners shall be formed to the smallest radius possible without causing grain separation or otherwise impairing the work.
3. Corners and seams shall be welded continuously to comply with the following:
    a. Materials and methods shall be used that minimize distortion and develop strength and corrosion resistance of the base metals.
    b. Fusion shall be obtained without undercut or overlap.
    c. Welding flux shall be removed immediately.
    d. At exposed connections, exposed welds and surfaces shall be finished smooth and blended so that no roughness is apparent and the contour of the welded surface matches that of the adjacent surface.
4. Joints that will be exposed to weather shall be fabricated in a manner to exclude water. Drain holes shall be provided where water may accumulate.
5. Fabrications exposed to view in the completed Work, shall be provided with smooth, flat surfaces without blemishes.
6. Fabrications with exposed pitting, seam marks, roller marks, rolled trade names, or roughness shall not be used.

B. Shop Assembly:

1. Items shall be preassembled in shop to greatest extent possible to minimize field splicing and assembly.
2. Units shall be disassembled only as necessary for shipping and handling limitations.
3. Connections shall maintain the structural value of joined pieces through the use of properly sized holes, proper spacing and gage distances, tolerances, and other requirements as determined in the applicable codes listed elsewhere in this specification.
4. Units shall be clearly marked for reassembly and coordinated installation.

2.23 FINISHES

A. Fabrications shall be finished after shop assembly.

B. Anodized aluminum finishes to be in accordance with the Aluminum Association's standards for Anodized Architectural Aluminum as published by the American Architectural Manufacturer's Association (AAMA).

C. Anodized finishes damaged in the field during installation or transit shall be repaired using brush anodizing to restore the coating to its specified Class and thickness.

D. Galvanizing

1. Items of miscellaneous ironwork and steel work indicated on the Drawings or specified to be galvanized shall be zinc-coated by the hot-dip process in accordance with ASTM Standard Specification for Zinc (Hot-Galvanized) Coatings on Products Fabricated from Rolled, Pressed, and Forged Steel Shapes, Plates, Bars, and Strip, Designation A123; or ASTM Standard Specifications for Zinc Coating (Hot-Dip) on Iron and Steel Hardware, Designation A153, as appropriate.

E. Aluminum Surfaces in Contact with Concrete

1. Paint-on coating suitable for embedment in, or surface mounting to, concrete to prevent adverse reaction between aluminum and concrete surfaces.

2. Apply one coat of the following;

a. Coal Tar 46-465 H. B. Tnemecol, Tnemec Company, North Kansas City, MO.

b. Bitumastic Super Service Black, KOP-COAT, Inc., Pittsburgh, PA.

c. Tarmastic 100 Porter Coatings Division, Porter Paint Co., Louisville, KY.

d. Or equal.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Field Assembly:

1. Metal fabrications shall be cut, reinforced, drilled, and tapped cleanly and accurately to receive finish hardware, screws, and similar items.

2. Exposed work shall be formed true to line and level, with accurate angles and surfaces, and straight rounded edges.

3. Sharp or rough areas shall be removed on exposed traffic surfaces.

4. Exposed connections shall be formed with hairline joints, flush and smooth, using concealed fasteners where possible.

5. Exposed fasteners of type indicated on the Drawings shall be used; when not indicated, Phillips flat-head (countersunk) screws or bolts shall be used. Joints shall be located where least conspicuous.

B. Erection Tolerances

1. Maximum Variation from Plumb: 1/4 inch per story, noncumulative.

2. Maximum Offset from True Alignment: 1/4 inch.

C. Anchorage:

1. Coordinated type of anchorage with supporting structure.
2. Anchoring devices shall be fabricated and spaced to secure metal fabrications in place and to support indicated loads.

D. Fastening to In-Place Construction:

1. Anchorage devices and fasteners shall be provided where necessary for securing metal fabrications to in-place construction.

E. Cutting, Fitting, and Placement:

1. Cutting, drilling, and fitting for the installation of metal fabrications shall be performed as required.
2. Metal fabrications shall be set accurately in location, alignment, and elevation; with edges and surfaces level, plumb, true, and free of rack; and measured from established lines and levels.

F. Temporary bracing or anchors shall be provided in formwork for items that are to be built into concrete.

G. Exposed connections shall fit together to form hairline joints. Welded connections that cannot be made in the shop due to shipping limitations shall be made in the field. Do not weld, cut, or abrade surfaces of exterior units that have been anodized after fabrication and are for bolted or screwed field connections.

H. Field Welding: Comply with the following requirements:

1. Materials and methods shall be used that minimize distortion and develop strength and corrosion resistance of base metals.
2. Fusion shall be obtained without undercut or overlap.
3. Welding flux shall be removed immediately.
4. At exposed connections, welds and surfaces shall be finished smooth and blended so that no roughness shows after finishing and the contour of the welded surface matches that of adjacent surface.

3.2 SETTING BEARING AND LEVELING PLATES

A. Concrete bearing surfaces shall be cleaned of bond-reducing materials and roughened to improve bond to surfaces. The bottom surface of plates shall be cleaned.

B. Bearing and leveling plates shall be set on wedges, shims, or leveling nuts. After bearing members have been positioned and plumbed, anchor bolts shall be tightened. Wedges and shims shall not be removed but, if protruding, shall be cut off flush with the edge of bearing plate before packing with grout.

1. Provide grout in accordance with SECTION 03600.
2. Grout shall be solidly packed between bearing surfaces and plates to ensure that no voids remain.

3.3 ANCHOR BOLTS (CAST IN PLACE)

A. Accurately locate and hold anchor bolts in place with templates at the time concrete is placed.

B. Use sleeves for location adjustment and provide two nuts and one washer per bolt of same material as bolt. Minimum bolt size: 1/2-inch diameter by 12 inches long, unless otherwise shown.

C. All anchors and anchor bolts shall be properly located and shall be built into the connecting work when the work is built. Expansion bolts shall be inserted into drilled holes.

3.4 ANCHORING SYSTEMS (CURED CONCRETE)

A. Begin installation only after concrete or masonry receiving anchors have attained design strength.

B. Do not install an anchor closer than six times its diameter to either an edge of concrete or masonry, or to another anchor, unless specifically shown otherwise.

C. Install in accordance with manufacturer's specific quality control submittal instructions. Hole diameters are critical to installation, use only drills recommended by anchor manufacturer. Follow manufacturer's safe handling instructions.

D. Epoxy or Adhesive Anchors: Do not install when temperature of concrete is below 40 degrees F or above 100 degrees F, unless stated otherwise in manufacturer's written instructions.

E. Follow specific manufacturer safe handling practices when handling and installing concrete anchors.

3.5 FASTENER SCHEDULE:

Service Use and Location	Product	Remarks
Anchor Bolts Cast Into Concrete for Equipment Bases:		
Dry Areas	Stainless steel bolts, unless otherwise specified with equipment	
Submerged or Wet Areas	Stainless steel bolts with fusion bond coating unless otherwise specified with equipment	See Section 09900, Painting and Protection Coating
Anchor Bolts Cast Into Concrete for Metal Fabrications and Structural Components.		
Dry or Protected Areas Exterior, Wet, Washdown, and Chemical Handling Areas	Stainless steel bolts with fusion bond coating	See Section 09900, Painting
Anchors for Metal Components to Concrete: e.g. Electrical Panels and Equipment:		
Dry Areas	Stainless steel wedge or expansion anchors	
Wet and Damp Areas	Epoxy or adhesive stainless steel anchors	
Submerged or Buried in Earth	Epoxy or adhesive stainless steel anchors	
Connections for Structural Steel Components:		

Exterior and Interior	High-strength zinc-coated steel bolts	See Section 05120, Structural Steel
Connections for Steel Fabrications:		
Exterior and Interior	Zinc-coated steel bolts	See Section 05120, Structural Steel
Connections for Aluminum Components:		
Exterior and Interior	Stainless steel bolts	
All Others:		
Exterior and Interior	Stainless steel fasteners	

A. Do not use epoxy anchors to support fire-resistive construction or where ambient temperature will exceed 120 degrees F.

3.6 WHEEL GUARDS

A. Anchor to structure in accordance with manufacturer's instructions.

B. Fill guard completely with grout.

C. Paint safety yellow in accordance with SECTION 09900.

3.7 ABRASIVE NOSINGS

A. Provide abrasive nosings on concrete steps not being supplied or coated with another type of nosing or nonskid material.

3.8 ACCESS COVERS AND HATCHES

A. Accurately position prior to placing concrete, such that covers and hatches are flush with floor surface.

B. Protect from damage resulting from concrete placement. Thoroughly clean exposed surfaces of concrete spillage to obtain a clean, uniform appearance.

3.9 PIPE BOLLARDS

A. Anchored in place with concrete footings as detailed in the Contract Drawings. Bollards shall be supported and braced in position until their footings are cured.

B. Fill pipe solidly with 3,000 psi concrete, mounding the top surface.

C. Paint bollards Safety Yellow in accordance with:

1. Exterior Steel - Non-Immersion
    a. Shop Surface Preparation: SSPC SP6 Commercial Blast Cleaning
    b. Shop Primer Coat: Series 91-K97 Organic Zinc
        1) Dry Film Thickness: 2.5 to 3.5 mils
    c. Full Field Prime Coat: Series 66-color Hi-Build Epoxoline
        1) Dry Film Thickness: 3.0 to 5.0 mils

d. Finish Coat: Series 73-color Endura-Shield

1) Dry Film Thickness: 2.5 to 5.0 mils

e. Total Dry Film Thickness: 8.0 to 13.5 mils.

3.10 LADDERS

A. Anchor uprights to wall with angles or bent plates, weld to uprights and expansion bolt to wall. Ground smooth all welds.

B. Provide safety cages or fall prevention system as indicated.

3.11 LIFTING HOOKS

A. Supported from Concrete:

1. Coordinate installation with concrete placement.

B. Support for Steel:

1. Place lifting hooks in punched holes in bottom flange of steel beams and secure in place by nuts.

C. ANGLE PROTECTION

D. Provide galvanized structural steel angels and strap anchors as indicated and specified.

3.12 MISCELLANEOUS ITEMS

A. Metal Fabrication Subcontractor shall furnish items to be embedded in the Work to the Contractor for installation.

3.13 ALUMINUM WORK PROTECTION

A. Areas where the coating has been damaged by abrasion or other cause shall be cleaned and repainted as directed so that the aluminum will have a complete protective film when brought into contact with the material against which it is being protected. Before application of coating, the surface shall be cleaned of all dirt, heavy deposits of grease or oil, and other foreign substances, and shall be immersed in or swabbed with an acceptable solvent. Next, the surfaces shall be rinsed with clear water and thoroughly dried.

B. Protect against electrolysis where aluminum is to be used in conjunction with dissimilar metals.

C. Where a shop coating of methacrylate lacquer has been specified on aluminum work to protect the surface from stain, the protective coating of lacquer worn off due to handling or erection shall be replaced in the field by a new coating of lacquer of the same type.

D. During construction, care shall be taken to prevent damage to the aluminum work from splashing or by the accumulation of paint, concrete, mortar, or other similar materials.

3.14 CLEANING AND TOUCHUP

A. Painted Surfaces: Clean and touchup paint field welds, bolted connections, and abraded areas of shop paint as specified in SECTION 09900 or as approved by the Engineer.

B. Anodized Surfaces: Clean field welds, bolted connections, and abraded areas and repair anodizing to match the quality of the coating provided by the shop.

C. After aluminum has been erected, it shall be cleaned with mild soap and water, followed by a clear water rinse.

END OF SECTION

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SECTION 05520

METAL HANDRAILS AND RAILINGS

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Section Includes

1. Requirements for fabrication and installation of metal handrails and railing.

B. Related Sections

1. Section 05500 – Metal Fabrications

1.2 PERFORMANCE REQUIREMENTS

A. Railing assembly including anchoring of posts and framing members shall be capable of withstanding a minimum load of at least 200 lb. applied in any direction at any point on the top rail.

1.3 SUBMITTALS

A. In accordance with Section 01300 submit the following:

1. Manufacturer's specifications, dimension diagrams, anchor details and installation instructions for products to be used in the fabrication of handrails and railings, include coating products. Transmit copy of instructions to the installer.

2. Shop drawings for the fabrication and erection of handrail and railing assemblies. Include plans and elevations and include details of sections and connections. Submittal shall also include all connection and anchorage items.

3. Certification that all iron or steel brackets, hardware, fittings or other components are produced in the United States in accordance with the American Iron and Steel requirements of P.L. 113-76, the Consolidated Appropriations Act of 2014

1.4 PROJECT CONDITIONS

A. Field Measurements.

1. Take field measurements prior to preparation of shop drawings and fabrication to ensure proper fitting of the work to existing features and work completed under this Contract.

2. Coordinate fabrication with Construction Schedule.

1.5 SEQUENCING

A. Inserts and Anchorages:

1. Furnish inserts and anchoring devices which must be set in concrete or built into masonry for the installation of the handrails and railings work.

2. Provide setting drawings, templates, instructions and directions for installation of anchorage devices.
3. Coordinate delivery with other work to avoid delays.

PART 2 - PRODUCTS

2.1 HANDRAILS AND RAILINGS

A. Handrails Rails shall be:

1. 1¾" diameter Stainless Steel Grade 316.

B. General

1. Non-welded modular construction.
2. Fabricated as indicated on the Drawings.
3. Pickets to be ¼" x 2" ASTM A36 flat bars color galvanized – black.
4. Top and bottom rails and returns to be 2" x 1" A36 flat bars color galvanized – black. Corners shall have a minimum ⅛" fillet.
5. Posts shall be 2½" x 2½" ASTM A500 Grade B steel tubing color galvanized – black.
6. Clips, connections, and base plates to be ASTM A36 steel color galvanized – black
7. Provide stainless steel anchor bolts and fasteners in accordance with SECTION 05500.
    - Certification that all iron or steel brackets, hardware, fittings or other components are produced in the United States in accordance with the American Iron and Steel requirements of P.L. 113-76, the Consolidated Appropriations Act of 2014

C. Removable pipe railings

1. Fabricated in the same manner as fixed railings.
2. Installed as indicated.

2.2 HANDICAPPED PROVISIONS

A. Provide knurled, abrasive or other textured finish on portions of handrails, a distance of 4 feet from stairs and other openings, to indicate a danger signal in accordance with applicable ADA requirements.

2.3 FABRICATION

A. Shop Assembly:

1. Form exposed work true to line and elevation with accurate angles and surfaces and straight sharp edges. Ease exposed edges to a radius of approximately 1/32 of an inch, unless otherwise shown. Form bent-metal corners to the smallest radius possible without causing grain separation or otherwise impairing the work.

2. Provide for anchorage of the type shown, coordinated with the supporting structure. Fabricate and space anchoring devices as shown and as required to provide adequate support.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Anchorages

1. Furnish setting drawings, diagrams, templates instructions and directions for the installation of anchorages, such as concrete inserts, anchor bolts and miscellaneous items having integral anchors.
2. Install inserts and anchorage devices in accordance with Section 05500.
3. The use of impact imbedded fasteners will not be allowed.

3.2 FASTENING TO IN-PLACE CONSTRUCTION

A. Provide anchorage devices and fasteners where necessary to secure handrails and railings to in place construction; including, threaded fasteners for concrete and masonry inserts, toggle bolts, through-bolts, lag bolts, wedge anchors and other connectors as required.

3.3 CUTTING, FITTING AND PLACEMENT

A. Perform all cutting, drilling and fitting required for the installation. Set the work accurately in location, alignment and elevation, plumb, level, true and free of rack, measured form established lines and levels. Provide temporary bracing or anchors in framework for items which are to be built into concrete, masonry or similar construction.

B. Fit exposed connections accurately together to form tight hairline joints.

C. Adjust railings prior to securing in place to ensure proper matching at butting joints and correct alignment throughout their length. Space posts not more than 8 feet on centers, unless otherwise shown. Plumb posts in each direction. Secure posts and rail ends to building construction as follows:

1. Handrail and/or railings shall be mounted on the top of stair stringers as indicated on the drawings.
2. Posts set into concrete curbs shall be set into preformed holes and secured in place with nonshrinking grout. The holes shall be at least ¾ inches greater in diameter than the outside diameter of the bases and shall be a minimum of 5 inches deep.
3. Products offered by manufacturers to comply with the requirements for hydraulic cement include the following:
    a. Embeco: Master Builder's
    b. Ferrolith G; Sonneborn Bldg. Products, Inc.
    c. Por-Rok; Halemite Mfg. Co.

4. The bases to be side-mounted to structure walls shall be attached to brackets anchored to the structure wall with wedge anchors or suitable fasteners providing a system capable of withstanding the minimum load as specified.

D. Secure handrails to walls as shown, or by means of wall brackets, and wall return fitting at handrail ends.

E. Provide brackets with not less than 3 inch projection from the finish wall surface to the center of the pipe handrail, and with the wall plate portion of the bracket drilled to receive on 3/8 inch bolt. Locate brackets not more than 60 inches on center. Provide flush-type wall return fittings with the same projection as that specified for wall brackets. Secure wall brackets and wall return fittings to building construction as follows:

1. For concrete and solid masonry anchorage, use bolt anchor expansion shields and lag bolts.

2. For hollow masonry anchorage use toggle bolts having square heads.

3.4 WORK PROTECTION

A. Areas where the paint has been damaged by abrasion or other cause shall be cleaned and repainted as directed so that the railing will have a complete protective paint film when brought into contact with the material against which it is being protected. Before application of coating, the surface shall be cleaned of all dirt, heavy deposits of grease or oil, and other foreign substances, and shall be immersed in or swabbed with an acceptable solvent. Next, the surfaces shall be rinsed with clear water and thoroughly dried.

B. During construction, care shall be taken to prevent damage to the steel work from splashing or by the accumulation of paint, concrete, mortar, or other similar materials.

3.5 CLEANING STEEL WORK

A. After railing has been erected it shall be cleaned with mild soap and water followed by a clear water rinse.

END OF SECTION

SECTION 05530

METAL GRATING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes

1. Requirements for the fabrication and installation of metal gratings and appurtenances.

B. Filed Sub-bid

1. In accordance with the Massachusetts General Laws, Chapter 149, Sections 44A through 44I, the work of this Section shall be a sub-trade designated in the appropriate category of the General Bid Form and shall be a subcontract made on the basis of sub-bids. Bidders shall review DIVISION 0 - BIDDING REQUIREMENTS for all bidding and contract requirements.
2. The work of this Section shall be included in the sub-bid titled Miscellaneous and Ornamental Metals and is based on [portions] of Drawings Nos. ____ and any and all Drawings referenced thereon. For additional work, the bidders shall completely review all related project Contract Drawings.
3. The work described in the following Related Sections shall not be included in the Miscellaneous and Ornamental Metals sub-bid unless stated otherwise in the individual section. Related Sections shall not require filed sub-bids in another category unless stated in the individual specification.

C. Related Sections

1. Section 05500 - Metal Fabrications.
2. Section 05510 - Aluminum Stairs and Ladders.

1.2 REFERENCES

A. American Society for Testing and Materials (ASTM)

1. A36, Specification for Carbon Structural Steel.
2. A123, Specification for Zinc (Hot-Dipped Galvanized) Coatings on Iron and Steel Products.
3. A153, Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
4. A167, Specification for Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet, and Strip.
5. A307, Specification for Carbon Steel Bolts and Studs, 60,000 PSI Tensile Strength.
6. A568, Specification for Steel, Sheet, Carbon, and High-Strength, Low-Alloy, Hot-Rolled and Cold Rolled.
7. B221, Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.

8. F593, Specification for Stainless Steel Bolts, Hex Cap Screws and Studs.
9. F594, Specification for Stainless Steel Nuts.
10. F844, Specification for Washers, Steel, Plain (Flat), Unhardened for General Use.

B. American National Standards Institute/National Association of Architectural Metal Manufacturers (ANSI/NAAMM)

1. MBG 531, Metal Bar Grating Manual.
2. MBG 532, Heavy Duty Metal Bar Grating Manual.

1.3 SUBMITTALS

A. In accordance with Section 01300 submit the following:

1. Shop Drawings
   a. Grating: Show dimensions, weight, and size, and location of connections to adjacent grating, supports, and other work.
   b. Grating Anchorage: Show structural calculations and details of anchorage to supports to prevent displacement from traffic impact.
   c. Grating Supports: Show dimensions, weight, size, location, and anchorage to supporting structure.
   d. Catalog information and catalog cuts.
   e. Manufacturer's specifications, to include coatings.

B. Samples:

1. Two samples of aluminum grating approximately 4 inches by 8 inches, showing at least four crossbars each and four bearing bars each.
2. One sample will be retained at the site to be used as a basis for acceptance or rejection of grating installed.

C. Quality Control Submittals:

1. Special handling and storage requirements.
2. Installation instructions.
3. Factory test reports.
4. Manufacturer's Certification of Compliance for specified products.
5. Written Test Report that swaged crossbars, if used on grating, meet the requirements of the specified test and additional requirements of these Specifications.

1.4 PREPARATION FOR SHIPMENT

A. Insofar as is practical, factory assemble items provided.

B. Package and clearly tag parts and assemblies that are of necessity shipped unassembled and protect the materials from damage and facilitate identification and final assembly in the field.

PART 2 - PRODUCTS

2.1 FOOT TRAFFIC GRATING

A. Design:

1. Uniform Service Load: 200 psf minimum uniform load and 300 pound minimum concentrated load, unless otherwise shown.
2. Maximum Deflection: 1/4 inch, unless otherwise shown.
3. Space bearing bars at 1-3/16-inch center-to-center.
4. Banding: 3/16-inch minimum.

B. Material:

1. Aluminum Bar Type Grating:
   a. Press-locked rectangular design, as manufactured by IKG/Borden, Clark, NJ; IKG/Borden Type B or Type F.
   b. Swage locked aluminum grating, rectangular bar type, as manufactured by:
      1) IKG/Borden, Clark, NJ; IKG/Borden Type BS or Type FS.
      2) Seidelhuber Metal Products, Inc., San Carlos, CA; Type A-2.
      3) Ohio Gratings, Inc., Canton, OH; Aluminum Flush Top, Type 19SGF2.
      4) Klemp Corp., Chicago, IL; Type KRP.

or

2. Aluminum Bar Type Grating:
   a. Swage locked, rectangular bar grating in accordance with ASTM B221, 6061-T6
   b. Provide with clear, Class II, anodized finish in accordance with Aluminum Association Designation AA-A31, 0.4 mils thick minimum.
   c. Layout as indicated on the Drawings.
   d. Bearing Bars shall be of the depth noted on the drawings and shall be spaced at 1-3/16" on center.
   e. Cross bars shall be spaced at 4" on center. Individual grating panels shall be banded around their edges and clipped to framing members with the grating manufacturer's standard fastening devices.
   f. A serrated surface shall be provided where indicated on the Drawings.
   g. Grating shall be 19-SG-4 as manufactured by Ohio Gratings, Inc. of Canton, OH, Type BS as manufactured by IKG Borden or Paramus, NJ, or Engineer approved equal.
3. Galvanized Steel Bar Type Grating: Press-locked, deep rectangular crossbar design, as manufactured by IKG/Borden, Clark, NJ; Type B or Type F.
4. Galvanized Steel Plank Style Safety Grating

a. Hot rolled, pickled and oiled black steel, ASTM A568, hot-dip galvanized after fabrication with serrated openings.

b. Manufacturers and Products:

1) USG Industries, Metal Products Div., Chicago, IL; Grip-Strut.

2) IKG/Borden, Clark, NJ; IKG/Deck Span.

3) Morton Manufacturing, Libertyville, IL; Open-Grip.

5. Aluminum Plank Style Safety Grating

a. Regular, heavy-duty, with serrated openings.

b. Manufacturers and Products:

1) USG Industries, Metal Products Div., Chicago, IL; Grip-Strut.

2) IKG/Borden, Clark, NJ; IKG/Deck Span.

3) Morton Manufacturing Co., Libertyville, IL; Open-Grip.

6. Stainless Steel Plank Style Safety Grating

a. ASTM A167, Type 316L stainless steel grating with serrated openings.

b. Manufacturers and Products:

1) UGS Industries, Metal Products Div., Chicago, IL; Grip-Strut

2) IKG/Borden, Clark, NJ; IKG/Deck Span.

7. Stair Treads:

a. In accordance with this SECTION and the applicable requirements of SECTION 05510.

2.2 LIGHT VEHICULAR TRAFFIC GRATING

A. Design:

1. Maximum Load: 2,000 pounds per wheel, minimum wheel base and axle width of 4 feet 0 inchs.

2. Space main bars at 1-3/16-inch center-to-center.

3. Banding: 1/4 inch.

B. Material:

1. Aluminum Bar Type Grating: Press-locked deep rectangular crossbar designed as manufactured by IKG/Borden, Clark, NJ, IKG/Borden; Type B or Type F.

2. Galvanized Steel Bar Type Grating:

a. After Fabrication: ASTM A123, zinc coating.

b. Manufacturer and Product: IKG/Borden, Clark, NJ; IKG/Borden heavy-weld Type HWF or Type HWB or press-locked, rectangular crossbar, Type FJ or BJ.

2.3 HEAVY VEHICULAR TRAFFIC GRATING

A. Design:
   1. Loading: AASHTO HS 20-44.
   2. Banding: 1/4 inch.

B. Material:
   1. Galvanized Steel Bar Type:
      a. Heavy-duty, main bars spaced at 1-7/8-inch maximum center-to-center.
      b. After Fabrication: ASTM A123, zinc coating.
      c. Manufacturer and Product: IKG/Borden, Clark, NJ; KG/Borden heavy-weld Type HWF or HWB or press-locked, rectangular crossbar, Type BJ or FJ.

2.4 ACCESSORIES

A. Anchor Bolts and Nuts:
   1. Carbon Steel: ASTM A307 or A36.
   2. Stainless Steel: ASTM F593 and ASTM F594, Type 316.
   3. Galvanized Steel Bolts and Nuts: ASTM A153, zinc coating for ASTM A307 or A36.

B. Flat Washers
   1. Carbon Steel: (Unhardened): ASTM F844; use ASTM A153 for zinc coating.
   2. Stainless Steel: see SECTION 05500.

C. Removable Fastener Clips and Bolts:
   1. Removable from above grating walkway surface.
   2. Hat Bracket: Type 304 stainless steel.
   3. Bolt: type 316 stainless steel.
   4. Cast iron, galvanized body.
   5. Manufacturer and Product: Struct-Fast, Wellesley Hills, MA; Gratefast.

D. Partially Removable Anchor:
   1. Bolt: Threaded stud, Type 316 stainless steel.
      a. Manufacturer: Nelson Stud Welding Co., Loraine, OH.
   2. Hat Bracket: Type 304 stainless steel.
      a. Manufacturer:
         1) Struct-Fast, Wellesley Hills, MA.
         2) Or equal.

2.5 FABRICATION

A. General:

1. Exposed Surfaces: Smooth finish and sharp, well-defined lines.
2. Furnish necessary rabbets, lugs, and brackets so work can be assembled in a neat, substantial manner.
3. Conceal fastenings where practical.
4. Drill metalwork and countersink holes as required for attaching hardware or other materials.
5. Weld Connections: Not permitted on grating except at banding bars.

B. Design:

1. Field measure areas to receive grating, verify dimensions of new fabricated supports, and fabricate to dimension required for specified clearances.
2. Section Length: Sufficient to prevent its falling down through clear opening when oriented in the span direction when one end is touching either the concrete or the vertical leg of grating support.
3. Minimum Bearing: ANSI/NAAMM MBG 531.
4. Metal Crossbar Spacing: 4-inch maximum, unless otherwise shown or specified.
5. Crossbars: Flush with top of main bar and extend downward a minimum of 50 percent of the main bar depth.
    a. Swaged Crossbars:
        1) Within 1/4 inch of top of grating with 1/2-inch minimum vertical dimension after swaging, and minimum before swaging dimension of 5/16-inch square.
        2) Crossbar Dimension After Swaging: Minimum 1/8-inch wider than the opening at minimum of two corners at each side of each square opening in main bar.
        3) Crossbars may be a special extruded shape so that after swaging the top will be flat, 3/16 inches wide and will be flush with the top surface of the bearing bars for a minimum of 5/8 inches at center between bearing bars.
        4) Flush crossbar meeting all of the above except that after swaging shall overlap one corner by a minimum of 1/8 inch. A sample of one bearing bar and one crossbar shall be tested by holding the bearing bar and pulling on the crossbar. The crossbar to bearing bar shall sustain a minimum of 300 pounds without pullout of the bearing bar.
        5) Tightly fit main bars and crossbars allowing no differential movement.
6. Do not use weld type crossbars.
7. Banding: Same material as grating: ANSI/NAAMM MBG 531 and ANSI/NAAMM MBG 532.
8. Furnish stainless steel Type 316 threaded anchor studs, as fasteners for grating attachment to metal supports either not embedded or partially embedded in concrete, as manufactured by Nelson Studs Welding Co., Loraine, OH.

C. Supports:

1. Seat angles and beams where shown:

a. Same material as rectangular bar grating.

b. Extruded aluminum frame with slot for recessed grating clips, as manufactured by Thompson Fabricating Co., for aluminum I-Bar type grating.

2. Coordinate dimensions and fabrication with grating to be supported.

3. Coordinate dimensions with increased depth due to serrations.

4. Welded Frames with Anchors: Continuously welded.

D. Slip-Resistant Surface:

1. Rectangular Steel and Aluminum Bar Grating (as noted): As manufactured by:

a. IKG/Borden, Clark NJ; EZ Weldslip-Resistant Coating.

b. Seidelhuber Metal Products, Inc., Hayward, CA; Safety Grit Non-Slip System.

c. Ohio Gratings, Inc., Canton, OH with “Slip-Not” Safety Surface manufactured by W.S. Molnar Co., Detroit, MI.

2. I-Bar grating aluminum shall incorporate a striated anti-skid walking surface produced during the extrusion process, as manufactured by:

a. IKG/Borden, Clark, NJ.

b. Seidelhuber Metal Products, Inc., Hayward, CA.

c. Klemp Corp., Chicago, IL.

E. Aluminum:

1. ASTM B221 extruded shapes.

2. Fabricate as shown and in accordance with manufacturer’s recommendations.

3. Grind smooth sheared edges exposed in the finished work.

4. Swage crossbars, if used, with equipment strong enough to deform crossbars.

5. Eliminate any loose crossbar intersections on swaged grating.

F. Foot Traffic Grating: Any single grating section, individual plank, or plank assembly shall be not less than 1 foot 6 inches or greater than 3 feet 0 inch in width or weigh more than 150 pounds.

G. Light Vehicular Traffic Grating: Any single grating section, individual plank, or plank assembly shall not be less than 1 foot 6 inches or greater than 3 feet 0 inch in width (except 3/8-inch thick bearing bar grating) or weigh more than 150 pounds.

H. Heavy Vehicular Traffic Grating: Minimum width of grating sections shall be 2 feet 0 inch regardless of length or weight.

PART 3 - EXECUTION

3.1 PREPARATION

A. Electrolytic Protection:

1. Aluminum surfaces in contact with dissimilar metals, other than stainless steel, and embedded or in contact with masonry, grout, and concrete, to be protected by a coat of Bitumastic Super Service Black manufactured by KOP-COAT, Inc., Pittsburgh, PA; 46-465 Heavy Themecol manufactured by Tnemec Company, North Kansas City, MO; or an acceptable equivalent product.

3.2 INSTALLATION

A. Install supports such that grating sections have a solid bearing on both ends, and that rock and wobble grating movement does not occur under designed traffic loading.

B. Install plumb or level as applicable.

C. Install welded frames with anchors to straight plan without offsets.

D. Anchor grating securely to supports using minimum of four fasteners clips and bolts per grating section.

E. Use stainless steel anchors and accessories with aluminum gratings.

F. Completed installation shall be rigid and neat in appearance.

G. Commercially Manufactured Products:

1. Installation in accordance with manufacturer's recommendations.
2. Secure grating to support members with fasteners.
3. Welding is not permitted.
4. Fasteners: Field locate and install.
5. Permit each grating section or plank style grating assembly to be easily removed and replaced.

H. Protect painted surfaces during installation.

I. Should coating become marred, prepare and touch up surface in accordance with paint manufacturer's instructions.

END OF SECTION

SECTION 09900

PAINTING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Work under this section consists of surface preparation, priming, painting, color galvanization, and finishing work necessary to complete Work indicated or reasonably implied on Drawings.
2. Use high performance coating systems specified in this section to finish components, unless otherwise indicated. Without restricting volume or generality, work to be performed under this section shall include, but is not limited to:
    a. Interior wall and ceiling surfaces
    b. Interior steel (including steel railings).
    c. Interior concrete floors, walls and ceilings and concrete masonry
    d. Opening frames and trim
    e. Exterior metal items
    f. Piping, hangers, and supports
    g. Exposed bare pipes (including color coding)
    h. Electrical conduit, junction boxes, and other equipment
    i. Shop-primed items exposed to view, including metal fabrications, equipment, lintels, metal doors and frames, access doors, hangers, and railings not scheduled to receive other finish treatments
3. Providing a colored galvanic coating to steel members as shown on the Plans.
4. Painting or finishing is not needed for the following:
    a. Stainless steel piping, stainless steel equipment, stainless steel equipment supports, metal grating and stairs, aluminum railings. Surfaces or materials specifically scheduled or shown on Drawings to remain unfinished.
    b. Items provided with factory finish.
    c. Equipment nameplates, fire rating labels, and operating parts of equipment.
5. Materials and products having factory-applied primer shall not be considered factory finished.

B. Related Sections

1. Division 0 – Contract Requirements
2. Section 03300 - Cast-In-Place Concrete
3. Section 05520 – Metal Handrails and Railings

4. Division 11 - Equipment
5. Division 15 - Mechanical
6. Division 16 - Electrical

1.2 REFERENCES

A. Publications listed herein are part of this specification to extent referenced.

B. American National Standards Institute

1. ANSI A13.1 Scheme for the Identification of Piping Systems
2. ANSI Z535.1 Safety Color Code

C. American Society for Testing and Materials

1. ASTM B117 Test Method for Salt Spray (fog) Testing
2. ASTM D16 Terminology Relating to Paint, Varnish, Lacquer, and Related Products
3. ASTM D149 Test Method for Dielectric Breakdown Voltage and Dielectric Strength of Solid Electrical Insulating Materials at Commercial Power Frequencies
4. ASTM D522 Test Methods for Mandrel Bend Test of Attached Organic Coatings
5. ASTM D870 Practice for Testing Water Resistance of Coatings Using Water Immersion
6. ASTM D1014 Practice for Conducting Exterior Exposure Tests of Paints on Steel
7. ASTM D1308 Test Method for Effect of Household Chemicals on Clear and Pigmented Organic Finishes
8. ASTM D1653 Test Methods for Water Vapor Transmission of Organic Coating Films
9. ASTM D2047 Test Method for Static Coefficient of Friction of polished-Coated Floor Surfaces as Measured by the James Machine
10. ASTM D2794 Test Method for Resistance of Organic Coatings to the Effects of Rapid Deformation (Impact)
11. ASTM D3273 Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber
12. ASTM D3359 Test Method for Measuring Adhesion by Tape Test
13. ASTM D3363 Test for Film Hardness by Pencil Test
14. ASTM D4060 Test Method for Abrasion of Organic Coatings by the Taber Abraser
15. ASTM D4141 Practice for Conducting Accelerated Outdoor Exposure Tests of Coatings
16. ASTM D4213 Test Method for Wet Abrasion Resistance of Interior Paints
17. ASTM D4263 Test Method for Indicating Moisture in Concrete by the Plastic Sheet Method.
18. ASTM D4442 Test Methods for Direct Moisture Content of Wood and Wood-Base Materials
19. ASTM D4541 Test Method for Pull-Out Strength of Coatings Using Portable Adhesion-Testers

20. ASTM D4585 Practice for Testing the Water Resistance of Coatings Using Controlled Condensation
21. ASTM E84 Test Methods for Surface Burning Characteristics of Building Materials
22. ASTM E648 Test Method for Critical Radiant Flux of Floor-Covering Systems Using a Radiant Heat Energy Source
23. ASTM G8 Test Methods for Cathodic Disbonding of Pipeline Coatings
24. ASTM G53 Practice for Operating Light-and-Water-Exposure Apparatus (Fluorescent UV-Condensation Type) for Exposure of Nonmetallic Materials

D. National Fire Protection Association
   1. NFPA 101 Life Safety Code

E. Steel Structures Painting Council:
   1. SSPC SP-1 Specification for Solvent Cleaning
   2. SSPC SP-2 Specification for Hand Tool Cleaning
   3. SSPC SP-3 Specification for Power Tool Cleaning
   4. SSPC SP-5 Specification for White Metal Blast Cleaning
   5. SSPC SP-6 Specification for Commercial Blast Cleaning
   6. SSPC SP-7 Specification for Brush-Off Blast Cleaning
   7. SSPC SP-10 Specification for Near White Metal Blast Cleaning
   8. SSPC SP-11 Specification for Power Tool Cleaning to Bare Metal
   9. SSPC PA-1 Painting Application Specification
   10. SSPC SP-13 Specification for Preparation of Concrete Surfaces.

1.3 DEFINITIONS

A. Terms ‘Paint’ or ‘Painting’ shall in a general sense have reference to sealers, primers, oil, alkyd, latex, polyurethane, epoxy, and enamel type coatings and application of these materials.

B. Dry Film Thickness (DFT): Thickness, measured in mils, of a coat of paint in cured state.

C. Conform to ASTM D16 for interpretation of terms used in this section.

1.4 SUBMITTALS

A. Product Data (If other than specified products are submitted)
   1. Submit manufacturer's literature describing products to be provided, giving manufacturer's name, product name, and product line number for each material.
   2. Submit technical data sheets for each coating, giving descriptive data, curing times, mixing, thinning, and application requirements.
      a. Provide material analysis, including vehicle type and percentage by weight and by volume of vehicle, resin and pigment.

3. Submit manufacturer's Material Safety Data Sheets (SDS) and other safety requirements.

B. Shop Drawings

1. Submit a complete list of products proposed for use, including identifying product names and catalog numbers.
   a. Arrange in same format as Schedule of Paint Finishes below.
   b. Include applicable manufacturer's data and recommendations.

C. Samples

1. Selection Samples
   a. Submit color charts displaying manufacturer's full range of standard colors for initial selection by Engineer and Owner.
2. Verification Samples
   a. Submit 3 samples of each coating and color selected, showing bare, prepared surface and each successive coat.
   b. Samples shall be submitted on hardboard or metal as appropriate to coating system. Label samples on back, identifying manufacturer, product name, and color number.
   c. Sample Size: Not less than 12" x 12" (300 mm x 300 mm)

D. Quality Assurance Submittals: (If other than specified products are submitted)

1. Test Reports
   a. Provide certified ASTM Performance test reports, prepared by an independent testing laboratory, confirming compliance with specified materials performance criteria.
2. Certificates
   a. Coatings manufacturer shall certify that coating materials utilized are "non-lead" (less than 0.06% lead by weight in dried film) as defined in Part 1303 of Consumer Product Safety Act.
   b. Provide certification that specialized equipment as may be required by manufacturers for proper application of coating materials shall be utilized for work of this Section.
   c. Provide manufacturer's certification that products to be used comply with specified requirements and are suitable for intended application.
   d. Submit listing of not less than 5 of applicator's most recent applications representing similar scope and complexity to Project requirements. List shall include information as follows:
      1) Project name and address
      2) Name of owner
      3) Name of contractor
      4) Name of engineer
      5) Date of completion

3. Manufacturer's Instructions

    a. Submit manufacturer's installation procedures that shall be basis for accepting or rejecting actual installation procedures.

1.5 QUALITY ASSURANCE

A. Qualifications

1. Provide products from a company specializing in manufacture of high performance coatings with a minimum of 10-years experience on regional New England projects of similar size and complexity.
2. Applicator shall be trained in application techniques and procedures of coating materials and shall demonstrate a minimum of 2 years successful experience in such application.

    a. Maintain, throughout duration of application, a crew of painters who are fully qualified to satisfy specified qualifications.

3. Single Source Responsibility

    a. Materials shall be products of a single manufacturer or items standard with manufacturer of specified coating materials.

    b. Provide secondary materials that are produced or are specifically recommended by coating system manufacturers to ensure compatibility of system.

B. Regulatory Requirements

1. Conform to applicable codes and ordinances for flame, fuel, smoke, and volatile organic compound (VOC) ratings requirements for finishes at time of application.
2. For Potable Water applications, provide compliance information to NSF Standard 600 approvals.

C. Pre-Installation Meetings

1. Schedule a conference and inspection to be held on-site before field application of coating systems begins.
2. Conference shall be attended by Contractor, Owner's representative, Engineer, coating applicators, and a representative of coating material manufacturer.
3. Topics to be discussed at meeting shall include:

    a. A review of Contract Documents and accepted shop drawings shall be made and deviations or differences shall be resolved.

    b. Review items such as environmental conditions, surface conditions, surface preparation, application procedures, and protection following application.

    c. Establish which areas on-site will be available for use as storage areas and working area.

4. Pre-construction conference and inspection shall serve to clarify Contract Documents, application requirements and what work should be completed before coating application can begin.

5. Prepare and submit to parties in attendance a written report of pre-installation conference. Report shall be submitted within 3 days following conference.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Packing, Shipping, Handling, and Unloading

1. Deliver products in manufacturer's original unopened containers. Each container shall have manufacturer's label, intact and legible. Containers shall fully identify brand, type, grade, class, and other qualifying information used to describe contents.
2. Include on label for each container:
    a. Manufacturer's name
    b. Type of paint
    c. Manufacturer's stock number
    d. Color name and number
    e. Instructions for thinning, where applicable

B. Storage and Protection

1. Store materials in a protected area, away from construction activities. Restrict storage area to paint materials and related equipment.
2. Maintain temperature in area of storage between 40 degrees F (4 degrees C) and 110 degrees F (43 degrees C).
3. Comply with health and fire safety regulations.
4. Remove damaged materials from Site.

1.7 PROJECT CONDITIONS

A. Environmental Requirements

1. Apply coating materials under conditions as follows:
    a. Air temperature shall not be below 35 degrees F (2 degrees C) or above 110 degrees F (43 degrees C).
    b. Refer to specific product information sheets for minimum surface temperature requirements. Surface temperatures shall be at least 5 degrees F (15 degrees C) above dew point and in a rising mode.
    c. Relative humidity shall be no higher than 85%.
    d. For exterior spray applications, wind velocity shall be less than 15 mph.
    e. Atmosphere shall be relatively free of airborne dust.

1.8 SEQUENCING

A. Coordination

1. Perform work in proper sequence with work of other trades to avoid damage to finished work.
2. Where coatings are scheduled to be applied over shop-applied coatings, coordinate work of such shop applied products to ensure compatibility with field applied coating systems.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

A. To define requirements for materials, size, and design, this specification lists specific products manufactured by Tnemec Company, Inc. of Kansas City, Missouri. Materials specified herein are cited as minimum standard of quality which will be acceptable: Tnemec; Carboline; Ameron; or equal.

B. Materials specified herein shall not preclude consideration of equivalent or superior materials. Suggested equivalent materials or other substitutions shall be submitted to Engineer for consideration.

1. Requests for substitution shall include evidence of satisfactory past performance on water and wastewater treatment facilities.
2. Substitutions will not be considered that change number of coats or do not meet specified total dry film thickness.

2.2 ACCESSORIES

A. Coating Application Accessories

1. Provide application accessories as indicated in coating manufacturer's application instructions, including but not limited to cleaning agents, etching agents, cleaning cloths, sanding materials, and clean-up materials.
2. Material not specifically identified but needed for proper application shall be of a quality not less than specified products.

2.3 SHOP FINISHING

A. Surface Preparation

1. Clean surfaces of loose scale, rust, oil, dirt, and other foreign matters, immediately prior to priming. Surfaces to be coated shall be clean, dry, smooth and free from dust and foreign matter that will adversely affect adhesion or appearance.
2. Prior to application of primer, steel surfaces shall be prepared to receive coating system in compliance with manufacturer's recommendations and specifications of Steel Structures Painting Council as indicated in Schedule of Coating Systems below.

B. Shop Applied Coatings

1. Steel members shall be provided with one coat of primer as indicated in Schedule of Coating Systems below. Application for the first coat shall follow immediately after surface preparation and cleaning and within an eight-hour working day. Cleaned areas not receiving first coat within an eight-hour period shall be re-cleaned prior to application of first coat.

2. Apply materials at film thickness specified by methods recommended by manufacturer in compliance with SSPC PA-1.
3. Allow each coat of paint to dry thoroughly before applying succeeding coats.
4. Make finish topcoats smooth, uniform in color, and free of laps, runs, dry spray, over-spray, and skipped or missed areas.
5. Environmental conditions shall be in compliance with coating manufacturer's printed instructions.

2.4 SOURCE QUALITY CONTROL

A. Testing Laboratory Services
   1. Documents
      a. Review Contract Documents and applicable sections of referenced standards.
   2. Shop Painting Inspection
      a. Verify cleaning operations to surfaces are to condition specified.
      b. Verify conformance of paint to specification.
      c. Check for thickness of each coating, final thickness and holidays.
      d. Check touch-up for final finish.
   3. Reports
      a. Submit written progress reports describing tests and inspections made and showing action taken to correct non-conforming work. Report uncorrected deviations from Contract Documents.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Site Verification of Conditions
   1. Examine areas and conditions under which application of coating systems shall be performed for conditions that will adversely affect execution, permanence, or quality of coating system application.
   2. Measure moisture content of surfaces using an electronic moisture meter. Do not apply finishes until moisture content of surface is below following limits:
      a. Masonry Surfaces: 12% maximum
      b. Vertical Concrete Surfaces: 12% maximum
      c. Horizontal Concrete Surfaces: 8% maximum
      d. Gypsum Board Surfaces: 12% maximum
      e. Wood Surfaces: 15% maximum; in compliance with ASTM D4442
   3. Correct conditions detrimental to timely and proper execution of Work.

4. Do not proceed until unsatisfactory conditions have been corrected.
5. Commencement of installation constitutes acceptance of conditions and responsibility for satisfactory performance.

3.2 PREPARATION

A. Protection

1. Take precautionary measures to prevent fire hazards and spontaneous combustion. Remove empty containers from Site.
2. Place cotton waste, cloths and hazardous materials in containers, and remove from Site daily.
3. Provide drop clothes, shields, and other protective equipment.
4. Protect elements surrounding work of this section from damage or disfiguration.
5. As Work proceeds, promptly remove spilled, splashed, or splattered materials from surfaces.
6. During application of coating materials, post Wet Paint signs.
7. During application of solvent-based materials, post No Smoking signs.

B. Surface Preparation & Finish

1. General Requirements
   a. Prior to application of primer, surfaces shall be prepared to receive specified coating system in compliance with manufacturer's recommendations and specifications of Steel Structures Painting Council as indicated in Schedule below.
   b. Clean surfaces of residual deposits of grease, scale, rust, oil, dirt, and other foreign matter, immediately prior to priming. Surfaces to be coated shall be clean, dry, smooth and free from dust and foreign matter that will adversely affect adhesion or appearance.
   c. All previously painted surfaces, such as piping, CMU walls, concrete walls, doors, door frames, equipment, motors and floors shall be washed according to the coating manufacturer’s recommendations prior to painting. Remove glossy finishes of surfaces by sanding the substrate prior to painting, creating a suitable anchor pattern for the overcoat products.
2. Ferrous Metal Surfaces
   a. Surfaces shall be free of residual deposits of grease, rust, scale, dirt, dust, oil and weathered coating. Clean surfaces per SSPC SP #1 Standard.
   b. For shop primed surfaces, sand and scrape to remove loose and/or weathered primer and rust. Feather edges to make touch-up patches inconspicuous. Field welds and touch-ups shall be prepared to conform to original surface preparation standards as indicated in Schedule of Coating Systems below.
   c. Shop applied prime coatings that are damaged during transportation, construction, extended field exposure and/or installation shall be thoroughly cleaned and touched up in the field. Use repair procedures that ensure complete protection of adjacent primer. Repair methods and equipment may include wire brushing, hand or power tool cleaning, pressure washing and/or dry air blast cleaning. In order to prevent injury to surrounding

painted areas, blast cleaning may necessitate use of lower air pressure, small nozzle and abrasive particle sizes, short blast nozzle distance from surface, shielding and masking. If damage is too extensive to touch-up, item shall be re-cleaned and coated or painted.

d. For surfaces not shop primed, surfaces shall be cleaned in compliance with specifications of the Steel Structures Painting Council as indicated in Schedule of Coating Systems below.

e. Prepare all uncoated steel and iron ferrous metal surfaces per coating manufacturer requirements. Spot prime all repaired areas.

3. Galvanized Steel Surfaces

a. Clean metal with a grease-cutting solvent, such as xylene, to remove contamination and oils in compliance with SSPC-SP1.

b. Sand clean and spot prime abraded areas.

c. Reference SSPC SP #16 Standard.

4. Color Galvanized Steel Surfaces

a. Steel shall be galvanized following the requirements of ASTM A123/A123M for structural items or A653/A653M for sheet products.

b. Hardware items requiring centrifuging must comply with ASTM A153/A153M.

c. Finish and appearance shall be in accordance with ASTM A123 for a continuous, smooth, and uniform coating. The coating shall be free of uncoated areas, flux deposits, blisters, ash inclusions, or conditions that interfere with intended use.

d. Surface Preparation for Color Application

1) Newly galvanized surfaces must undergo proper curing/aging time as recommended to prevent adhesion issues (typical 24–72 hours, project-specific).

2) Surfaces shall be cleaned to remove oils and passivation if applicable.

e. Color Coating System

1) A multi-layer system consisting of primer + color topcoat or factory-applied coil coating shall be used.

2) Coating must be compatible with zinc substrates and provide UV, abrasion, and corrosion resistance suitable for the environment.

f. Film Thickness

1) Minimum dry film thickness (DFT) shall follow manufacturer standards (2-mil Min.).

2) Coating thickness shall be measured per ASTM A123.

3) Adhesion testing per ASTM D3359 or manufacturers recommendation.

5. Lightweight Metals

a. Prepare surfaces in compliance with SSPC SP2 or SP3.

6. Cast-In-Place and/or Precast Concrete Surfaces:

a. Allow concrete to cure for not less than 30 days prior to painting.

b. Remove loose particles with stiff brush.

c. Remove dirt, scale, efflorescence, powders, laitance, parting compounds, and other foreign matter.

d. Wash stains caused by weathering or corroding metals with a sodium metasilicate solution after thoroughly wetting with clean, clear water; allow surface to thoroughly dry.

e. Fill small surface pock marks and air holes with a suitable fill material. Thoroughly brush or rub over surface and let dry for not less than 24 hours before paint application.

7. Submerged Concrete (Void-free surface)

a. Remove oil, grease and contaminants by solvent cleaning.

b. Abrasive blast clean all surfaces scheduled for coating in accordance with SSPC SP #13 Standard. Provide the required ICRI CSP (concrete surface profile) per the manufacturers coating requirements.

c. Apply manufacturers recommended filler/surfacer to prepared concrete surfaces to fill all voids and holes in concrete prior to the application of the specified lining system.

8. Masonry Surfaces (facing brick or concrete masonry units)

a. Allow surfaces to cure for not less than 30 days prior to painting.

b. Remove dirt, loose mortar, scale, efflorescence or powder.

c. Reference SSPC SP #13 Standard.

9. Cement Plaster (stucco)

a. Allow surfaces to cure for 30 to 60 days prior to painting.

b. Fill minor isolated hairline cracks with patching plaster and smooth off to match texture of adjacent surfaces.

c. Remove dirt, loose material, scale, efflorescence, powder, and other foreign matter. Remove oil and grease by washing with a tri-sodium phosphate solution, rinse with clean, clear water and let thoroughly dry.

d. For solvent based paints, wash surfaces with a 4% zinc sulphate solution, rinse with clean, clear water and let thoroughly dry before painting.

10. Moisture Emission Test for Concrete and Masonry

a. Test substrates for moisture prior to application of coating systems. Test shall be plastic sheet method in compliance with ASTM D4263.

11. Gypsum Wallboard Surfaces:

a. Fill narrow, shallow cracks and small holes with spackling compound.

b. Rake deep, wide cracks and deep holes; dampen with clean, clear water and fill with thin layers of joint cement.

12. Copper Surfaces

a. Clean surfaces by pressurized steam, pressurized water, or solvent washing.

13. Stainless Steel Surfaces:

a. Clean surfaces by pressurized steam, pressurized water, or solvent washing.

14. Concrete Floors:

a. Allow concrete to cure “28 days” prior to painting.

b. Remove contamination, dirt, dust, and other foreign matter from concrete floors.

c. Abrasive blast clean all floor surfaces scheduled for coating in accordance with SSPC SP #13 Standard. Provide the required ICRI CSP (concrete surface profile) per the manufacturers coating requirements.

d. After surface treatment, keep traffic off surfaces until painting.

15. Wood Surfaces

a. Sand wood surfaces and edges smooth and even before finishing or painting and between coats. Remove dust after each sanding.

b. Remove residue from knots, pitch streaks, cracks, open joints and sappy spots. Knots shall be coated with a pigmented stain sealer prior to painting. Avoid use of shellac as an undercoat.

c. Countersink nails and fill nail holes, cracks, open joints and other defects with tinted putty or wood filler after priming is dry and before second coat.

16. Insulated Coverings, Canvas or Cotton

a. Clean using high-pressure air and solvent of type recommended by coating manufacturer.

17. Polyvinyl Chloride (PVC) Pipe

a. Remove ink markings by wiping down with clean-lint-free cloths saturated denatured alcohol.

3.3 APPLICATION

A. General Requirements

1. Apply coating systems in compliance with manufacturer's instructions and using application method best suited for obtaining full, uniform coverage of surfaces to be coated.

a. Work shall be implemented in compliance with applicable sections of AWWA D102.

2. Apply primer, intermediate, and finish coats to comply with wet and dry film thickness and spreading rates for each type of material as recommended by manufacturer.

a. Application rates in excess of those recommended and fewer numbers of coats than specified shall not be accepted.

3. Number of coats specified shall be minimum number acceptable. Apply additional coats as needed to provide a smooth, even application.

a. Closely adhere to re-coat times recommended by manufacturer. Allow each coat to dry thoroughly before applying next coat. Provide adequate ventilation for interior to carry off solvents during drying phase.

4. Employ only application equipment that is clean, properly adjusted, and in good working order, and of type recommended by coating manufacturers.

5. After surface preparation, interior weld seams shall be brush applied.
6. Make edges of paint adjoining other materials or colors sharp and clean, without overlapping.
7. Finish tops, bottoms and edges of doors same as faces of doors.
8. Piping and Conduit Exposed to View
    a. Finish in compliance with requirements for unprimed ferrous metal items.
        1) Use colors specified in ANSI Z13.1 and Z535.1.
9. Access Panels, Electrical Panels, and Cover Plates:
    a. Finish in compliance with requirements for shop-primed ferrous metal items, including doors, door backs and sight-exposed cabinet surfaces, color matching adjacent surfaces unless otherwise indicated; do not allow coatings on identification plates, tags, or markings.

3.4 REPAIR/RESTORATION

A. At completion of Work, touch-up and restore finishes where damaged.

B. Defects in Finished Surfaces

1. When stain, dirt, or undercoats show through final coat, correct defects and cover with additional coats until coating is of uniform finish, color, appearance and coverage.
2. Correct defects visible from a distance of 5 feet. Runs shall not be permitted.

C. Touch-up of minor damage shall be acceptable where result is not visibly different from surrounding surfaces. Where result is visibly different, either in color, sheen, or texture, recoat entire surface.

3.5 FIELD QUALITY CONTROL

A. Testing Laboratory Services

1. Documents
    a. Review Contract Documents and applicable sections of referenced standards.
2. Field Painting Inspection:
    a. Verify cleaning operations to surfaces are to condition specified.
    b. Verify conformance of paint to specification.
    c. Check for thickness of each coating, final thickness and holidays.
    d. Check touch-up for final finish.
3. Reports
    a. Submit written progress reports describing tests and inspections made and showing action taken to correct non-conforming work. Report uncorrected deviations from Contract Documents.

B. Manufacturer's Field Service

1. Coatings manufacturer shall be available to provide on-site inspections, technical assistance, and guidance for application of coating system as needed.

3.6 CLEANING

A. At completion of day's work, remove from Site rubbish and accumulated materials.

B. Clean paint spots and other soiling from prefinished surfaces and surfaces with integral finish. Use solvents which will not damage finished surface.

C. Leave storage area clean and in same condition indicated for equivalent spaces in Project.

3.7 PROTECTION

A. Protect work against damage until fully cured. Provide signs identifying wet surfaces until surfaces are adequately cured.

3.8 WASTE MANAGEMENT

A. General Requirements

1. Place materials defined as hazardous or toxic waste in designated containers.
2. Return solvent and oil-soaked rags for contaminant recovery and laundering or for proper disposal.
3. Do not dispose of paints or solvents by pouring on ground. Place in designated containers for proper disposal.
4. Where paint recycling is available, collect waste paint by type and provide for delivery to recycling or collection facility.

3.9 SCHEDULE OF COATING SYSTEMS

A. Carbon Steel (structural steel, miscellaneous metal, tanks, pipes, and equipment)

1. Exterior Steel - Non-Immersion
   a. Shop Surface Preparation: SSPC SP6 Commercial Blast Cleaning
   b. Shop Primer Coat: Series 94-H20 Tneme-Zinc
      1) Dry Film Thickness: 2.5 to 3.5 mils
   c. Full Field Prime Coat: Series V69 Epoxoline II
      1) Dry Film Thickness: 3.0 to 5.0 mils
   d. Finish Coat: Series 1095-color Endura-Shield
      1) Dry Film Thickness: 2.5 to 5.0 mils
   e. Total Dry Film Thickness: 8.0 to 13.5 mils.
2. Interior Steel - Non-Immersion (moderate chemical and dry exposure) for structural steel, pumps, valves, mechanical equipment, etc.)

a. Shop Surface Preparation: SSPC SP6 Commercial Blast Cleaning
b. Shop Primer Coat: Series 94-H20
    1) Dry Film Thickness: 2.5 to 3.5 mils
c. Full Field Prime Coat: Series V69 Epoxoline II
    1) Dry Film Thickness: 3.0 to 5.0 mils
d. Finish Coat: Series V69 Epoxoline II
    1) Dry Film Thickness: 3.0 to 5.0 mils
e. Total Dry Film Thickness: 7.5 to 13.5 mils.

3. Exterior Steel Subject to Splash
    a. Shop Surface Preparation: SSPC-SP-6
    b. Shop Primer Coat: Series 94-H20
        1) Dry Film Thickness: 2.5-3.5 mils.
    c. Full Field Prime Coat: Series V69 Epoxoline II
        1) Dry Film thickness: 3.5-5.0 mils
    d. Second Field Coat: Series 1095 Endura Shield -color
        1) Dry Film Thickness: 1.5-3.0 mils
4. Miscellaneous Ferrous Metals Items:
    a. Shop Surface Preparation: SSPC-SP-10, Blast profile 1.5-2.5 mils.
    b. 1st Coat; (Shop applied): Tnemec Series 94H20, DFT 2.5 to 3.0 mils.
    c. 2nd Coat; (Field applied): V69 Epoxoline, DFT 4.0 to 6.0 mils.
    d. 3rd Coat; (Field applied): V69 Epoxoline, DFT 4.0 to 6.0 mils.
5. Exterior Carbon Steel-Immersion – Non-Potable
    a. Surface Preparation: Immersion Service-SSPC-SP-10.
    b. 1st coat: (Shop Applied) Tnemec Series 94-H20, DFT. 3.0 mils.
    c. 2nd Coat: (Field Applied) Tnemec V69 Color, DFT. 4.0 mils.
    d. 3rd Coat: (Field Applied) Tnemec Series V69 Color, DFT. 4.0 mils.
    e. Finish Coat: (Field Applied) 1095 Endurashield, DFT 2.5 to 3.5 mils.
6. Exterior Ferrous Metals – Immersion, Non-Potable:
    a. Shop Surface Preparation: SSPC-SP-10, Blast profile 1.5-2.0 mils.
    b. 1st Coat; (Shop applied): Tnemec 94-H20, DFT 3.0 mils.
    c. 2nd Coat; (Field applied): Tnemec 104 H.S. Epoxy, DFT 6.0 to 10.0 mils. Scarify 1st coat prior to 2nd coat application.
    d. 3rd Coat; (Field applied): Tnemec 104 H.S. Epoxy, DFT 6.0 to 10.0 mils.

e. Finish Coat: (Field Applied) 1095 Endurashield, DFT 2.5 to 3.5 mils.

7. Exterior Ferrous Metals – Immersion, Potable Water, NSF approved:
   a. Shop Surface Preparation: SSPC-SP-10, Blast profile 1.5-2.0 mils.
   b. 1st Coat; (Shop applied): Tnemec Series 94H20, DFT 2.5 to 3.5 mils.
   c. 2nd Coat; (Field applied): Tnemec Series 22, DFT 15.0 mils.
   d. 3rd Coat; (Field applied): Tnemec Series 22 White, DFT 15.0 mils.
   e. Finish Coat: (Field Applied) 1095 Endurashield, DFT 2.5 to 3.5 mils.
8. Interior Steel - Immersion; Non-Potable:
   a. Shop Surface Preparation: SSPC-SP-10, Blast profile 1.5-2.0 mils.
   b. 1st Coat; (Shop applied): Tnemec 94-H20, DFT 3.0 mils.
   c. 2nd Coat; (Field applied): Tnemec 104 H.S. Epoxy, DFT 6.0 to 10.0 mils. Scarify 1st coat prior to 2nd coat application.
   d. 3rd Coat; (Field applied): Tnemec 104 H.S. Epoxy, DFT 6.0 to 10.0 mils.
9. Interior or Exterior Steel - High Temperature Surfaces to 1,200 degrees F
   a. Surface Preparation: SSPC-SP10 Near White Blast Cleaning
   b. Primer Coat: Series 39-1261 Silicone Aluminum
      1) Dry Film Thickness: 0.7 to 1.5 mils
   c. Finish Coat: Series 39-1261 Silicone Aluminum
      1) Dry Film Thickness: 0.7 to 1.5 mils
   d. Total Dry Film Thickness: 1.4 to 3.0 mils

B. Mill Coated Ductile Iron Pipe
1. Exterior - Non-Potable:
   a. Surface Preparation: Per DIPRA DIP Standard.
   b. 1st Coat: (Shop Applied) Tnemec Series 1 Omnithane, DFT. 3.0 mils.
   c. 2nd Coat: (Field Applied) Tnemec V69 Color, DFT. 4.0 mils.
   d. 3rd Coat: (Field Applied) Tnemec Series V69 Color, DFT. 4.0 mils.
   e. Finish Coat: (Field Applied) 1095 Endurashield, DFT 2.5 to 3.5 mils.
2. Interior - Non-Potable:
   a. Surface Preparation: Per DIPRA DIP Standard.
   b. 1st Coat: (Shop Applied) Tnemec Series 1 Omnithane, DFT. 3.0 mils.
   c. 2nd Coat: (Field Applied) Tnemec V69 Color, DFT. 4.0 mils.
   d. 3rd Coat: (Field Applied) Tnemec Series V69 Color, DFT. 4.0 mils.
3. Exterior- Non-Immersion:

a. Shop Surface Preparation: Per DIPRA DIP Standard

b. Shop Primer Coat: Series 1 Omnithane,

1) Dry Film Thickness: 2.5-3.0 dry mils

c. Field Surface Preparation: Pressure Wash Shop Primer to remove surface contamination. SSPC SP3 any damaged primer or welded connections. Spot prime with shop primer.

d. Full Field Prime Coat: Series V69 Epoxoline II

1) Dry Film Thickness: 3.0 to 5.0 mils

e. Finish Coat: Series 1095 Endura-Shield

1) Dry Film Thickness: 2.5 to 5.0 mils

f. Total Dry Film Thickness: 8.5 to 13.0 mils.

4. Interior - Non-Immersion:

a. Shop Surface Preparation: Per DIPRA DIP Standard

b. Shop Primer Coat: Series 1 Omnithane,

1) Dry Film Thickness: 2.5-3.0 dry mils

c. Field Surface Preparation: Pressure Wash Shop Primer to remove surface contamination. SSPC SP3 any damaged primer or welded connections. Spot prime with shop primer.

d. Full Field Prime Coat: Series V69 Epoxoline II

1) Dry Film Thickness: 3.0 to 5.0 mils

e. Finish Coat: Series V69 Epoxoline II

1) Dry Film Thickness: 3.0 to 5.0 mils

f. Total Dry Film Thickness: 8.5 to 13.0 mils.

C. Galvanized Steel - Pipe, and Miscellaneous Fabrications

1. Exterior

a. Surface Preparation: SSPC SP#16, SSPC-SP1 Solvent Cleaning and SSPC-SP7 Brush-Off-Blast Cleaning to achieve a uniform 1.0-1.5 mil profile.

b. 1st coat: V69 Epoxoline, DFT 2.0 to 4.0 mils.

c. 2nd coat: 1095 Endurashield, DFT 1.5 to 3.0 mils.

d. Total Dry Film Thickness: 4.5 to 8.5 mils

2. Interior (Wet, High-Humidity Areas)

a. Surface Preparation: SSPC-SP1 Solvent Cleaning and SSPC-SP7 Brush-Off-Blast Cleaning to achieve a uniform 1.0-1.5 mil profile.

b. Primer Coat: Series 90G-1K97 (touch-up only)

1) Dry Film Thickness: 2.5 to 3.5 mils

c. Series V69 Epoxoline II

1) Dry Film Thickness: 3.0 to 4.0 mils

d. Finish Coat: Series V69 Epoxoline II

1) Dry Film Thickness: 3.0 to 4.0 mils

e. Total Dry Film Thickness: 8.5 to11.5 mils

3. Interior Galvanized, or Shop-Primed Metal Decking

a. Surface Preparation: SSPC SP #1 Standard

b. 1st coat: Series 115 Unibond, 3.0-5.0 mils dft.

D. PVC Pipe

1. Exterior:

a. Surface Preparation: Lightly sand to de-gloss finish.

b. 1st coat: Series V69, Hi-build Epoxoline, DFT 4.0 to 6.0 mils.

c. Second Coat: Series 1095 Endurashield, DFT 2.5-3.0 mils.

2. Exterior– Immersion, Potable Water:

a. Surface Preparation: Lightly sand to de-gloss finish.

b. 1st Coat; (Field applied): Tnemec Series 22, DFT 15.0 mils.

c. 2nd Coat; (Field applied): Tnemec Series 22 White, DFT 15.0 mils.

3. Interior

a. Surface Preparation: Surface shall be clean and dry; scarify surface uniformly.

b. First Coat: Series V69 Epoxoline II

1) Dry Film Thickness: 2.0 to 3.0 mils

c. Second Coat: Series V69 Epoxoline II

1) Dry Film Thickness: 2.0 to 3.0 mils

d. Total Dry Film Thickness: 4.0 to 6.0 mils

E. Concrete

1. Exterior Concrete and Concrete Block Masonry (New)

a. 1st coat: Tnemec Series 180 Tneme-Crete WB, DFT 8.0 mils.

b. 2nd coat: Tnemec Series 180 Tneme-Crete WB, DFT 8.0 mils.

2. Exterior Concrete and Concrete Block Masonry (New), (Clear finish)

a. 1st coat: Tnemec Prime-A-Pell H20.

b. 2nd coat: Tnemec Prime-A-Pell H20.

3. Interior Concrete Block

a. 1st coat: Tnemec 130-6602 Spray then back roll.

b. 2nd coat: Tnemec V69 Epoxoline, DFT 6.0 mils.

c. 3rd coat: Tnemec V69 Epoxoline, DFT 6.0 mils.

4. Interior Concrete Walls and Ceilings
   a. 1st coat: Tnemec V69 Epoxoline, DFT 6.0 mils.
   b. 2nd coat: Tnemec V69 Epoxoline, DFT 6.0 mils.

F. Drywall
1. Interior
   a. 1st coat: Tnemec 151 Elasto-Grip Sealer.
   b. 2nd coat: Tnemec Series 1029 Enduratone.
   c. 3rd coat: Tnemec Series 1029 Enduratone.

G. Wood (To be painted)
1. Interior or Exterior
   a. 1st coat: Tnemec 151 Elasto-Grip.
   b. 2nd coat: Tnemec Series 1029 Enduratone, DFT 2.5-3.0 mils.
   c. 3rd coat: Tnemec Series 1029 Enduratone DFT 2.5-3.0 mils.

H. Non-ferrous Metals (Galvanized, copper, etc.)
1. Interior
   a. Surface preparation: Per SSPC SP#16 Standard
   b. 1st coat: V69 Epoxoline, DFT 1.5 to 3.0 mils.
   c. 2nd coat: 1095 Endurashield, DFT 2.0 to 3.0 mils.

I. Canvas and Cotton Insulation Coverings
1. Interior
   a. 1st coat: Tnemec 151 Elasto-Grip.
   b. 2nd coat: Tnemec Series 1026 Enduratone.
   c. 3rd coat: Tnemec Series 1026 Enduratone.

J. Concrete Tanks in Contact with Potable Water
1. Interior
   a. Surface preparation: SSPC-SP-13, with ICRI CSP #4
   b. 1st coat: Surface entire concrete with Tnemec 217 or 218 Surfacer.
   c. 2nd coat: Tnemec Series 22 Epoxoline white, DFT 25.0-35.0 mils.

K. Chemical Mixing, Feed and Storage Area
1. Concrete Containment Wall, Tank Pads and Floors.
   a. Surface preparation: SSPC-SP-13, with ICRI CSP #4
   b. 1st coat: Fill large voids with Tnemec 215 Filler/Surfacer.

c. 2nd coat: Prime all surfaces with Tnemec Series 201 Epoxoline, DFT 6.0-8.0.

d. 3rd coat: Tnemec Series 282 Tneme-Glaze Gray DFT 8.0-10.0.

e. 4th coat: Tnemec Series 282 Tneme-Glaze Gray DFT 8.0-10.0.

Note: Detail all cracks per Tnemec Stratashield Detail requirements.

3.10 SCHEDULE OF COLOR SYSTEM MATERIAL IDENTIFICATION

A. Colors as follows have been used successfully in wastewater facilities for identification of various materials contained in tanks and pipes. These colors reflect the guidelines of Technical Report #16 (TR-16) prepared by the New England Interstate Water Pollution Control Commission, and the Recommended Standards for Wastewater Facilities prepared by the Great Lakes – Upper Mississippi River Board of State and Provincial Public Health and Environmental Managers (10 States' Standards).

COLOR CODING SCHEDULE

Service	Generic Color	Color Identification
Compressed Air	green	SC07 Safety Green
Grit Slurry	brown	EN05 Weathered Bark
Natural Gas	red	SC05 Monterrey Tile
Other Lines	light gray	IN01 Light Gray
Plant Water	dark green	EN09 Balsam
Drains	black	IN06 Black

B. Sample, drain, overflow, vent, metering, blowoff and other associated lines shall be painted the same code color as the piping system they serve.

C. Existing surfaces, items of existing equipment, and piping which will require refinishing as a result of demolition and alteration work shall be repainted using the appropriate paint. Repainting shall not be limited to spot touch-up but shall include the painting of entire surfaces where demolition or alteration work has taken place.

D. Insulated pipe jacketed with aluminum or stainless steel shall not be painted, but uninsulated valves and fittings on such lines shall be color coded in accordance with color coding schedule. Such piping shall be identified by bands of proper code color and by legend.

E. Plumbing and HVAC lines, and electrical and telecommunications conduits exposed in finished areas, shall not be color coded but shall be painted the same color as the background to which they are adjacent, or as approved by engineer.

F. Items of equipment connected to color-coded systems shall be painted the same color as the system they serve.

3.11 IDENTIFICATION

A. Label piping by contents and arrows indicating direction of flow.

B. Labels to be twenty feet (20) apart maximum, and within each space through which pipeline passes.

C. Adjacent to each side of walls which pipeline penetrate.

D. Adjacent to valves, equipment, and pumps.

E. Locate labels where they are unobstructed from view and visible from valves.

F. Colors to be white or black as appropriate for the substrate.

G. Letters, numbers and flow arrows to be stenciled to pipeline and equipment or die cut from vinyl film as approved by the Engineer.

H. Lettering size as follows:

Pipe Diameter in Inches	Size of Letters in Inches
3/4 to 1-1/4	1/2
1-1/2 to 2	3/4
2-1/2 to 6	1-1/2
8 to 10	2-1/2
Over 10	3

I. Pipelines smaller than 3/4 inches in diameter and for valves, securely fasten brass tags, 2-1/2 inches x 1/2 inches, with etched lettering filled with enamel paint.

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, assembly, fabrication and installation of all types of site conduit, all types of wiring, connections, enclosures, panel boards, breakers, all light poles, luminaires, lamps, fixtures, lamp drivers and related illumination and lighting controls as indicated in the Contract Drawings and these specifications.

B. RELATED SECTIONS

1. Section 02200- Earth Excavation, Backfill and Grading
2. Section 05000 – Miscellaneous Metals

C. REFERENCES

1. ASTM Testing Standards:
2. ASTM B 117 – Standard Practice for Operating Salt Spray (Fog) Apparatus.
3. ASTM D 522 – Standard Test Methods for Mandrel Bend Test of Attached Organic Coatings.
4. ASTM D 523 – Standard Test Method for Specular Gloss.
5. ASTM D 2247 – Standard Practice for Testing Water Resistance of Coatings in 100% Relative Humidity.
6. ASTM D 2794 – Standard Test Method for Resistance of Organic Coatings to the Effects of Rapid Deformation (Impact).
7. ASTM D 3359 – Standard Test Methods for Measuring Adhesion by Tape Test.
8. ASTM D 3363 – Standard Test Method for Film Hardness by Pencil Test.
9. ASTM G 155 – Standard Practice for Operating Xenon Arc Light Apparatus for Exposure of Non-Metallic Materials.
10. ISO Testing Standards:
11. ISO 1520 – Paints and Varnishes – Cupping Test.
12. ISO 2815 – Paints and Varnishes – Buchholz Indentation Test.
13. Underwriters Laboratories (UL):
14. UL listed
15. IESNA LM-79 Testing Standard:
16. Type 3 IES file available

D. QUALITY ASSURANCE

1. Utilize Manufacturer regularly engaged in the manufacture of site lighting.

2. All products shall be supported by manufacturer's shop drawings with full dimensions shown.
3. All work shall be performed by certified welders and machine operators.
4. Provide all components with the Manufacturer's stated warranty.
5. 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.

E. DELIVERY, STORAGE, PROTECTION & PROJECT CONDITIONS

1. Section 01400- Quality Control
2. Section 01560 -Temporary Controls

1.2 ACTION SUBMITTALS

A. Product Data: For all materials proposed for use: all wiring, all connectors, all poles, 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 LIGHTS

1. Refer to the Electrical Plans for light types.

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.

C. Conductors. Wire conductors shall be annealed copper conforming to the following specifications as applicable.

D. American Society for Testing Materials

1. ASTM B3 - specification for annealed copper wire.

2. ASTM B8 - specification for concentric-lay-standard, copper conductor, hard, medium hard or soft.

3. ASTM B33 - specification for tinned soft or annealed copper wire for electrical purposes.

4. Insulation. Insulation shall be indicated and shall conform to the following specifications as applicable.

E. American Society for Testing Materials

1. ASTM D1351 - (THW and THWN) specification for polyethylene insulated wire and cable ASTM

2. D2655 - (XHHW-2) specification for crosslink, thermosetting polyethylene insulation for wire and cable 0 to 600 volts.

F. 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.

1. All wire below finish grade shall be XHHW-2. THW or THWN may be used between the handhole and fixture if the percentage of wire above ground is greater than the percentage 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.

1. 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.

2.4 SPLICE KITS

A. Two-Way Splice.

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 requirements listed in UL 486.

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.
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.
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 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

1. For lighting wiring: 2” RGS set 2’-6” below top of base
2. 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)

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.

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

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Appendix H

Plans Issued for Bid

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CITY OF PAWTUCKET, RI

PLEASANT STREET PUBLIC STAIRWAY CONSTRUCTION PHASE

BID NO. 26-011

BID DOCUMENTS

MAY 2026

OWNER:
CITY OF PAWTUCKET
137 ROOSEVELT AVENUE,
PAWTUCKET, RI 02860

PROJECT ADDRESS:
TAFT STREET
PAWTUCKET, RI 02860

PROJECT LOCATION

LOCATION MAP
1"=200'

PLAN INDEX

SHEET NO.	DESCRIPTION
1	COVER SHEET
2	LEGEND
3	GENERAL NOTES
4	PAVEMENT NOTES
5	EXISTING CONDITIONS PLAN
6	SITE PREPARATION PLAN
7	CONSTRUCTION PLAN
8	GRADING AND DRAINAGE PLAN
9	PROFILES
10	LAYOUT PLAN
11-12	ENLARGEMENT PLANS
13	PLANTING PLAN
14-18	DETAILS
19-20	ARCHITECTURAL WALL ELEVATIONS
21-22	TRAFFIC MANAGEMENT PLANS
23-27	CROSS SECTIONS
28	ELECTRICAL PLAN
29-32	ELECTRICAL DETAILS
S-1	STRUCTURAL NOTES
S-2	JOB SPECIFIC PLAN SYMBOLS LEGEND & NOTES
S-3	BORING LOGS
S-4	GENERAL PLAN & ELEVATION
S-5	FOOTING PLAN & DETAILS
S-6- S-7	STAIR SUPPORT COLUMN DETAILS
S-8 - S-9	STEEL STAIR SECTIONS & DETAILS
S-10	CONCRETE STAIR & LANDING DETAILS
S-11	WALL PLAN & DETAILS
S-12	ABUTMENT PLANS & DETAILS
S-13	MISCELLANEOUS DETAILS

PREPARED BY:

BETA
www.BETA-Inc.com

ISSUE DATE: 5/13/2026

McClanaghan Associates, Inc.

ELECTRICAL ENGINEERING
178 TREASURE ROAD
NARRAGANSETT, RHODE ISLAND
02882

KEVIN M. AGUIAR
No. 6913
REGISTERED
PROFESSIONAL ENGINEER
CIVIL

REGISTERED PROFESSIONAL

5/13/2026
DATE

LEGEND

GENERAL SYMBOLS

EXISTING	PROPOSED	
		CURB OR BERM (TYPE AS NOTED)
		EDGE OF PAVEMENT
CB	CB	CATCH BASIN (OR GUTTER INLET, LEACHING BASIN, DROP INLET, CATCH BASIN CURB INLET)
EHH	EHH	ELECTRIC HANDHOLE (NUMBER AS NOTED)
E	EMH	ELECTRIC MANHOLE
T	TMH	TELEPHONE MANHOLE
W	WMH	WATER MANHOLE
S	SMH	SEWER MANHOLE
D	DMH	DRAINAGE MANHOLE
GG	GG	GAS GATE
WG	WG	WATER GATE
CS	CS	CURB STOP
HYD.	HYD	HYDRANT
FA	FAB	FIRE ALARM BOX
PM	PM	PARKING METER
LP		STREET LIGHT POLE
UP	UP	UTILITY POLE
UPL	UPL	UTILITY POLE w/ LIGHT
		SIGN
GUY	GUY	GUY POLE
12" RCP	10'-12" RCP	DRAIN PIPE (SIZE AS NOTED)
8" VCP	10'-8" PVC	SEWER MAIN (SIZE AS NOTED)
	10'-8" PVC	ELECTRIC DUCT
4" HP	10'-4" HP	GAS MAIN (SIZE AS NOTED)
8" CI	10'-8" DI	WATER MAIN (SIZE AS NOTED)
	10'-8" PVC	TELEPHONE DUCT (SIZE AS NOTED)
	OHW	OVERHEAD WIRE
MB	MB	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)
BND	BND	HIGHWAY/PROPERTY BOUND (TYPE AS NOTED)
SHLO (Date of Layout)		STATE HIGHWAY LAYOUT LINE (SHLO)
		CITY, TOWN OR COUNTY LAYOUT LINE (R.O.W.)
Boundary Name		CITY, TOWN, COUNTY OR STATE BOUNDARY LINE
℄		PROPERTY LINE
		EASEMENT LINE (TYPE NOTED)
	2+00	CONSTRUCTION BASELINE
N00°00'00"E 000.00'		SURVEY LINE
		RAILROAD OR STREET RAILWAY TRACKS WITH SIDELINES
		WHEELCHAIR RAMP
24" PINE		TREE (SIZE AND TYPE AS NOTED)
		HEDGE/SHRUBS
	x x x	FENCE (SIZE AND TYPE AS NOTED)
WF-1		EDGE OF WETLAND W/ FLAGGED NUMBER
		EDGE OF RIVER/STREAM LINE
		100-FT. WETLAND BUFFER LIMIT
		100-FT. RIVER FRONT LIMIT
		200-FT. RIVER FRONT LIMIT
		WOODED AREA / LIMIT OF CLEARING
x 00.0	x 00.00	SPOT GRADE
		SAW CUT LINE
	TP-1	TEST PIT
	B-1	BORING

ABBREVIATIONS

GENERAL

ABAN.	ABANDON
ADJ.	ADJUST
ALT.	ALTERATION
APPROX.	APPROXIMATE
℄	BASELINE
B.B.	BITUMINOUS BERM
BC	BOTTOM OF 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
CLF	CHAIN LINK FENCE
CONC.	CONCRETE
CONST.	CONSTRUCTION
CONT.	CONTINUOUS
DWY	DRIVEWAY
E.P., EOP	EDGE OF PAVEMENT
EL.	ELEVATION
ESMT.	EASEMENT
EXIST.	EXISTING
FDN.	FOUNDATION
GRAN.	GRANITE
GC	GRANITE CURB
HOR.	HORIZONTAL
IP	IRON PIPE
JCT	JUNCTION
LP	LOW POINT
MB	MAIL BOX
MHB	MASSACHUSETTS HIGHWAY BOUND
O.C.	ON CENTER
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
TC	TOP OF CURB
TEMP.	TEMPORARY
TOS	TOP OF SLOPE
TOW	TOP OF WALL
TYP.	TYPICAL
VAR.	VARIABLE
VERT.	VERTICAL
VGC	VERTICAL GRANITE CURB
WCR	WHEELCHAIR RAMP

TRAFFIC SIGNAL SYSTEMS

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

UTILITIES

ACCMP	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

TRAFFIC SIGNAL SYMBOLS

EXISTING	PROPOSED	
		CONTROL CABINET GROUND MOUNTED WITH FOUNDATION
		CONTROL CABINET POLE MOUNTED
	Ø2	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
HH		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
M	M	MAGNETIC DETECTOR
		SCHOOL ZONE SPEED LIMIT SIGN
		MICROWAVE OR ULTRASONIC DETECTOR
		VIDEO DETECTION CAMERA
		VIDEO DETECTION ZONE

PAVEMENT MARKINGS AND SIGNING SYMBOLS

PROPOSED

CW	CROSSWALK, 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	SCHOOL ZONE - WHITE
	HANDICAP SYMBOL - WHITE
	PAVEMENT ARROW - WHITE
ONLY	LEGEND "ONLY" - WHITE

PREPARED BY

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REGISTERED PROFESSIONAL

KEVIN M. AGUIAR
No. 6913
REGISTERED PROFESSIONAL ENGINEER
CIVIL

SUBCONSULTANT

PROJECT

Pleasant Street Public Stairway Construction Phase

Bid No. 26-011

Pawtucket, RI

TITLE

LEGEND

NO.	REVISIONS	DATE

DRAWN BY: AD

DESIGNED BY: BB

CHECKED BY: KA

ISSUE DATE: 5/13/2026

BETA JOB NO.: 11433

SCALE

NONE

UNLESS OTHERWISE NOTED OR CHANGED BY REPRODUCTION

For Review Only

SHEET NO.

2

\\BETA-INC.COM\RITRANS\11400\11433 - TIDEWATER PHASE 1B\AUTOCAD FILES\3_STAIRS\PLANSET\11433 ABBREV NOTES.DWG

GENERAL NOTES:

1. ANY DAMAGE TO EXISTING PAVEMENT, BRIDGES, CONDUIT, SIDEWALK, FENCES, ETC., CAUSED BY THE CONTRACTOR SHALL BE REPAIRED BY THE CONTRACTOR AT NO ADDITIONAL COST TO OWNER.

2. THE CONTRACTOR SHALL PLACE ALL EQUIPMENT AND MATERIAL AS FAR AWAY AS POSSIBLE FROM STREETS AND SIDEWALKS SO AS NOT TO CAUSE A SAFETY HAZARD.

3. IT IS THE CONTRACTOR'S RESPONSIBILITY TO ENSURE THAT THE EXISTING CONDITIONS ARE NOT OBLITERATED BEFORE CONTROL POINTS ARE LOCATED AND CONSTRUCTION LAYOUT IS ESTABLISHED. THE CONSTRUCTION LAYOUT SHALL BE PROVIDED IN SUFFICIENT DETAIL, THEREBY ENABLING HIM TO CONSTRUCT THE PROJECT IN CONFORMITY WITH THE PLANS AND SPECIFICATIONS. SURVEY WILL BE PROVIDED BY THE CONTRACTOR. THE OWNER'S REPRESENTATIVE WILL NOT AUTHORIZE CONSTRUCTION ACTIVITIES TO BEGIN UNTIL HE IS SATISFIED THAT ALL GROUND CONTROL HAS BEEN ESTABLISHED, TIED DOWN, AND DULY RECORDED IN STANDARD FIELD BOOKS.

4. ALL CONSTRUCTION ACCESS ROADS SHALL BE CONSTRUCTED PRIOR TO START OF SITE WORK.

5. THE FREQUENCY AND APPLICATION RATES FOR THE DUST CONTROL ITEMS WILL BE AS DIRECTED BY THE OWNER'S REPRESENTATIVE.

6. ALL SIDEWALK AND DRIVEWAYS DESIGNATED FOR REPLACEMENT SHALL BE CUT AND MATCHED AT LOCATIONS SHOWN ON THE PLANS OR AS DIRECTED BY THE OWNER'S REPRESENTATIVE.

7. ASPHALT EMULSION TACK COAT SHALL BE PLACED PRIOR TO PAVEMENT PLACEMENT ON THE CONCRETE BASE OR COLD PLANED PAVEMENT, AND ON ANY NEW COURSE WHICH HAS BEEN OPEN TO TRAFFIC, OR ANY NEW COURSE WHICH HAS BEEN EXPOSED FOR MORE THAN 3 DAYS, AND/OR AS DIRECTED BY THE OWNER'S REPRESENTATIVE. IT SHALL ALSO BE APPLIED TO VERTICAL PAVEMENT FACES BETWEEN ADJOINING PAVEMENT SECTIONS. ALL APPLICATIONS ON BOTH HORIZONTAL AND VERTICAL SURFACES.

8. THE LIMITS OF CLEARING AND SURFACE DISTURBANCE MUST BE STRICTLY ADHERED TO IN ALL AREAS. IN ADDITION TO THOSE AREAS SPECIFICALLY DESIGNATED ON THE PLANS, THE CONTRACTOR WILL BE RESPONSIBLE FOR PROVIDING AND PLACING, AT HIS OWN EXPENSE, PLANTABLE SOIL AND SEED IN AREAS WHICH ARE OUTSIDE OF THE PROJECT'S AREAS OF DISTURBANCE AND WHICH ARE IMPACTED BY CONSTRUCTION OPERATIONS INCLUDING THOSE AREAS WHERE VEHICLES, EQUIPMENT AND MATERIALS ARE STORED WITH THE PERMISSION OF THE OWNER'S REPRESENTATIVE.

9. UNDER NO CIRCUMSTANCE WILL THE CONTRACTOR BE ALLOWED TO STOCKPILE REMOVED PAVEMENT MATERIALS WITHIN THE PROJECT LIMITS.

10. CLEANING AND SWEEPING OF PAVEMENT WILL INCLUDE REMOVAL OF ALL PAVEMENT DEBRIS PRIOR TO THE PLACEMENT OF EACH BITUMINOUS PAVEMENT LIFT. ALL CLEANING AND SWEEPING SHALL BE DONE TO THE SATISFACTION OF THE OWNER'S REPRESENTATIVE.

11. PRIOR TO INSTALLATION, ALL SIGNS, MOUNTINGS AND LOCATIONS SHALL BE APPROVED OR MODIFIED BY THE OWNER'S REPRESENTATIVE.

12. PAVEMENT OPERATIONS FOR CURBED SECTIONS: IN AREAS WHERE CURBING IS SET TO FINISH LINE AND GRADE, THE CONTRACTOR WILL BE ALLOWED TO MANUALLY ADJUST THE BITUMINOUS SURFACE TO ESTABLISH POSITIVE PITCH.

13. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING ALL ROADWAYS FREE OF DEBRIS RESULTING FROM THEIR CONSTRUCTION OPERATIONS. ALL DEBRIS SHALL BE REMOVED TO THE SATISFACTION OF THE OWNER'S REPRESENTATIVE AT NO ADDITIONAL COST TO THE OWNER.

14. NO FUEL STORAGE, VEHICLE REFUELING, OR EQUIPMENT STORAGE SHALL TAKE PLACE IN DESIGNATED WETLANDS, NOR WITHIN 100' OF ANY WATER BODY. THIS REQUIREMENT SHALL NOT SUPERSEDE ANY FEDERAL, STATE OR LOCAL LAW, ORDINANCE, RULE OR REGULATION THAT APPLIES TO THE SAME, UNLESS THIS REQUIREMENT IS MORE STRINGENT THAN SAID LAW, ORDINANCE, RULE OR REGULATION.

15. THE CONTRACTOR SHALL BE RESPONSIBLE TO ENSURE THAT AT THE END OF FINAL PAVING OPERATIONS, STORM WATER FLOW TO EXISTING DRAINAGE STRUCTURES HAS BEEN REESTABLISHED AND THAT NO ISOLATED DEPRESSIONS REMAIN.

16. ALL EMBANKMENTS SHALL BE PLACED IN HORIZONTAL LAYERS NOT EXCEEDING 12" (AFTER COMPACTION) AND SHALL BE COMPACTED AS SPECIFIED BEFORE THE NEXT LAYER IS PLACED.

17. THIS PROJECT IS ON A HURRICANE EVACUATION AND DIVERSIONARY ROUTE, THE CONTRACTOR IS ADVISED THAT UPON 12 (TWELVE) HOURS NOTICE THE ROADWAY SHALL BE OPEN TO EVACUEES AND EMERGENCY PERSONNEL.

18. THE CONTRACTOR SHALL READ, BECOME FAMILIAR WITH, AND ADHERE TO ALL OF THE PROVISIONS, CONDITIONS, AND STIPULATIONS STATED IN THE ENVIRONMENTAL APPROVALS ISSUED FOR THE PROJECT FROM THE DEPARTMENT OF ENVIRONMENTAL MANAGEMENT (RIDEM) AND COASTAL RESOURCES MANAGEMENT COUNCIL (CRMC). ALL COSTS ASSOCIATED WITH THESE CONDITIONS SHALL BE CONSIDERED INCIDENTAL TO THE CONSTRUCTION AND INCLUDED WITH THE COST FOR THE ASSOCIATED BID.

19. FOR ALL PROJECTS INVOLVING KNOWN SITE REMEDIATION ISSUES, THE CONTRACTOR SHALL READ, BECOME FAMILIAR WITH, AND ADHERE TO ALL OF THE CONSTRUCTION RELATED PROVISIONS, CONDITIONS, AND STIPULATIONS OF ANY REMEDIAL PLANS DEVELOPED FOR THE PROJECT. COPIES OF THESE DOCUMENTS ARE INCLUDED IN THE CS PAGES OF THE CONTRACT DOCUMENTS. ALL COSTS ASSOCIATED WITH COMPLIANCE WITH THESE DOCUMENTS SHALL BE CONSIDERED INCIDENTAL TO THE CONSTRUCTION AND INCLUDED WITH THE COST FOR THE ASSOCIATED BID.

20. NO UNPROTECTED CONSTRUCTED FEATURE MAY PROJECT MORE THAN 4 INCHES ABOVE THE FINISHED GRADE OF A TRAVERSABLE SLOPE IN A CLEAR ZONE, e.g. HEADWALL, DRAINAGE INLET, ETC.

DRAINAGE AND EROSION CONTROL NOTES:

1. PROJECTS WITH AT LEAST ONE(1) ACRE OF SOIL DISTURBANCE ARE REQUIRED TO DEVELOP AND ENFORCE A SITE SPECIFIC STORM WATER POLLUTION PREVENTION PLAN (SWPPP) IN ORDER TO REMAIN IN COMPLIANCE WITH THE RIPDES GENERAL PERMIT FOR STORMWATER DISCHARGES ASSOCIATED WITH CONSTRUCTION ACTIVITIES. THE CONTRACTOR SHALL READ, BECOME FAMILIAR WITH, AND ADHERE TO ALL OF THE PROVISIONS, CONDITIONS, AND STIPULATIONS OF THE GENERAL PERMIT AND THE SITE SPECIFIC SWPPP FOR THIS PROJECT. ALL COSTS ASSOCIATED WITH ADHERENCE TO THE SWPPP SHALL BE CONSIDERED INCIDENTAL TO THE CONSTRUCTION AND INCLUDED WITH THE COST FOR THE ASSOCIATED BID.

2. NO UNDISTURBED AREAS SHALL BE CLEARED OF EXISTING VEGETATION AFTER OCTOBER 15 OF ANY CALENDAR YEAR OR DURING ANY PERIOD OF FULL OR LIMITED WINTER SHUTDOWN. ALL DISTURBED SOILS EXPOSED PRIOR TO OCTOBER 15 OF ANY CALENDAR YEAR SHALL BE SEEDED OR PROTECTED BY THAT DATE. ANY SUCH AREAS THAT DO NOT HAVE ADEQUATE VEGETATIVE STABILIZATION, AS DETERMINED BY THE OWNER'S REPRESENTATIVE, BY NOVEMBER 15 OF ANY CALENDAR YEAR, MUST BE STABILIZED THROUGH THE USE OF EROSION CONTROL MATTING OR HAY MULCH, IN ACCORDANCE WITH SPECIFICATIONS CONTAINED WITHIN THE R.I. SOIL EROSION AND SEDIMENT CONTROL HANDBOOK. IF WORK CONTINUES WITHIN ANY OF THESE AREAS DURING THE PERIOD FROM OCTOBER 15 THROUGH APRIL 15, CARE MUST BE TAKEN TO ENSURE THAT ONLY THE AREA REQUIRED FOR THAT DAY'S WORK IS EXPOSED, AND ALL ERODIBLE SOIL MUST BE RESTABILIZED WITHIN 5 WORKING DAYS. ANY WORK TO CORRECT PROBLEMS RESULTING FROM FAILURE TO COMPLY WITH THIS PROVISION SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. THERE WILL BE NO SEPARATE PAYMENT FOR THIS PROVISION, IT SHALL BE CONSIDERED INCIDENTAL TO CONSTRUCTION OPERATIONS. STABILIZATION OF ONE FORM OR ANOTHER AS DESCRIBED ABOVE SHALL BE ACHIEVED WITHIN 2 WEEKS OF FINAL GRADING.

3. STOCKPILES OF MATERIAL SHALL NOT BE LOCATED WITHIN REGULATED WETLANDS OR BUFFER ZONE AREAS. THEY SHALL HAVE SIDE SLOPES NO GREATER THAN 30% AND STOCKPILES OF ERODABLE MATERIAL SHALL ALSO BE SEEDED AND RINGED EROSION CONTROL.

4. IF THE PLANS INCLUDE SPECIFIC AREAS FOR PLACEMENT OF CONSTRUCTION EQUIPMENT AND MATERIALS STORAGE AND STOCKPILING, AND IF THE CONTRACTOR ELECTS TO UTILIZE ANY OTHER AREAS FOR THESE PURPOSES, THIS SHALL BE APPROVED BY THE OWNER'S REPRESENTATIVE ONLY AFTER OBTAINING ANY NECESSARY PERMITS AND/OR PERMIT MODIFICATIONS FROM THE APPROPRIATE REGULATORY AUTHORITY(IES). ANY PERMITTING REQUIREMENTS SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR AND SHALL BE ACCOMPLISHED AT NO COST TO THE OWNER.

5. JUTE MESH SHALL BE USED TO STABILIZE PLANTABLE SOIL AND/OR LOAM IN ALL DITCHES, ON ALL SLOPES ADJACENT TO WETLANDS AND WETLAND PERIMETERS, AND ON ALL SLOPES WITHIN WATER QUALITY BASINS. JUTE MESH IN DITCHES SHALL EXTEND TO AN ELEVATION 2 FEET ABOVE THE BOTTOM OF THE DITCH.

6. SEEDING ON ALL SLOPES 3 TO 1 OR STEEPER SHALL CONSIST OF THE FOLLOWING APPLICATIONS UNLESS SPECIFIED OTHERWISE.

   a. SEEDING TYPE I

   b. ADHESIVE MULCH STABILIZER

7. UNVEGETATED AREAS SHALL NOT BE UNATTENDED OR EXPOSED FOR PERIODS IN EXCESS OF 2 WEEKS OR THROUGH THE INACTIVE WINTER SEASON.

8. PRIOR TO DRAINAGE AND UTILITY CONSTRUCTION, THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE LOCATION (HORIZONTAL AND VERTICAL) OF ALL EXISTING PIPES AND/OR STRUCTURES WHICH ARE TO BE CONNECTED. ANY VARIATION FOUND FROM THE PLANS MUST BE BROUGHT TO THE ENGINEER'S ATTENTION PRIOR TO DRAINAGE AND UTILITY CONSTRUCTION. WORK CAN COMMENCE ONLY UPON THE OWNER'S REPRESENTATIVE AUTHORIZATION.

9. ALL DRAINAGE AND UTILITY STRUCTURES WITHIN THE PAVED ROADWAY SHALL BE ADJUSTED TO GRADE WITH THE SURROUNDING PAVEMENT PRIOR TO THE WINTER SHUTDOWN IF APPLICABLE.

10. DURING CONSTRUCTION, THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING DRAINAGE AND RUNOFF FLOW DURING STORMS AND PERIODS OF RAINFALL THROUGHOUT THE WORK AREA.

11. CATCH BASIN RIM GRADES NOTED ON PLANS ARE DEPRESSED 0.1' LOWER THAN THE GUTTER GRADE. RIM ELEVATIONS SHOWN ARE FINAL GRADES. THE CONTRACTOR SHALL PLACE FRAMES AND GRATES 0.1' BELOW THE GRADE CONSTRUCTED IN THIS CONTRACT OR AS DIRECTED BY THE OWNER'S REPRESENTATIVE.

12. SILT SACK INLET PROTECTION SHALL BE INSTALLED AT ALL CATCH BASINS AND INLETS WHENEVER SUBBASE IS EXPOSED, AND SHALL REMAIN IN PLACE UNTIL THE ABUTTING GROUND SURFACES ARE STABILIZED.

13. ALL INLET PROTECTION USED AT CATCH BASINS, THEY SHALL BE REMOVED AT THE END OF THE PROJECT OR AS DIRECTED BY THE OWNER'S REPRESENTATIVE IN ORDER TO PREVENT CLOGGING OF THE INLET.

14. THE TOE OF ANY FILL SLOPE IS TO REMAIN AT LEAST 1' INSIDE OF ALL EROSION CONTROLS. UNDER NO CIRCUMSTANCES SHALL THE CONTRACTOR COVER ANY PORTION OF THE EROSION CONTROL MEASURES WITH MATERIAL. ANY MATERIAL THAT IS PLACED ON ANY EROSION CONTROLS BY THE CONTRACTOR, OR ANY AGENT OF THE CONTRACTOR, SHALL BE IMMEDIATELY REMOVED BY THE CONTRACTOR, AND ANY NECESSARY REPAIRS TO THE EROSION CONTROLS ACCOMPLISHED.

15. PRIOR TO COMMENCING CONSTRUCTION ACTIVITIES, EROSION AND SEDIMENTATION CONTROLS SHALL BE INSTALLED AT THOSE AREAS INDICATED ON THE PLANS. CLEARING MAY OCCUR PRIOR TO INSTALLATION OF SUCH CONTROLS, HOWEVER NO GRUBBING, GRADING, FILLING, OR OTHER SOIL DISTURBANCE SHALL OCCUR PRIOR TO INSTALLATION. THE LIMITS OF CLEARING AND SURFACE DISTURBANCE MUST BE STRICTLY ADHERED TO IN ALL AREAS.

16. ALL EROSION CONTROL MEASURES OR TEMPORARY PROTECTION SHALL REMAIN IN PLACE UNTIL AN ACCEPTABLE STAND OF GRASS IS ESTABLISHED. IF NEEDED, TEMPORARY SEEDING SHALL BE USED TO MINIMIZE EROSION.

17. THE CONTRACTOR MUST REPAIR AND/OR RESEED ANY AREAS THAT DO NOT DEVELOP WITHIN THE PERIOD OF ONE YEAR AND HE SHALL DO SO AT NO ADDITIONAL EXPENSE TO THE OWNER.

18. THE NORMAL ACCEPTABLE SEASONAL SEEDING DATES ARE CONTAINED IN THE SPECIFICATIONS.

19. UNDER SEVERE WEATHER EVENTS ADDITIONAL EROSION CONTROLS MAYBE REQUIRED AND SHALL BE INSTALLED AS DIRECTED BY THE OWNER'S REPRESENTATIVE.

UTILITY NOTES:

1. ALL STREETSCAPE IMPROVEMENTS INCLUDING DRAINAGE, LIGHTING AND RELATED UTILITY IMPROVEMENTS SHOWN HEREIN SHALL BE COORDINATED WITH WORK DESIGNED AND CONSTRUCTED BY THE NARRAGANSETT BAY COMMISSION (NBC) PHASE III COMBINED SEWER OVERFLOW PROGRAM. REFER TO VOLUME 1 DRAWINGS FOR ALL UNDERGROUND WORK WITHIN THIS PROJECT AREA.

2. EXISTING UTILITIES HAVE BEEN SHOWN ON THE PLANS USING THE BEST AVAILABLE INFORMATION AND ARE APPROXIMATE. REFER TO VOLUME 1 DRAWINGS FOR INFORMATION REGARDING THE EXISTING UTILITIES AS WELL AS PROPOSED UTILITY LOCATIONS AND RELATED WORK WITHIN THE PROJECT AREA.

3. BUILDING SERVICE CONNECTIONS (ELECTRIC, GAS, TELEPHONE, WATER AND SANITARY) ARE NOT SHOWN. CONTRACTOR IS TO ASSUME SERVICES ARE PRESENT AND ACTIVE IN ALL ADJACENT BUILDINGS.

4. THE CONTRACTOR SHALL VERIFY THE LOCATIONS OF ALL EXISTING DRAINAGE AND UTILITIES BOTH UNDERGROUND AND OVERHEAD BEFORE EXCAVATION BEGINS IN ACCORDANCE WITH CHAPTER 39-1.2 OF THE R.I. GENERAL LAWS ENTITLED "EXCAVATION NEAR UNDERGROUND UTILITY FACILITIES", WITH AMENDMENTS EFFECTIVE AS OF NOVEMBER 1, 2009 AND, WHEN NECESSARY, BY CONTACTING THE INDIVIDUAL UTILITY COMPANIES. EXCAVATION SHALL BE IN ACCORDANCE WITH ALL STATUTES, ORDINANCES, RULES AND REGULATIONS OF ANY APPLICABLE CITY, TOWN, STATE OR FEDERAL AGENCY. THE CONTRACTOR SHOULD UNDERSTAND THAT NOT ALL UTILITIES SUBSCRIBE TO THE DIG SAFE PROGRAM. IT IS THE CONTRACTOR'S RESPONSIBILITY TO NOTIFY ALL UTILITY COMPANIES AND ENSURE THAT ALL UTILITIES HAVE BEEN MARKED PRIOR TO COMMENCING THEIR WORK. ANY DAMAGE TO EXISTING UTILITIES MARKED IN THE FIELD, OR AS A RESULT OF FAILING TO CONTACT THE APPROPRIATE UTILITY COMPANY, SHALL BE REPAIRED OR REPLACED AT NO ADDITIONAL COST TO THE OWNER.

5. ALL EXISTING UTILITIES TO BE ABANDONED SHALL BE CAPPED.

6. UTILITY SERVICE CONNECTIONS SHALL BE MAINTAINED TO ALL EXISTING FACILITIES TO REMAIN.

7. FIRE HYDRANTS SHALL NOT BE REMOVED FROM SERVICE WITHOUT WRITTEN AUTHORIZATION FROM THE FIRE DEPARTMENT OR THE WATER AUTHORITY.

LANDSCAPE NOTES:

1. THE OWNER'S REPRESENTATIVE MUST BE ON SITE TO APPROVE ALL PRUNING, THINNING, AND CLEARING NECESSARY TO COMPLETE THE WORK AS SHOWN ON THE PLANS.

2. ANY TOPSOIL USED AS PLANTABLE SOIL SHALL HAVE A SANDY LOAM TEXTURE FREE OF SUBSOIL MATERIAL, STONES, ROOTS, LUMPS OF SOIL, TREE LIMBS, TRASH OR CONSTRUCTION DEBRIS. REFER TO SPECIFICATIONS.

SURVEY NOTES:

1. THE INFORMATION SHOWN HEREON IS BASED ON FIELD SURVEY PERFORMED BETWEEN JANUARY 3, 2024 AND FEBRUARY 23, 2024, BY DIPRETE ENGINEERING.

2. THE HORIZONTAL DATUM FOR THIS PROJECT IS THE RHODE ISLAND STATE PLANE COORDINATE SYSTEM.

3. THE VERTICAL DATUM FOR THIS PROJECT IS REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).

PREPARED BY

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REGISTERED PROFESSIONAL

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PROFESSIONAL ENGINEER
CIVIL

SUBCONSULTANT

PROJECT

Pleasant Street Public Stairway Construction Phase

Bid No. 26-011

Pawtucket, RI

TITLE

GENERAL NOTES

NO.	REVISIONS	DATE

DRAWN BY: AD

DESIGNED BY: BB

CHECKED BY: KA

ISSUE DATE: 5/13/2026

BETA JOB NO.: 11433

SCALE

NONE

UNLESS OTHERWISE NOTED OR CHANGED BY REPRODUCTION

For Review Only

SHEET NO.

3

I:\BETA-INC.COM\RITRANS\11400\11433 - TIDEWATER PHASE 1B\AUTOCAD FILES\S_STAIRS\PLANSET\11433 ABBREV NOTES.DWG

CEMENT CONCRETE SIDEWALKS, ISLAND, AND WHEELCHAIR RAMP

SURFACE COURSE	5" CEMENT CONCRETE (AIR ENTRAINED 4000 PSI, 3/4", 610)
BASE COURSE	8" GRAVEL BORROW

CEMENT CONCRETE DRIVEWAY AND CEMENT CONCRETE SIDEWALK AT DRIVEWAYS

SURFACE COURSE	6" CEMENT CONCRETE (AIR ENTRAINED 4000 PSI, 3/4", 610)
BASE COURSE	8" GRAVEL BORROW

HOT MIX ASPHALT DRIVEWAY

SURFACE COURSE	1 ½" CLASS 9.5 HMA FOR SURFACE COURSE OVER
INTERMEDIATE COURSE	2 ½" CLASS 12.5 HMA FOR INTERMEDIATE COURSE OVER
BASE COURSE	8" GRAVEL BORROW

HOT MIX ASPHALT SHARED USE PATH

SURFACE COURSE	1 ½" CLASS 9.5 HMA FOR SURFACE COURSE OVER
INTERMEDIATE COURSE	2 ½" CLASS 12.5 HMA FOR INTERMEDIATE COURSE OVER
BASE COURSE	8" GRAVEL BORROW

NOTES

1. ASPHALT EMULSION FOR TACK COAT (RS-1H) SHALL BE APPLIED FOR UNIFORM COVERAGE OF 90%, AT RATE OF 0.07 GALLONS PER SQUARE YARD FOR MICRO MILLED SURFACES AND 0.05 GALLONS PER SQUARE YARD OVER SMOOTH PAVEMENTS.
2. HOT MIX ASPHALT SHALL BE INSTALLED IN ACCORDANCE WITH THE RHODE ISLAND DEPARTMENT OF TRANSPORTATION SECTION 401.

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Pleasant Street Public Stairway Construction Phase

Bid No. 26-011

Pawtucket, RI

TITLE

PAVEMENT NOTES

NO.	REVISIONS	DATE

DRAWN BY: AD
DESIGNED BY: BB
CHECKED BY: KA
ISSUE DATE: 5/13/2026
BETA JOB NO.: 11433

SCALE

NONE

UNLESS OTHERWISE NOTED OR CHANGED BY REPRODUCTION

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SHEET NO.

4

TAFT STREET

DRILL HOLE FOUND

200' BUFFER

LIMIT OF WORK

PROJECT AREA

STATE HIGHWAY LINE (RIHP NO. 2176)

51578
ELEVATION=59.76

52471
ELEVATION=12.43

50048
CBND

CONTRACT 26.011

NBC CONTRACT 308.04C (BY OTHERS)

CONTRACTOR SHALL COORDINATE ALL WORK BY OTHERS AS REQUIRED UNDER NBC CONTRACT NO. 308.04C, VOLUME II.

SEEKONK RIVER

DIVISION STREET

PLEASANT STREET

50013
CBND

50053
CBND

50052
HIGHWAY BOUND FND

50054
HIGHWAY BOUND FND

STATE FREEWAY LINE (RIHP NO. 961)

STATE FREEWAY LINE (RIHP NO. 2176)

CITY OF PAWTUCKET

STONE MASONRY RETAINING WALL

ROCK OUTCROP

ASPHALT PARKING

CONCRETE STEPS

CHAIN LINK FENCE

CONCRETE SIDEWALK

GRANITE CURB

JERSEY BARRIER

\\BETA-INC.COM\RITRANS\111400\111433 - TIDEWATER PHASE 1B\AUTOCAD FILES\3_STAIRS\PLANSET\111433 EXIST COND PLAN.DWG

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PROJECT

Pleasant Street Public Stairway Construction Phase

Bid No. 26-011

Pawtucket, RI

TITLE

EXISTING CONDITIONS PLAN

NO.	REVISIONS	DATE

DRAWN BY: AD

DESIGNED BY:

CHECKED BY: KA

ISSUE DATE: 5/13/2026

BETA JOB NO.: 11433

SCALE

20 0 20 40

SCALE IN FEET: 1"=20'

UNLESS OTHERWISE NOTED OR CHANGED BY REPRODUCTION

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SHEET NO.

5

TAFT STREET

STATE HIGHWAY LINE
RIHP NO. 2176

TEMPORARY FENCE
COMPOST FILTER SOCK
LIMIT OF CLEARING (TYP.)
INLET SEDIMENT CONTROL DEVICE
CONSTRUCTION ACCESS (10'x30')
TREE DRIPLINE PROTECTION
SAWCUT LINE (TYP.)
R&D EXIST. SHRUBS
R&D SIGN (3)
GEI-3
GEI-3-B(APPROX)
R&D CHAIN LINK FENCE
CLEAR & GRUB
R&D BIT CONC. PAVING
R&S GRAN. CURB
R&D CONC. PAVING
R&S EXISTING SITE LIGHT
R&S LANDSCAPE BOULDER WALL
SAWCUT LINE (TYP.)
COMPOST FILTER SOCK
STAGING AREA
R&S CONC. BARRIERS
INLET SEDIMENT CONTROL DEVICE
CONTRACT 1 26.01.1
NBC CONTRACT 308.04C (BY OTHERS)
COMPOST FILTER SOCK
R&S EXISTING SITE LIGHT
PROP. NBC CONTRACT 308.04C WORK BY OTHERS (TYP)

DIVISION STREET
PLEASANT STREET
SEEKONK RIVER

50048 CBND
50013 CBND
50053 CBND
50052 HIGHWAY BOUND FND
50054 HIGHWAY BOUND FND

N4°08'25"W
40.01' (TIE)

\\BETA-INC.COM\RITRANS\11400\11433 - TIDEWATER PHASE 1B\AUTOCAD FILES\3_STAIRS\PLANSET\11433 SITE PREP.DWG

PREPARED BY

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Pleasant Street Public Stairway Construction Phase

Bid No. 26-011

Pawtucket, RI

TITLE

SITE PREPARATION PLAN

NO.	REVISIONS	DATE

DRAWN BY: AD
DESIGNED BY: BB
CHECKED BY: KA
ISSUE DATE: 5/13/2026
BETA JOB NO.: 11433

SCALE

20 0 20 40
SCALE IN FEET: 1"=20'

UNLESS OTHERWISE NOTED OR CHANGED BY REPRODUCTION

For Review Only

SHEET NO.
6

TAFT STREET

PROP. NBC CONTRACT 308.04C WORK BY OTHERS (TYP)

REFER TO SHEET 11 FOR ENLARGEMENT PLAN

REFER TO SHEET 12 FOR ENLARGEMENT PLAN

CEMENT CONC. PAVING

LOAM AND SEED

PLANTING BED

STEEL STAIRWAY, REFER TO STRUCTURAL DRAWINGS

RIP RAP (R-3)

CAST-IN-PLACE CONC. STAIRWAY

RECONSTRUCT LANDSCAPE BOULDER WALL

CLF

HOT MIX ASPHALT BERM

FULL DEPTH RECONSTRUCTION OF EXIST. PARKING LOT

LIMIT OF PARKING LOT RECONSTRUCTION

PROP. NBC CONTRACT 308.04C WORK BY OTHERS (TYP.)

NBC CONTRACT 308.04C (BY OTHERS)

CONTRACT 26-011

STATE HIGHWAY LINE RHHP NO. 2176

DRILL HOLE FOUND

PC=183+39

PI=191+92

PT=199+12

+00

10

50048 CBND

50013 CBND

50053 CBND

50052 HIGHWAY BOUND FND

50054 HIGHWAY BOUND FND

DIVISION STREET

PLEASANT STREET

SEEKONK RIVER

STATE FREEWAY LINE (RHHP NO. 961)

STATE FREEWAY LINE (RHHP NO. 2176)

CITY OF PAWTUCKET

N41°08'25"W 10.01' (T)(E)

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PREPARED BY

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PROJECT

Pleasant Street Public Stairway Construction Phase

Bid No. 26-011

Pawtucket, RI

TITLE

CONSTRUCTION PLAN

NO.	REVISIONS	DATE

DRAWN BY: AD

DESIGNED BY: BB

CHECKED BY: KA

ISSUE DATE: 5/13/2026

BETA JOB NO.: 11433

SCALE

20 0 20 40

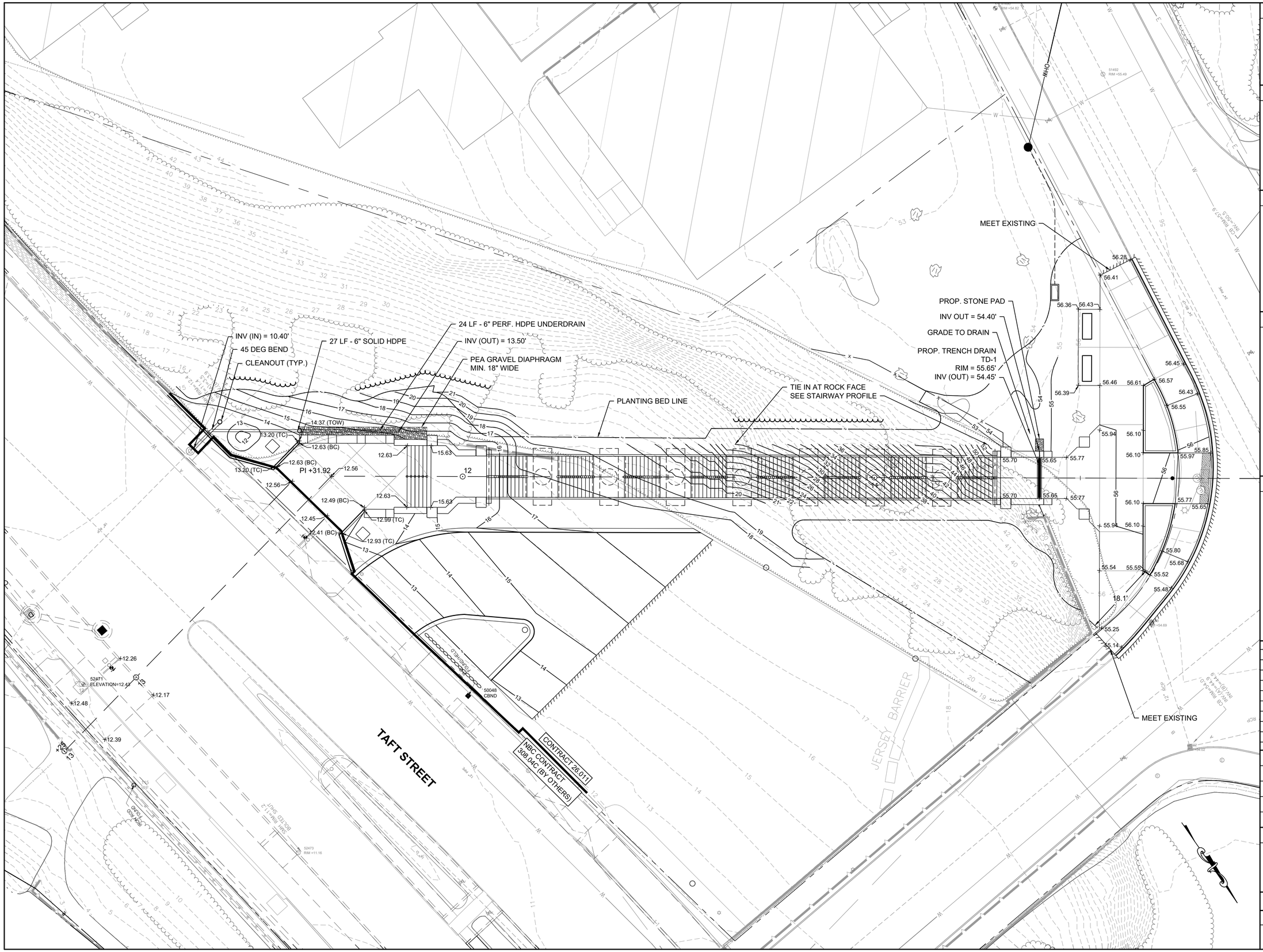
SCALE IN FEET: 1"=20'

UNLESS OTHERWISE NOTED OR CHANGED BY REPRODUCTION

For Review Only

SHEET NO.

7



\\BETA-INC.COM\RITRANS\11400\11433 - TIDEWATER PHASE 1B\AUTOCAD FILES\3_STAIRS\PLANSET\11433 GRADING PLAN.DWG

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PROJECT

Pleasant Street
Public Stairway
Construction Phase

Bid No. 26-011

Pawtucket, RI

TITLE

GRADING AND
DRAINAGE
PLAN

NO.	REVISIONS	DATE

DRAWN BY: AD

DESIGNED BY: BB

CHECKED BY: KA

ISSUE DATE: 5/13/2026

BETA JOB NO.: 11433

SCALE

10 0 10 20
SCALE IN FEET: 1"=10'

UNLESS OTHERWISE NOTED OR CHANGED BY REPRODUCTION

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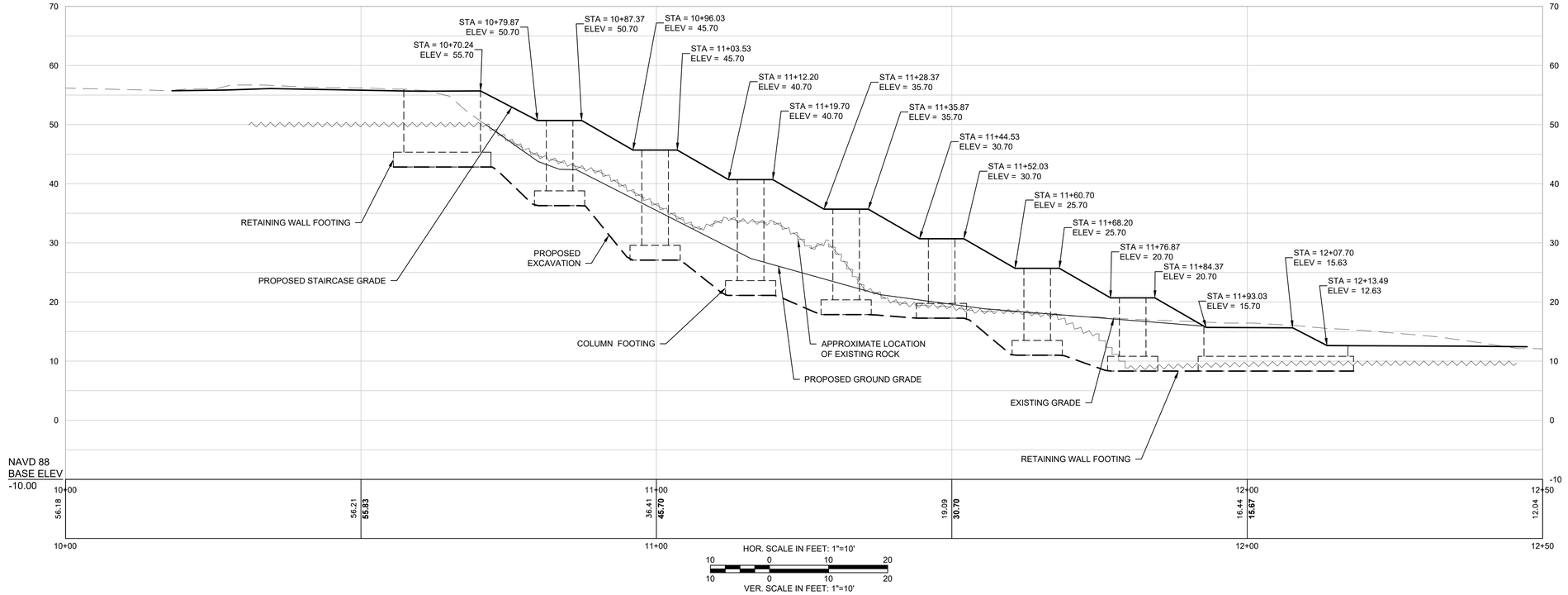
SHEET NO.

8

STAIRWAY PROFILE



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PROJECT

Pleasant Street Public Stairway Construction Phase

Bid No. 26-011

Pawtucket, RI

TITLE

PROFILES

NO.	REVISIONS	DATE

DRAWN BY: AD

DESIGNED BY: BB

CHECKED BY: KA

ISSUE DATE: 5/13/2026

BETA JOB NO.: 11433

SCALE

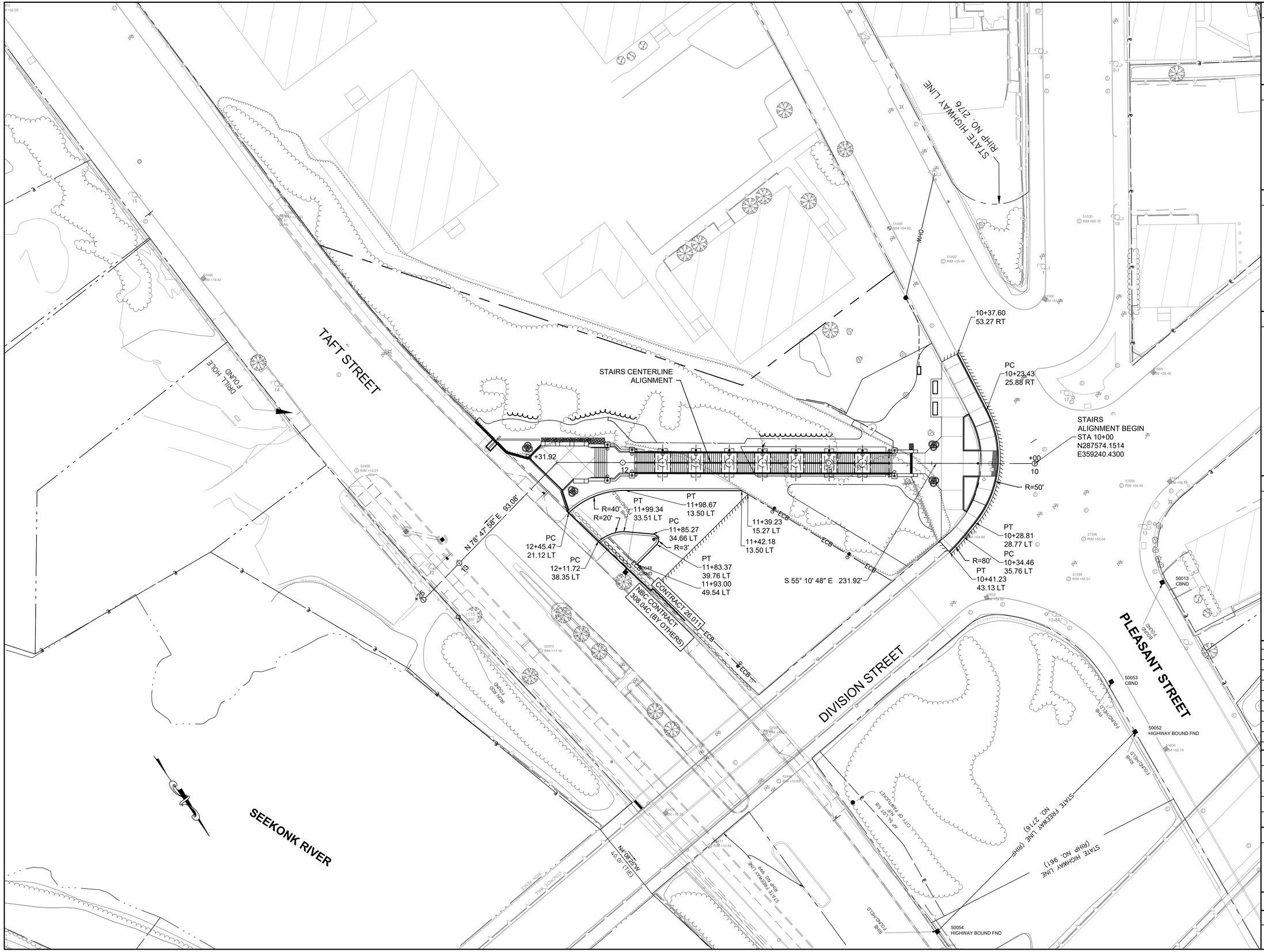
AS SHOWN

UNLESS OTHERWISE NOTED OR CHANGED BY REPRODUCTION

For Review Only

SHEET NO.

9



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PROJECT

Pleasant Street Public Stairway Construction Phase

Bid No. 26-011

Pawtucket, RI

TITLE

LAYOUT PLAN

NO.	REVISIONS	DATE

DRAWN BY: AD

DESIGNED BY: BB

CHECKED BY: KA

ISSUE DATE: 5/13/2026

BETA JOB NO.: 11433

SCALE

20 0 20 40
SCALE IN FEET: 1"=20'

UNLESS OTHERWISE NOTED OR CHANGED BY REPRODUCTION

For Review Only

SHEET NO.

10

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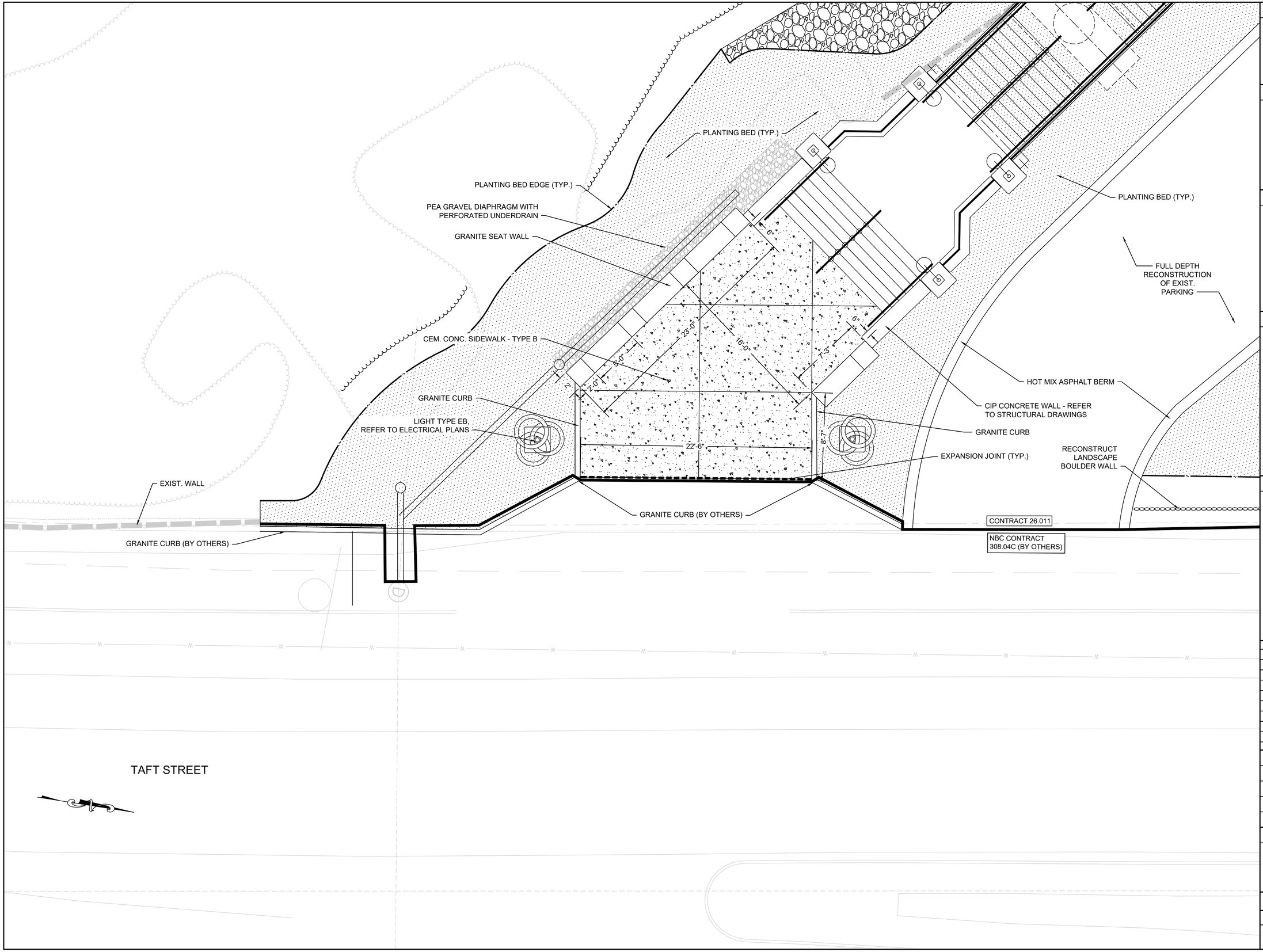

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CIVIL

SUBCONSULTANT

PROJECT

Pleasant Street Public Stairway Construction Phase

Bid No. 26-011

Pawtucket, RI

TITLE

ENLARGEMENT PLAN - 1

NO.	REVISIONS	DATE

DRAWN BY: AD

DESIGNED BY: BB

CHECKED BY: KA

ISSUE DATE: 5/13/2026

BETA JOB NO.: 11433

SCALE

4 0 4 8
SCALE IN FEET: 1"=4'

UNLESS OTHERWISE NOTED OR CHANGED BY REPRODUCTION

For Review Only

SHEET NO.

11

\\BETA-INC.COM\RITRANS\11400\11433 - TIDEWATER PHASE 1B\AUTOCAD FILES\3_STAIRS\PLANSET\11433 ENLARGEMENT PLANS.DWG

PLEASANT STREET

DIVISION STREET

DETECTABLE WARNING PANEL
CUT PANEL TO FIT

BOLLARD

ADJUST EXIST. MANHOLE TO FINISHED GRADE

EXIST. TRAFFIC MAST ARM (RET.)

SAWCUT

CEM. CONC. SIDEWALK - TYPE A

GRANITE CURB

BROOM FINISH CEM. CONC. SIDEWALK

CONTROL JOINT (TYP.)

EXPANSION JOINT (TYP.)

R44'-1"

R48'-9"

9"

8'-7"

3"

PLANTING BED (TYP.)

8'-8"

7'-9"

6'-6"

2"

16'-4"

12'-4"

16'-4"

GRANITE CURB (TYP)

10'-7"

12'-4"

SAWCUT

SAWCUT

EXISTING BRIDGE
WALL AND
GUARDRAIL

CEM. CONC. SIDEWALK - TYPE B

8'

LIGHT TYPE EB,
REFER TO ELECTRICAL PLANS

BENCH
(ADD ALT NO. 2)

CEM. CONC. SIDEWALK
BENCH PAD (ADD ALT NO. 2)

PLANTING BED (TYP.)

3'-7"

135°

10'

PLANTING BED (TYP.)

EXIST. WALL

TRENCH DRAIN TD-1

STONE PAD

SERVICE PEDESTAL,
REFER TO ELECTRICAL DRAWINGS

CIP CONCRETE WALL - REFER
TO STRUCTURAL DRAWINGS

BLACK VINYL COATED
CHAIN LINK FENCE

CIP CONCRETE COLUMN - REFER
TO STRUCTURAL DRAWINGS

PLANTING BED EDGE (TYP.)

LOAM AND SEED -
REFER TO
PLANTING PLAN
FOR SEED MIX

RIP RAP (R-3)

STEEL STAIRWAY - REFER
TO STRUCTURAL
DRAWINGS

BLACK VINYL COATED
CHAIN LINK FENCE

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PREPARED BY

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SUBCONSULTANT

PROJECT

Pleasant Street
Public Stairway
Construction Phase

Bid No. 26-011

Pawtucket, RI

TITLE

ENLARGEMENT
PLAN - 2

NO.	REVISIONS	DATE

DRAWN BY: AD

DESIGNED BY: BB

CHECKED BY: KA

ISSUE DATE: 5/13/2026

BETA JOB NO.: 11433

SCALE

4 0 4 8

SCALE IN FEET: 1"=4'

UNLESS OTHERWISE NOTED OR CHANGED BY REPRODUCTION

For Review Only

SHEET NO.

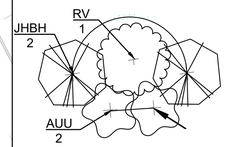
12

PLANT SCHEDULE

KEY	QTY	BOTANICAL NAME	COMMON NAME	SIZE	ROOT
TREES					
AC	13	Amelanchier canadensis	Shadblow Serviceberry	7/8'CLUMP	B&B
JV	4	Juniperus virginiana	Eastern Red Cedar	7/8'	B&B
HV	4	Hamamelis virginiana	Common Witch Hazel-autumn blooming	4/5'	B&B
NS	2	Nyssa sylvatica	Tupelo/Sour Gum	2/2.5"CAL	B&B
SHRUBS					
CAH	33	Clethra alnifolia 'Hummingbird'	Hummingbird Summersweet-compact	#3	Cont.
VD	18	Viburnum dentatum	Arrowwood Viburnum	#3	Cont.
RV	7	Rosa virginiana	Virginia Rose-pink	#1	Cont.
PERENNIALS					
SS	50	Schizachyrium scoparium	Little Bluestem Grass	#1	Cont.
GM	10	Geranium maculatum	Wild Geranium-pink	#1	Cont.
SOS	21	Solidago speciosa	Showy Goldenrod	#1	Cont.
ES	50	Eragrostis spectabilis	Purple Love Grass	#1	Cont.
JHBH	14	Juniperus horiz. 'Bar Harbor'	Bar Harbor Creeping Juniper	#3	Cont.
AUU	14	Arctostaphylos uva-ursi	Bearberry	#1	Cont.
PAH	30	Pennisetum alopecuroides 'Hameln'	Hameln Fountain Grass-dwarf	#1	Cont.
RH	10	Rudbeckia hirta	Coneflower-golden yellow	#1	Cont.
CKF	30	Calamagrostis 'Karl Foerster'	Karl Foerster Feather Reed Grass	#1	Cont.

SEED MIX A		75 Lbs per acre
% BY WEIGHT	BOTANICL NAME	COMMON NAME
30%	FESTUCA RUBRA SUBSP. COMMUTATA	CHEWINGS FESCUE
30%	POA PARTENSIS	KENTUCKY BLUEGRASS
40%	LOLIUM PERENNE	PERENNIAL RYEGRASS

SEED MIX B		35 Lbs per acre
% BY WEIGHT	BOTANICL NAME	COMMON NAME
27%	ELYMUS CANADENSIS	CANADA WILD RYE
22%	FESTUCA RUBRA	RED FESCUE
15%	LOLIUM MULTIFLORUM	ANNUAL RYEGRASS
13%	LOLIUM PERENNE	PERENNIAL RYEGRASS
7%	SCHYZACHYRIUM SCOPARIUM	LITTLE BLUESTEM
7%	PANICUM VIRGATUM	SWITCH GRASS
7%	SORGHASTRUM NUTANS	INDIAN GRASS
1%	JUNCUS TENUIS	PATH RUSH
1%	AGROSTIS PERENNANS	UPLAND BENTGRASS



PLANT GROUPINGS ENLARGEMENT

PLANTING KEY

- DECIDUOUS TREE
- EVERGREEN TREE
- DECIDUOUS SHRUB
- EVERGREEN SHRUB
- PERENNIAL
- GRASS
- GROUNDCOVER
- SEED MIX A (LAWN)
- SEED MIX B (NATURALIZED)

200' BUFFER

EXISTING VEGETATION TO REMAIN

PLEASANT STREET

TAFT STREET

DIVISION STREET

SEED MIX - A

SEED MIX - B

PLANT GROUPINGS - SEE ENLARGEMENT

CONTRACT 26.011
NBC CONTRACT
308.04C (BY OTHERS)

JERSEY BARRIER

52471
ELEVATION=12.43

52473
RIM =11.16

PREPARED BY

BETA
www.BETA-Inc.com

REGISTERED PROFESSIONAL

REGISTERED LANDSCAPE ARCHITECT
KEITH W. GULLE
No. 799

SUBCONSULTANT

PROJECT

Pleasant Street Public Stairway Construction Phase

Bid No. 26-011

Pawtucket, RI

TITLE

PLANTING PLAN

NO.	REVISIONS	DATE

DRAWN BY: AD

DESIGNED BY: AG

CHECKED BY: KA

ISSUE DATE: 5/13/2026

BETA JOB NO.: 11433

SCALE

10 0 10 20

SCALE IN FEET: 1"=10'

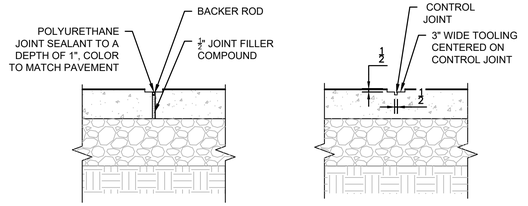
UNLESS OTHERWISE NOTED OR CHANGED BY REPRODUCTION

For Review Only

SHEET NO.

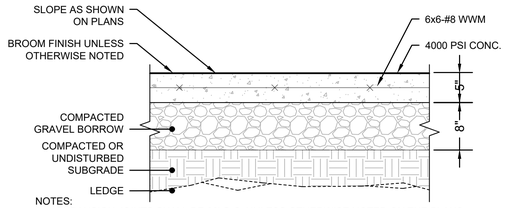
13

\\BETA-INC.COM\RI\TRANS\11400\11433 - TIDEWATER PHASE 1B\AUTOCAD FILES\3_STAIRS\PLANSET\11433 PLANTING PLAN.DWG



EXPANSION JOINT

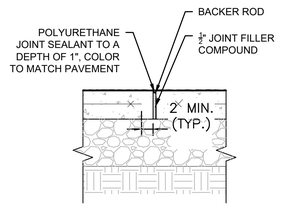
CONTROL JOINT



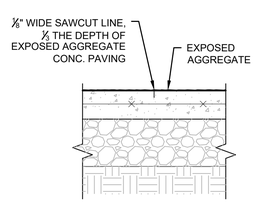
NOTES:
1. EXPANSION JOINTS SHALL BE 20' O.C. UNLESS OTHERWISE NOTED ON THE PLANS.
2. CONTROL JOINTS SHALL BE 5' O.C. UNLESS OTHERWISE NOTED ON THE PLANS.
3. IF LEDGE BECOMES PRESENT DURING EXCAVATION, CONTRACTOR IS RESPONSIBLE FOR REMOVING IT BEFORE IMPLEMENTING PROPOSED SURFACES.
4. REMOVE ANY AND ALL LEDGE ENCOUNTERED TO 2" BELOW THE LIMITS NECESSARY TO CONSTRUCT PROPOSED IMPROVEMENTS AS SHOWN IN THE PLANS/ DETAILS

CEM. CONC. SIDEWALK

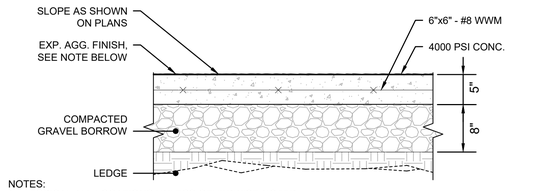
SCALE: 1"=1'-0"



EXPANSION JOINT



CONTROL JOINT

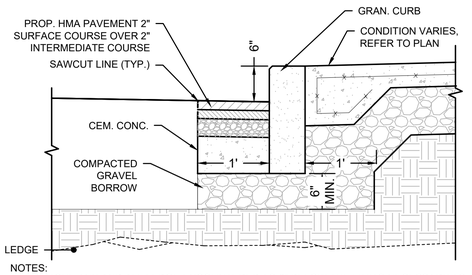


NOTES:
1. TYPICAL ALL LOCATIONS UNLESS OTHERWISE NOTED.
2. AGGREGATE SIZE, COLOR, AND SHAPE SHALL BE CONSISTANT THROUGHOUT THE PROJECT AREA.
3. EXPANSION JOINTS SHALL BE 20' O.C. UNLESS OTHERWISE NOTED ON THE PLANS.
4. THOROUGHLY WASH AND CLEAN ALL SURFACES AND REMOVE ALL DEBRIS AFTER POWERWASHING AND SAWCUTTING.
5. SAWCUT CONTROL JOINTS SHALL BE AS NOTED ON THE PLANS.
4. REMOVE ANY AND ALL LEDGE ENCOUNTERED TO 2" BELOW THE LIMITS NECESSARY TO CONSTRUCT PROPOSED IMPROVEMENTS AS SHOWN IN THE PLANS/ DETAILS

CEM. CONC. SIDEWALK - EXPOSED AGGREGATE CONCRETE ADD ALTERNATE NO. 1

SCALE: 1"=1'-0"

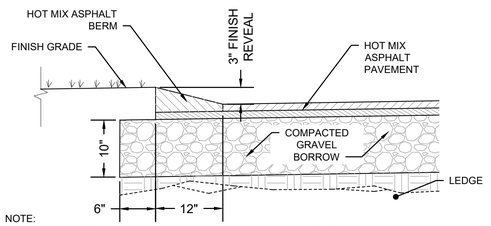
NOTE: IF ADD ALTERNATE NO. 1 IS ACCEPTED, CEMC. CONC. SIDEWALK DESIGNATED AS TYPE B WILL BE EXPOSED AGGREGATE FINISH.



NOTES:
1. REMOVE ANY AND ALL LEDGE ENCOUNTERED TO 2" BELOW THE LIMITS NECESSARY TO CONSTRUCT PROPOSED IMPROVEMENTS AS SHOWN IN THE PLANS/ DETAILS

GRANITE CURB

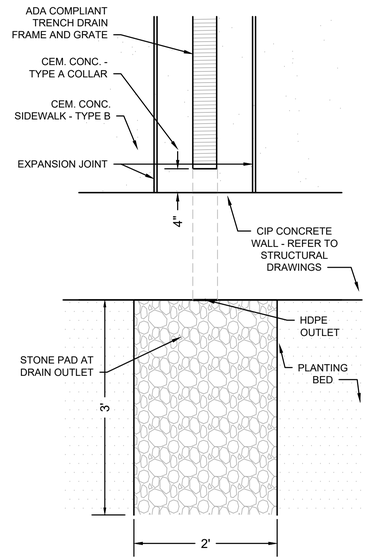
SCALE: 1"=1'-0"



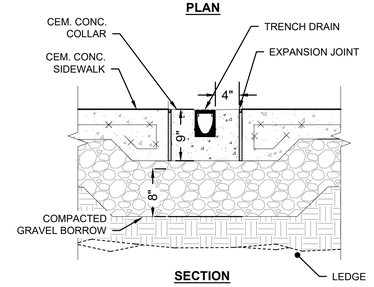
NOTE:
1. HMA BERM CAN BE PLACED AT THE SAME TIME THAT THE SURFACE COURSE LAYER IS PLACED ON THE BITUMINOUS ASPHALT DRIVEWAY OR IT CAN BE INSTALLED IN A SEPARATE OPERATION ON THE BINDER COURSE.
2. REMOVE ANY AND ALL LEDGE ENCOUNTERED TO 2" BELOW THE LIMITS NECESSARY TO CONSTRUCT PROPOSED IMPROVEMENTS AS SHOWN IN THE PLANS/ DETAILS

HOT MIX ASPHALT BERM

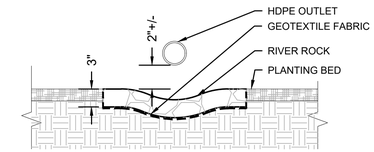
NOT TO SCALE



PLAN



SECTION

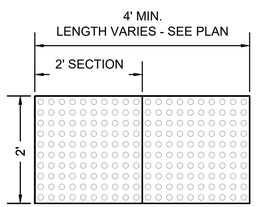


SECTION

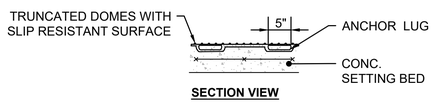
NOTE:
1. REMOVE ANY AND ALL LEDGE ENCOUNTERED TO 2" BELOW THE LIMITS NECESSARY TO CONSTRUCT PROPOSED IMPROVEMENTS AS SHOWN IN THE PLANS/ DETAILS

TRENCH DRAIN TD-1

SCALE: 1"=1'-0"



TOP VIEW

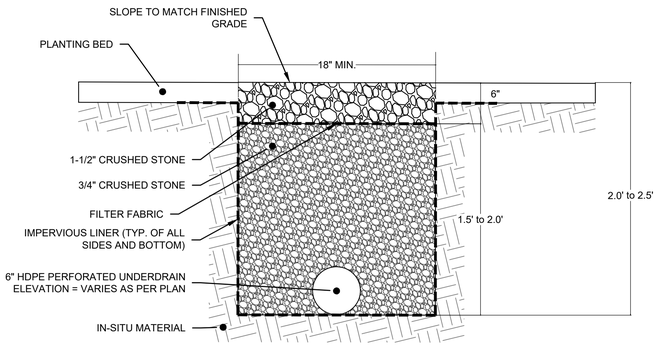


SECTION VIEW

NOTES:
1. LOCATE AT ALL WHEELCHAIR RAMPS AS SHOWN ON THE PLANS.
2. ADA COMPLIANT TACTILE WARNING PLATE FABRICATED FROM GRAY IRON.

DETECTABLE WARNING PANEL

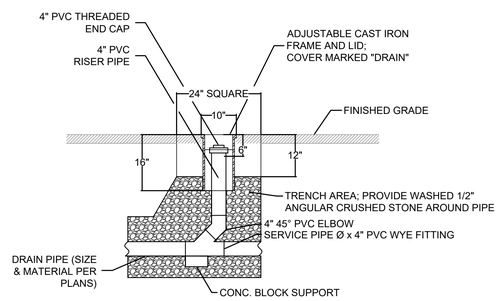
SCALE: ¾"=1'-0"



NOTES:
1. STONE TRENCH SHALL MEET THE MATERIAL AND INSTALLATION REQUIREMENTS OF SECTION 2.3.3 OF THE RHODE ISLAND DEPARTMENT OF TRANSPORTATION LINEAR STORMWATER MANUAL.
2. FILTER FABRIC SHALL BE MIRAFI 140N, OR APPROVED EQUAL.
3. IMPERMEABLE LINER SHALL BE A 30 MM THICK, NONWOVEN, HIGH-DENSITY POLYETHYLENE (HDPE) LINER SPECIFICALLY DESIGNED FOR USE IN SUBSURFACE LINING/CONTAINMENT APPLICATIONS. LINER SHALL BE PLACED TO LIMIT THE NUMBER OF SEAMS, AND OVERLAP A MINIMUM OF SIX INCHES OR AS OTHERWISE SPECIFIED BY THE MANUFACTURER'S INSTALLATION GUIDELINES.

STONE TRENCH

SCALE: NTS



TYPICAL DRAIN CLEANOUT DETAIL

SCALE: NTS

PREPARED BY

BETA
www.BETA-Inc.com

REGISTERED PROFESSIONAL

KEVIN M. AGUIAR
No. 6913
REGISTERED PROFESSIONAL ENGINEER
CIVIL

SUBCONSULTANT

PROJECT

Pleasant Street Public Stairway Construction Phase

Bid No. 26-011

Pawtucket, RI

TITLE

DETAILS - 1

NO.	REVISIONS	DATE

DRAWN BY: AD
DESIGNED BY: BB
CHECKED BY: KA
ISSUE DATE: 5/13/2026
BETA JOB NO.: 11433

SCALE

AS SHOWN

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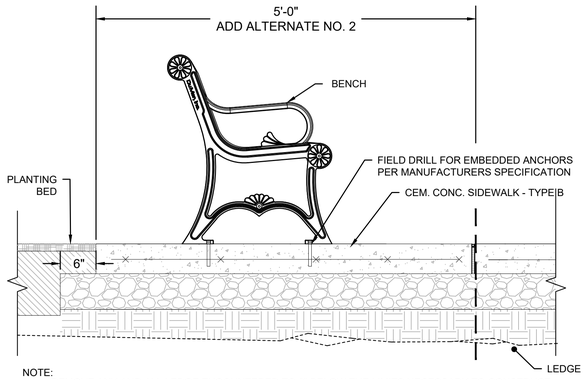
For Review Only

SHEET NO.

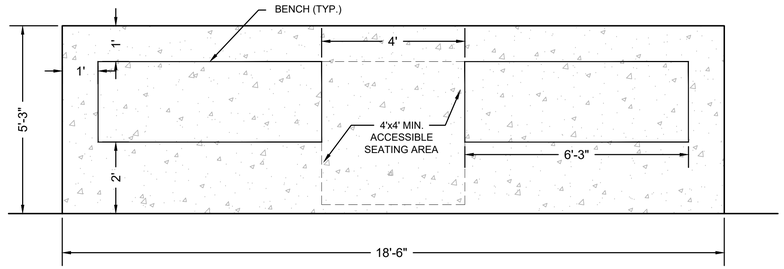
14

\\BETA-INC.COM\RITRANS\11400\11433 - TIDEWATER PHASE 1B\AUTOCAD FILES\3_STAIRS\PLANSET\11433 LA DETAILS.DWG



NOTE:-
1. REMOVE ANY AND ALL LEDGE ENCOUNTERED TO 2" BELOW THE LIMITS NECESSARY TO CONSTRUCT PROPOSED IMPROVEMENTS AS SHOWN IN THE PLANS/ DETAILS

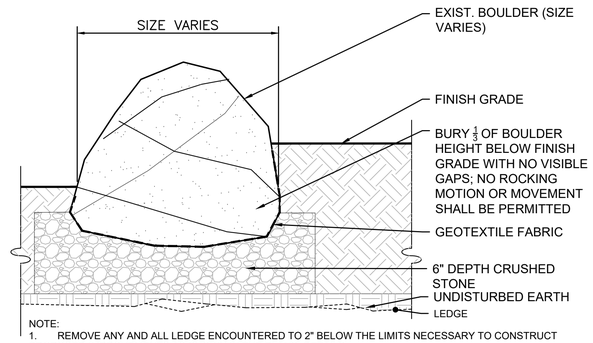
BENCH - SECTION
ADD ALTERNATE NO. 2
SCALE: 1" = 1' – 0"



BENCH - PLAN
ADD ALTERNATE NO. 3
SCALE: 1" = 1' – 0"

NOTE: IF ADD ALTERNATE NO. 3 IS ACCEPTED, FURNISH AND INSTALL THE CEM. CONC. SIDEWALK - TYPE B PAD AND BENCHES AS INDICATED ON THE DRAWINGS.

IF ADD ALTERNATE NO. 3 IS REJECTED, THE AREA INCLUDED IN THE BASE BID SHALL BE INSTALLED AS PLANTING BED.



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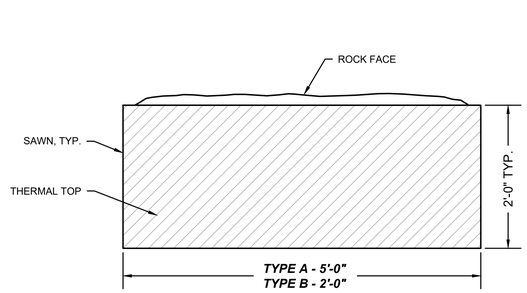
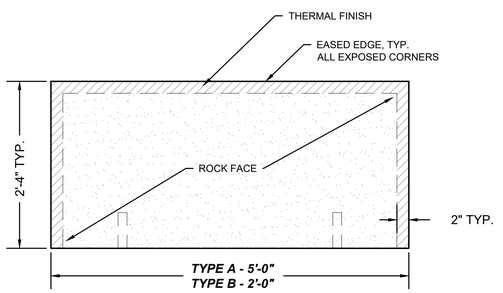
RECONSTRUCT LANDSCAPE BOULDER WALL
SCALE: 1"=1'-0"



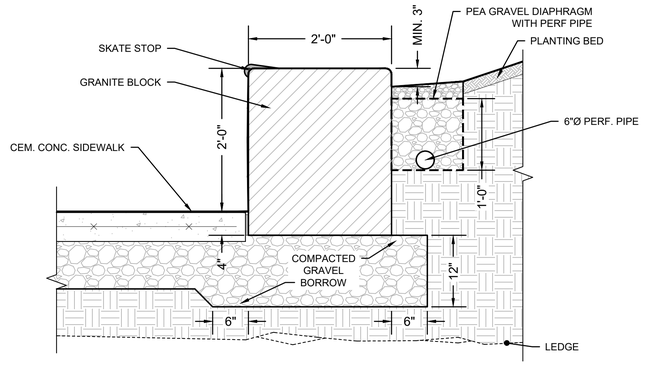
PLAN



ELEVATION

NOTE: REFER TO PLANS FOR BLOCK LOCATIONS AND QUANTITIES.

GRANITE BLOCK
SCALE: 1"=1'–0"



NOTE:
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GRANITE BLOCK SEAT WALL
SCALE: 1"=1'–0"

PREPARED BY

BETA
www.BETA-Inc.com

REGISTERED PROFESSIONAL

KEVIN M. AGUIAR
No. 6913
REGISTERED
PROFESSIONAL ENGINEER
CIVIL

SUBCONSULTANT

PROJECT

Pleasant Street
Public Stairway
Construction Phase

Bid No. 26-011

Pawtucket, RI

TITLE

DETAILS - 2

NO.	REVISIONS	DATE

DRAWN BY: AD
DESIGNED BY: AG
CHECKED BY: KA
ISSUE DATE: 5/13/2026
BETA JOB NO.: 11433

SCALE

AS SHOWN

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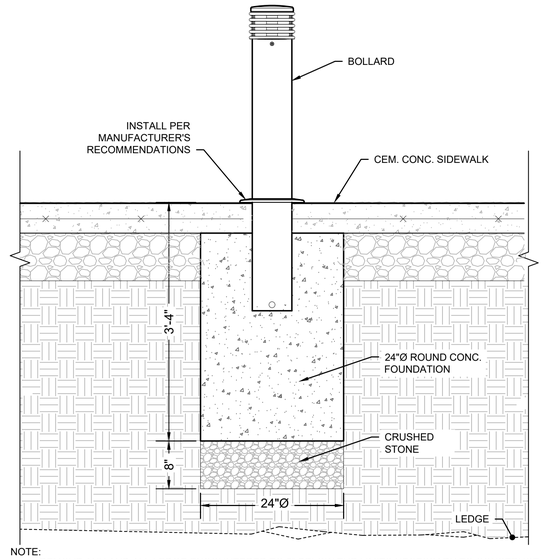
SHEET NO.
15

\\BETA-INC.COM\RI\TRANS\11400\11433 - TIDEWATER PHASE 1B\AUTOCAD FILES\3_STAIRS\PLANSET\11433_LA_DETAILS.DWG



NOTE:
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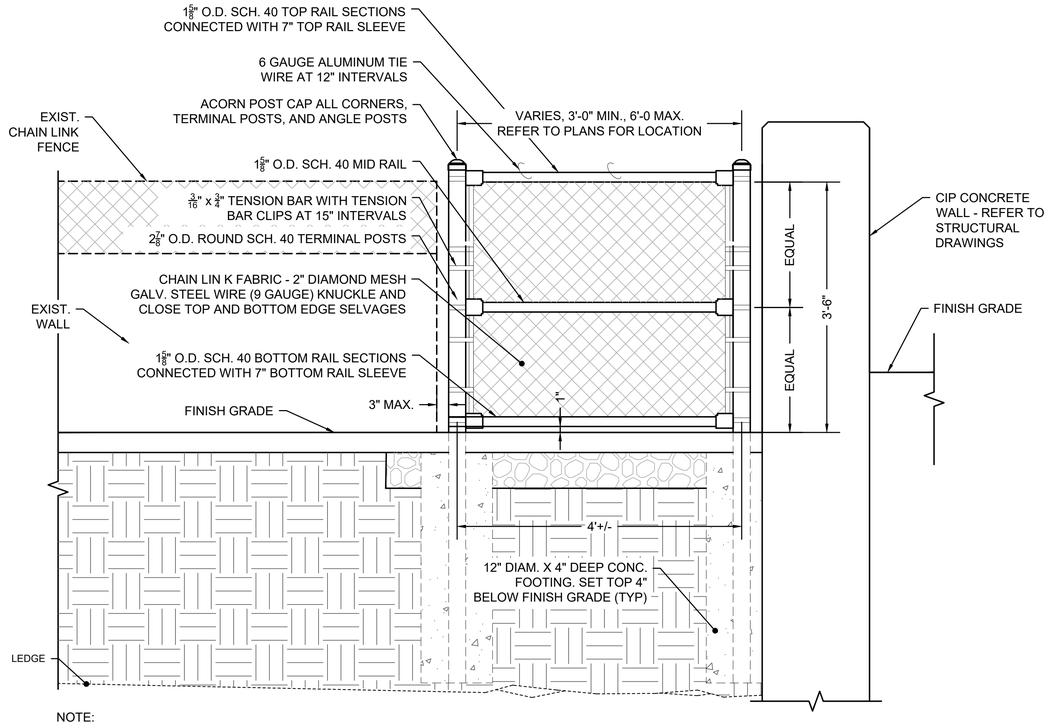
BOLLARD
SCALE: 1"=1'-0"



NOTE:
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BLACK VINYL CHAIN LINK FENCE
SCALE: 1"=1'-0"

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PREPARED BY

BETA
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REGISTERED PROFESSIONAL

KEVIN M. AGUIAR
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REGISTERED PROFESSIONAL ENGINEER
CIVIL

SUBCONSULTANT

PROJECT

Pleasant Street Public Stairway Construction Phase

Bid No. 26-011

Pawtucket, RI

TITLE

DETAILS - 3

NO.	REVISIONS	DATE

DRAWN BY: AD
DESIGNED BY: AG
CHECKED BY: KA
ISSUE DATE: 5/13/2026
BETA JOB NO.: 11433

SCALE

AS SHOWN

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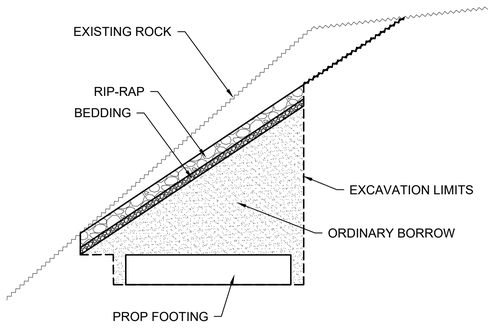
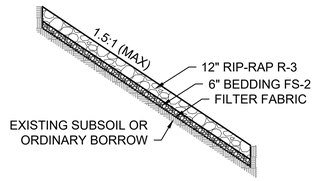
For Review Only

SHEET NO.

16

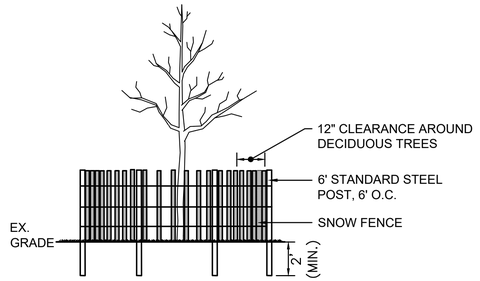


EXCAVATION BACKFILL DETAIL
NOT TO SCALE

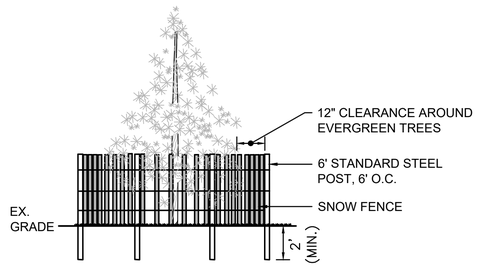


NOTES:
1. BEDDING SHALL BE CLASS FS-2 AND CONFORM TO SECTION 920 AND M.10.03.1 OF THE STANDARD SPECIFICATIONS.
2. DUMPED RIPRAP SHALL BE CLASS R-3 AND CONFORM TO SECTION 920 AND M.10.03.2 OF THE STANDARD SPECIFICATIONS.
3. FILTER FABRIC SHALL BE MIRAFI 140N AS MANUFACTURED BY US FABRICS, OR APPROVED EQUAL, AND CONFORM TO SECTION 920 OF THE STANDARD SPECIFICATIONS.
4. DIMENSIONS MAY BE MODIFIED BY ENGINEER TO MEET FIELD CONDITIONS.

RIP-RAP
NOT TO SCALE

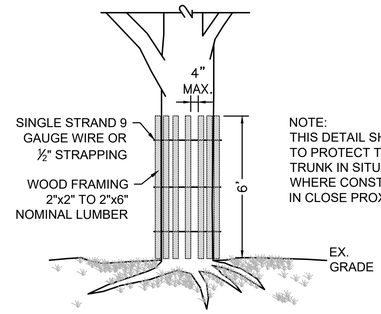


DECIDUOUS TREE



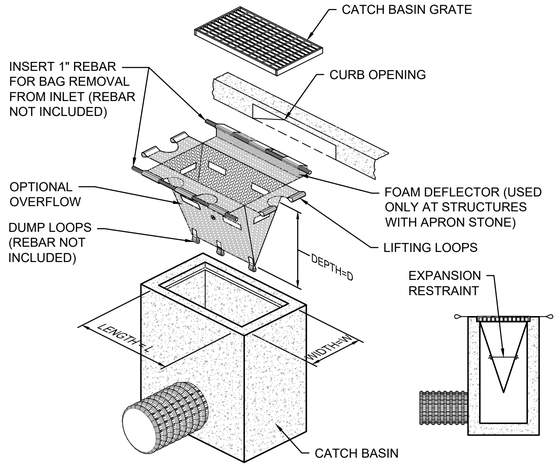
EVERGREEN TREE

DRIPLINE TREE PROTECTION DEVICE
NOT TO SCALE



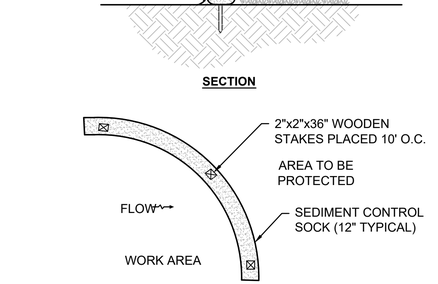
NOTE:
THIS DETAIL SHALL BE USED TO PROTECT THE TREE'S TRUNK IN SITUATIONS WHERE CONSTRUCTION IS IN CLOSE PROXIMITY.

TREE TRUNK PROTECTION DEVICE
NOT TO SCALE



NOTES:
1. CONTRACTOR SHALL MAINTAIN ALL SILT SACK SEDIMENT CONTROL DEVICE INSTALLATIONS AND REPLACE WHEN SATURATED WITH SEDIMENT BASED ON MANUFACTURER RECOMMENDATIONS. SILT SACK SHALL BE INSPECTED AFTER EVERY RAIN EVENT BUT NO LONGER THAN EVERY TWO WEEKS.
2. SILT SACK SHALL BE DOUBLE NEEDLE SEWN POLYPROPLYENE GEOTEXTILE FABRIC AND RATED FOR HIGH FLOW UNLESS OTHERWISE DIRECTED.
3. CONTRACTOR SHALL PROVIDE CURB OPENING DEFLECTOR AT ALL CATCH BASINS AS NECESSARY.

INLET SEDIMENT CONTROL DEVICE (SILT SACK)
(WITH OPTIONAL CURB DEFLECTOR)
NOT TO SCALE

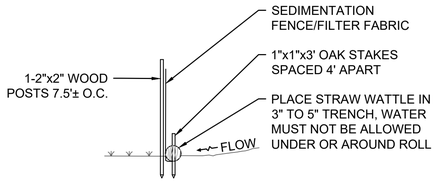


SECTION

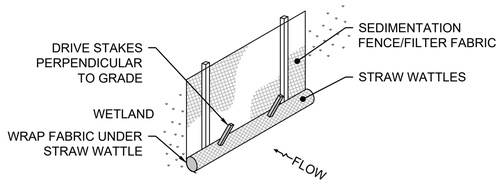
PLAN VIEW

CONSTRUCTION SPECIFICATIONS:
1. SOCKS SHALL BE PLACED IN A ROW WITH ENDS OVERLAPPING THE ADJACENT SOCK.
2. SOCKS SHALL BE SECURELY ANCHORED IN PLACE BY STAKES DRIVEN THOUGH THE SOCKS.
3. INSPECTION SHALL BE FREQUENT AND REPAIR OR REPLACEMENT SHALL BE MADE PROMPTLY AS NEEDED.
4. SOCKS SHALL BE REMOVED WHEN WORK IS COMPLETE AN THE AREA HAS STABILIZED.

COMPOST FILTER 'SOCK'
NOT TO SCALE



EMBEDDING DETAIL



ANCHORING DETAIL

EROSION CONTROL BARRIER
NOT TO SCALE

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PROJECT

Pleasant Street
Public Stairway
Construction Phase

Bid No. 26-011

Pawtucket, RI

TITLE

DETAILS - 4

NO.	REVISIONS	DATE

DRAWN BY: AD
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ISSUE DATE: 5/13/2026
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SCALE

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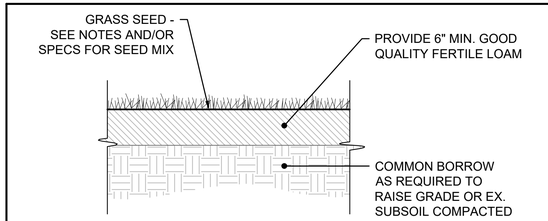
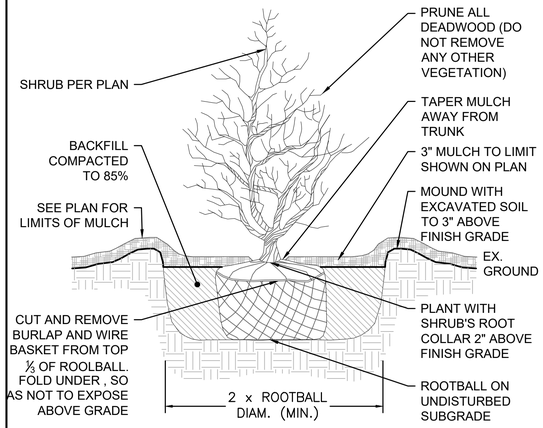
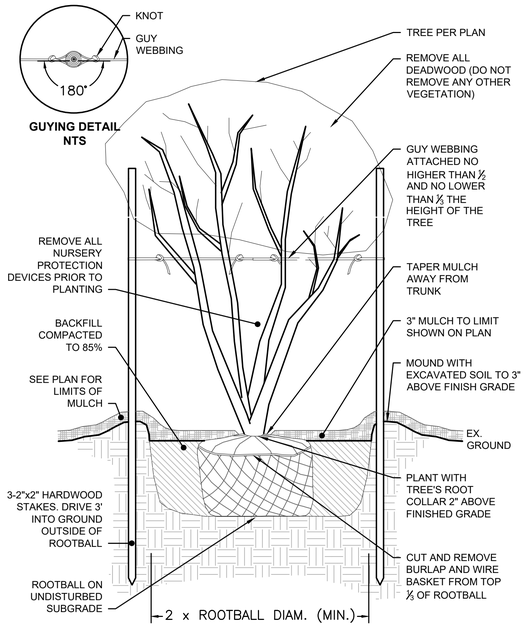


LOAM AND SEED
NOT TO SCALE



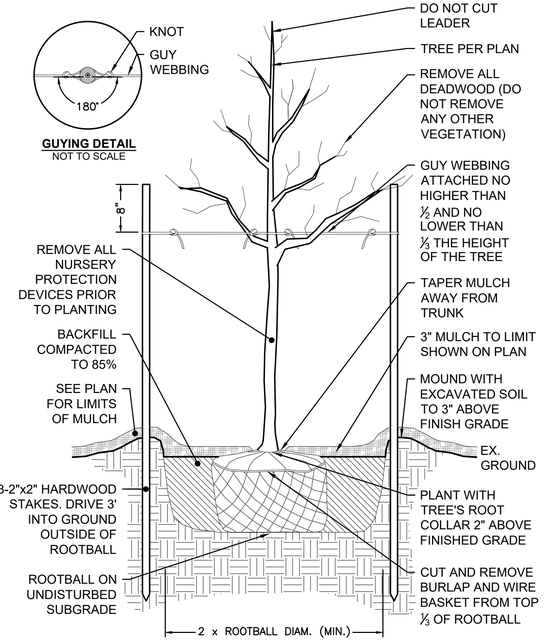
SHRUB PLANTING
NOT TO SCALE



GUYING DETAIL
NTS

NOTE:
AFTER THE GUARANTEE PERIOD THE CONTRACTOR WILL BE RESPONSIBLE FOR THE REMOVAL OF STAKES AND GUY WEBBING.

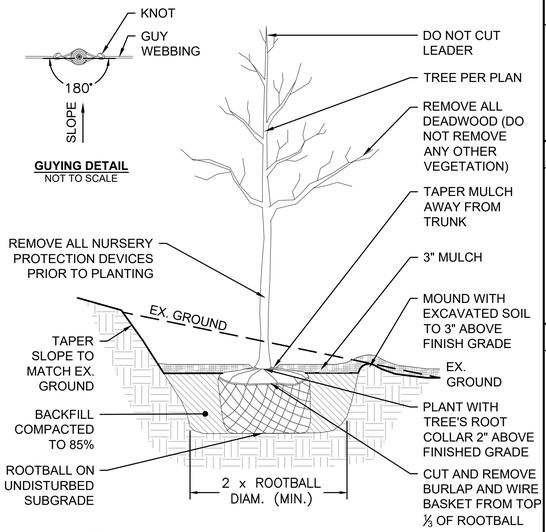
MULTI-STEM TREE STAKING & PLANTING
NOT TO SCALE



GUYING DETAIL
NOT TO SCALE

NOTE:
AFTER THE GUARANTEE PERIOD THE CONTRACTOR WILL BE RESPONSIBLE FOR THE REMOVAL OF STAKES AND GUY WEBBING.

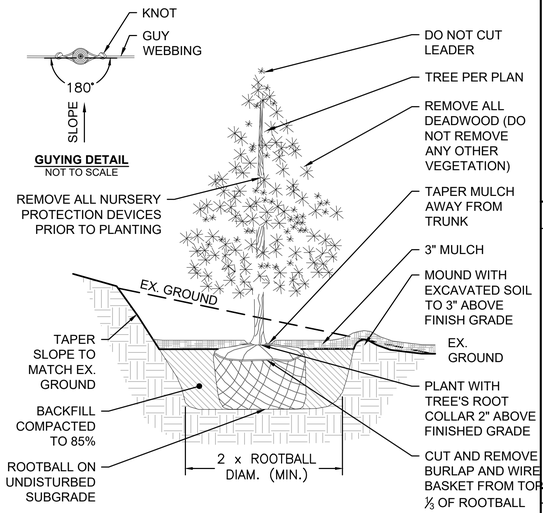
DECIDUOUS TREE STAKING & PLANTING
NOT TO SCALE



GUYING DETAIL
NOT TO SCALE

NOTE:
SLOPE PLANTING STAKES SHALL BE PLACED PARALLEL TO SLOPE.

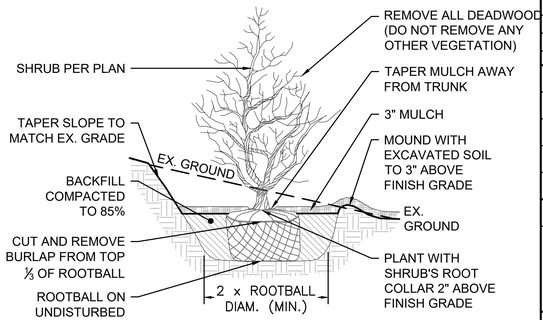
DECIDUOUS TREE PLANTING ON SLOPE
NOT TO SCALE



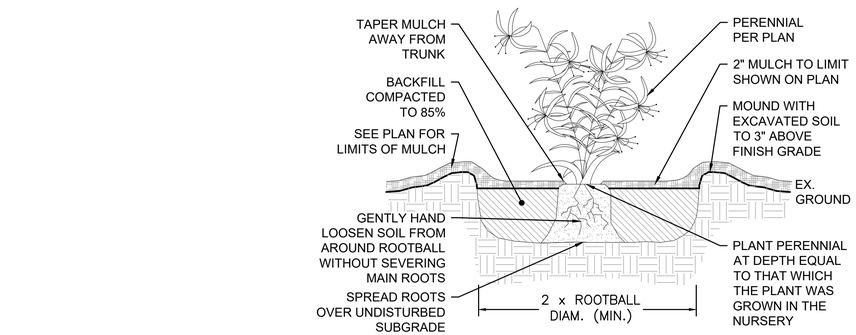
GUYING DETAIL
NOT TO SCALE

NOTE:
SLOPE PLANTING STAKES SHALL BE PLACED PARALLEL TO SLOPE.

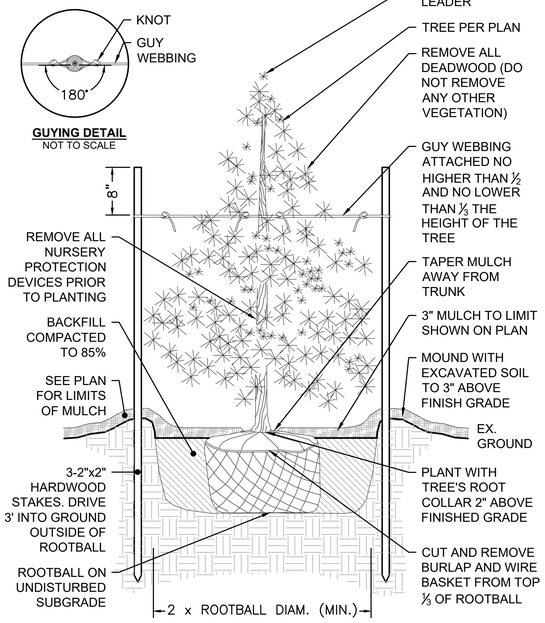
EVERGREEN TREE PLANTING ON SLOPE
NOT TO SCALE



SHRUB PLANTING ON SLOPE
NOT TO SCALE



PERENNIALS & GRASSES PLANTING
NOT TO SCALE



GUYING DETAIL
NOT TO SCALE

NOTE:
AFTER THE GUARANTEE PERIOD THE CONTRACTOR WILL BE RESPONSIBLE FOR THE REMOVAL OF STAKES AND GUY WEBBING.

EVERGREEN TREE STAKING & PLANTING
NOT TO SCALE

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PROJECT

Pleasant Street Public Stairway Construction Phase

Bid No. 26-011

Pawtucket, RI

TITLE

DETAILS - 5

NO.	REVISIONS	DATE

DRAWN BY: AD
DESIGNED BY: AG
CHECKED BY: KA
ISSUE DATE: 5/13/2026
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SCALE

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18

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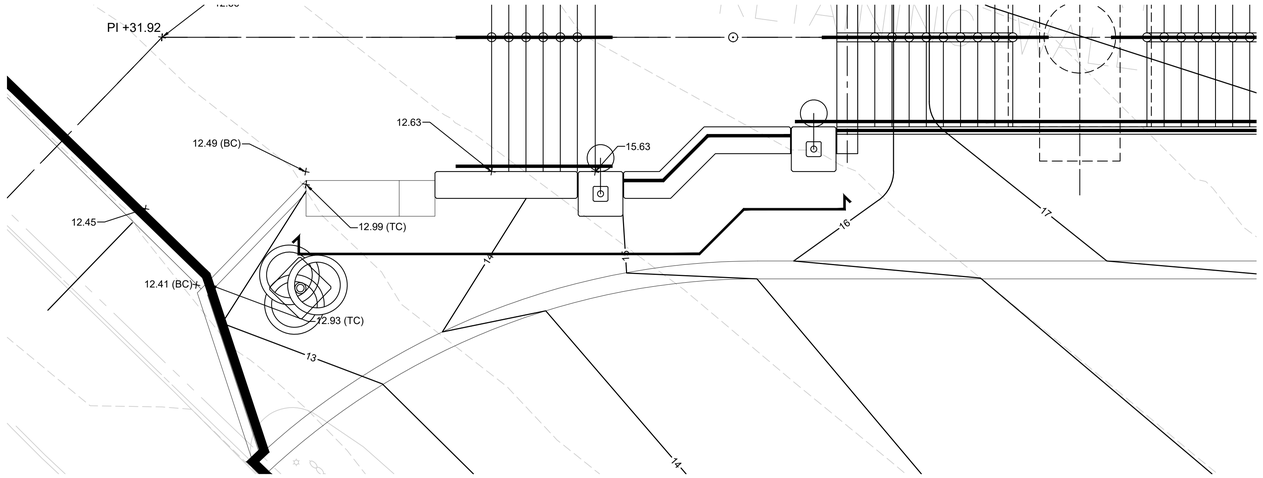
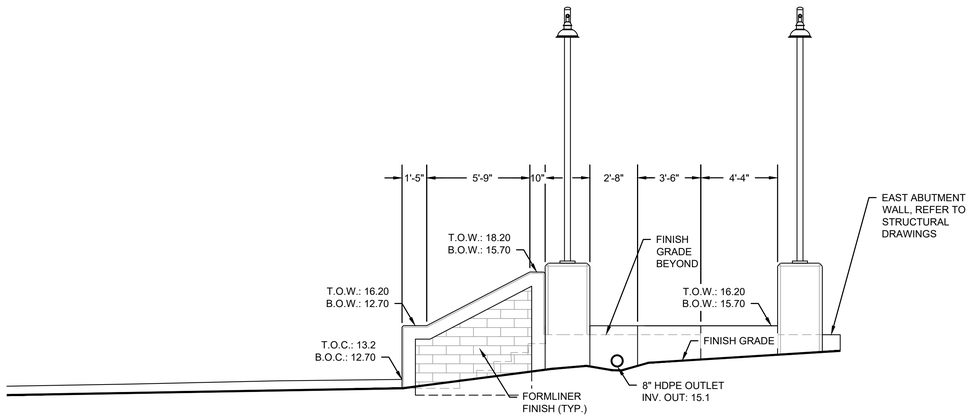


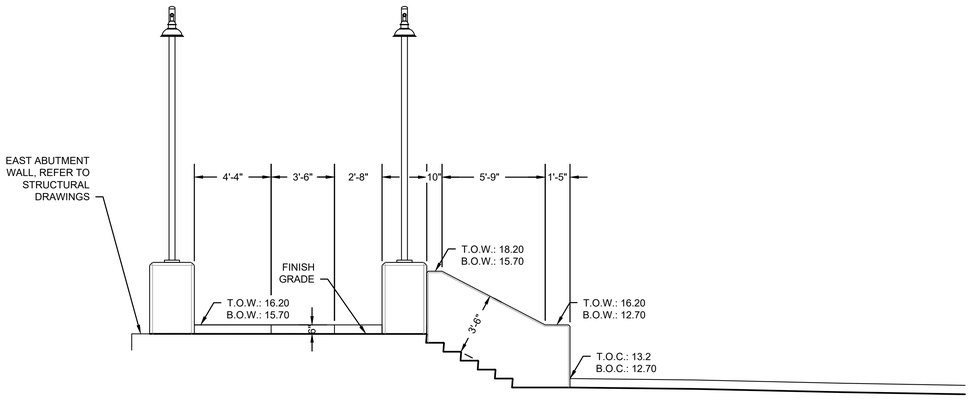
LOWER PLAZA WALL - PLAN

SCALE: $\frac{1}{4}$" = 1' - 0"



LOWER PLAZA WALL - ARCHITECTURAL ELEVATION - EXTERIOR

SCALE: $\frac{1}{4}$" = 1' - 0"



LOWER PLAZA WALL - ARCHITECTURAL ELEVATION - INTERIOR

SCALE: $\frac{1}{4}$" = 1' - 0"

CONCRETE FORMLINER PATTERN

FITZGERALD FORMLINERS 17027 $\frac{3}{4}$" ASHLAR LINEAR CUT ASHLAR BLOCK

EXISTING DIVISION STREET BRIDGE COLUMNS

NOTE: FORMLINER SHALL BE FITZGERALD FORMLINERS 17027 OR APPROVED EQUAL. THE DESIGN OF THE PROPOSED FORMLINER IS INTENDED TO MATCH THE LOOK OF THE DIVISION STREET BRIDGE COLUMNS.

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ADEK W. GALLE
No. 298

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PROJECT

Pleasant Street Public Stairway Construction Phase

Bid No. 26-011

Pawtucket, RI

TITLE

ARCHITECTURAL WALL ELEVATIONS - 1

NO.	REVISIONS	DATE

DRAWN BY: AD

DESIGNED BY: BB

CHECKED BY: KA

ISSUE DATE: 5/13/2026

BETA JOB NO.: 11433

SCALE

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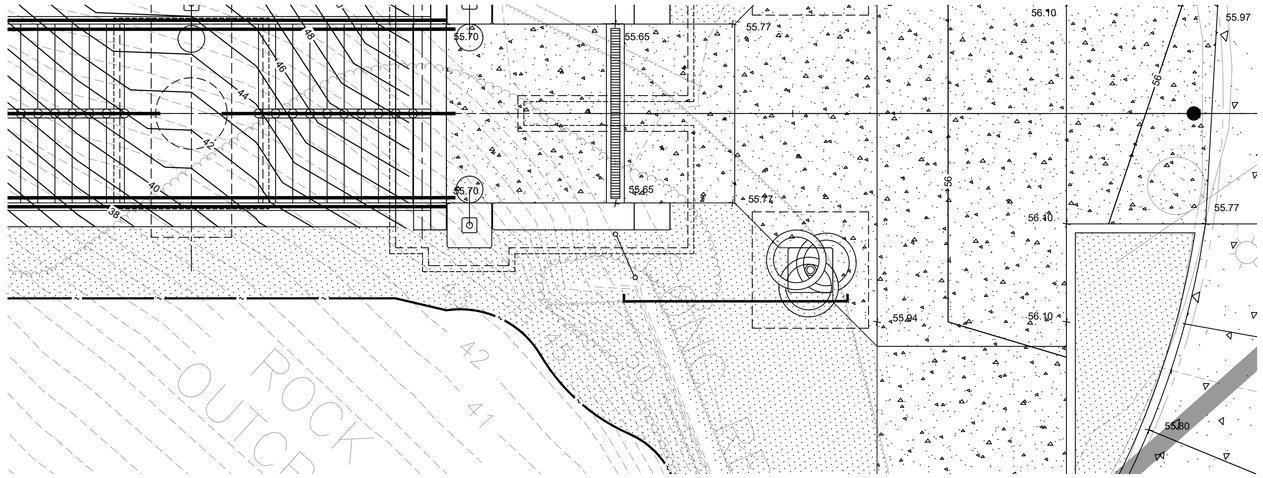
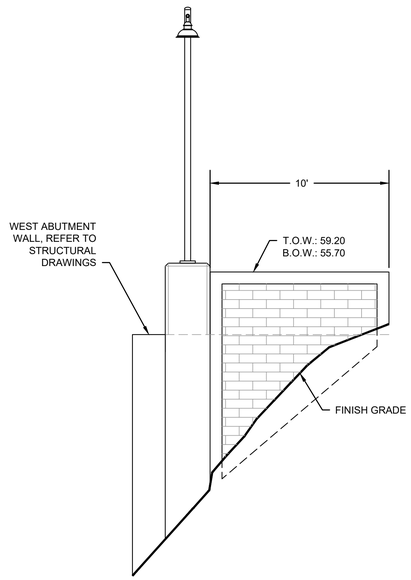
SHEET NO.

19



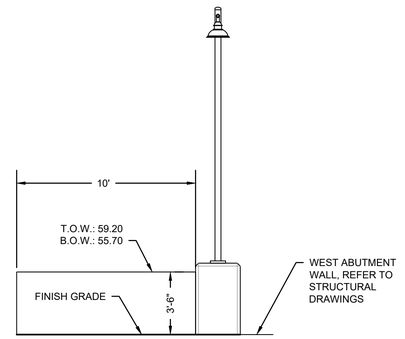
UPPER PLAZA WALL - PLAN

SCALE: 1/4" = 1' - 0"



UPPER PLAZA WALL - ARCHITECTURAL ELEVATION - EXTERIOR

SCALE: 1/4" = 1' - 0"



UPPER PLAZA WALL - ARCHITECTURAL ELEVATION - INTERIOR

SCALE: 1/4" = 1' - 0"

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No. 298

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PROJECT

Pleasant Street Public Stairway Construction Phase

Bid No. 26-011

Pawtucket, RI

TITLE

ARCHITECTURAL WALL ELEVATIONS - 2

NO.	REVISIONS	DATE

DRAWN BY: AD

DESIGNED BY: BB

CHECKED BY: KA

ISSUE DATE: 5/13/2026

BETA JOB NO.: 11433

SCALE

AS SHOWN

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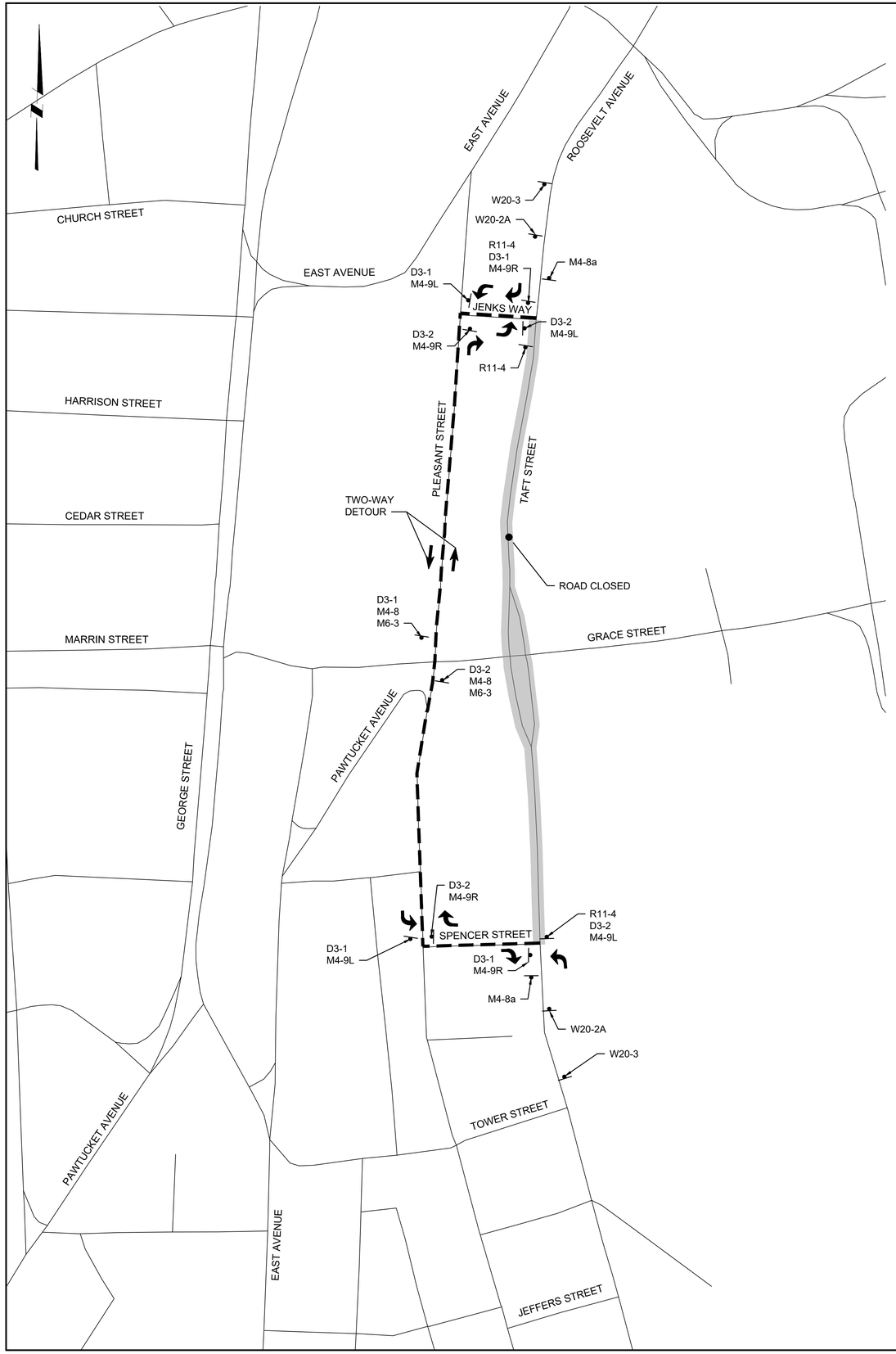
SHEET NO.

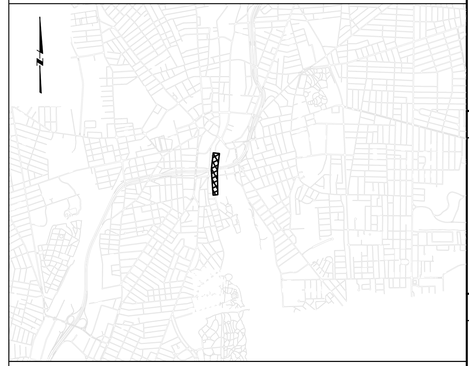
20



DETOUR SIGN LEGEND

	SIGN	DIMENSIONS	QUANTITY
TAFT STREET	D3-1	VARIES x 12 in.	5
ROOSEVELT AVE EXT.	D3-2	VARIES x 12 in.	5
END DETOUR	M4-8a	24 in. x 18 in.	2
DETOUR	M4-8	24 in. x 12 in.	2
DETOUR	M4-9L	30 in. x 24 in.	4
DETOUR	M4-9R	30 in. x 24 in.	4
	M6-3	21 in. x 15 in.	2
ROAD CLOSED LOCAL TRAFFIC ONLY	R11-4	60 in. x 30 in.	3
DETOUR AHEAD	W20-2a	36 in. x 36 in.	2
ROAD CLOSED AHEAD	W20-3	36 in. x 36 in.	2

KEY PLAN



GENERAL SHEET NOTES

1. DETOUR ON THIS SHEET SHALL ONLY BE IMPLEMENTED FOR CLOSURE OF TAFT STREET BETWEEN JENKS WAY AND SPENCER STREET AND SHALL ALLOW ACCESS TO LOCAL TRAFFIC.
2. CONTRACTOR SHALL MAINTAIN PEDESTRIAN ACCESS AT ALL TIMES THROUGH THE CONSTRUCTION ZONE. CONTRACTOR SHALL PROVIDE ADEQUATE SIGNAGE AND MARKINGS TO DELINEATE ALTERNATIVE PEDESTRIAN ACCESS SHOULD WORK REQUIRE CLOSURE OF A SIDEWALK SEGMENT. SEE DETAIL ON SHEET 22.
3. CONTRACTOR SHALL SECURE EQUIPMENT, MATERIALS, AND VEHICLES BEHIND CONSTRUCTION FENCING AT THE END OF EACH WORK DAY.

LEGEND

DETOUR ROUTE

SIGN

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PROJECT

Pleasant Street Public Stairway Construction Phase

Bid No. 26-011

Pawtucket, RI

TITLE

TRAFFIC MANAGEMENT PLAN - 1

NO.	REVISIONS	DATE

DRAWN BY: AD

DESIGNED BY: BB

CHECKED BY: KA

ISSUE DATE: 5/13/2026

BETA JOB NO.: 11433

SCALE

20 0 20 40

SCALE IN FEET: 1"=20'

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SHEET NO.

21

\\BETA-INC.COM\RI\TRANS\11400\11433 - TIDEWATER PHASE 1B\AUTOCAD FILES\3_STAIRS\PLANSET\11433 TRAFFIC MANAGEMENT.DWG

TEMPORARY TRAFFIC CONTROL GENERAL NOTES:

1. ALL MAINTENANCE AND PROTECTION OF TRAFFIC CONTROL SETUPS, SIGNS, CHANNELIZING DEVICES, ETC., SHALL BE IN ACCORDANCE WITH THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, LATEST EDITION.
2. ALL SIGN MOUNTINGS FOR TEMPORARY AND CONSTRUCTION SIGNS SHALL BE IN ACCORDANCE WITH THE R.I.D.O.T STANDARD SPECIFICATIONS, LATEST EDITION.
3. THE CONTRACTOR SHALL COVER ALL EXISTING AND/OR TEMPORARY SIGNS THAT ARE NOT RELEVANT TO THE TRAFFIC CONTROL REQUIRED DURING ANY PARTICULAR STAGE OF THE CONTRACT.
4. ADVANCE FLAGPERSON SIGNS (W20-7A) SHALL BE USED IN ADVANCE OF ANY POINT AT WHICH A FLAGPERSON OR A POLICE OFFICER HAS BEEN STATIONED TO CONTROL TRAFFIC. WHEN NEEDED, AN APPROPRIATE DISTANCE MESSAGE MAY BE DISPLAYED ON A SUPPLEMENTAL PLAQUE (24"x18") BELOW THE FLAGPERSON SYMBOL SIGN. THE SIGN SHALL BE PROMPTLY REMOVED OR COVERED WHENEVER THE FLAGPERSON IS NOT AT THE STATION.
5. POLICE OFFICERS (AND NOT FLAGPERSONS) SHALL BE UTILIZED WHEN WORK WILL IMPACT SIGNALIZED INTERSECTIONS AND LIMITED ACCESS HIGHWAYS.
6. POLYETHYLENE DRUMS SHALL BE UTILIZED AS A CHANNELIZING DEVICE WHEN A TRAFFIC CONTROL SET-UP IS TO REMAIN BEYOND WORKING HOURS WHEN NO WORKERS ARE PRESENT. CONES SHALL BE UTILIZED WHEN A TRAFFIC CONTROL SET-UP IS TO REMAIN ONLY DURING WORKING HOURS AND IS SUBSEQUENTLY BROKEN DOWN AT THE END OF THE WORKDAY.
7. ARROW PANELS SHALL BE SET IN THE FLASHING FOUR CORNERS CAUTION MODE UNLESS UTILIZED FOR A MERGING TAPER. ARROW PANELS SET IN THE FLASHING MODE SHALL NOT BE UTILIZED FOR LANE SHIFTS.
8. TEMPORARY CONSTRUCTION SIGNS AND OTHER WORKZONE TRAFFIC CONTROL DEVICES THAT ARE DAMAGED OR REQUIRE RELOCATION SHALL BE REPLACED AND/OR RELOCATED UNDER THE APPROPRIATE PAY ITEM.
9. THE PRIVATE VEHICLE OF CONSTRUCTION WORKERS SHALL NOT BE PARKED ON THE TRAVEL LANES OR SHOULDERS. THEY MAY BE PARKED WITHIN THE STATE AND/OR CITY RIGHT-OF-WAY ONLY IN AREAS 30' BEYOND THE OUTSIDE EDGE OF THE TRAVEL LANES AND/OR IN AREAS APPROVED BY THE ENGINEER.
10. TEMPORARY CONSTRUCTION SIGNS AND OTHER TEMPORARY TRAFFIC CONTROL DEVICES SHALL BE INSTALLED PRIOR TO THE START OF WORK IN ANY AREA OPEN TO TRAFFIC, AND SHALL BE REMOVED AS SOON AS PRACTICAL WHEN THEY ARE NO LONGER APPROPRIATE.
11. THE INTENDED VEHICLE PATHS THROUGH EACH WORK ZONE SHALL BE CLEARLY MARKED AT ALL TIMES. WATERBORNE PAVEMENT MARKINGS SHALL BE INSTALLED BEFORE THE END OF THE WORK SHIFT ON ALL COLD-PLANED AND NEW ROADWAY SURFACES THAT WILL BE OPENED TO TRAFFIC AT THE END OF THE SHIFT.
12. THE CONTRACTOR SHALL NOTIFY EACH ABUTTER AT LEAST 48 HOURS IN ADVANCE OF THE START OF ANY WORK THAT WILL REQUIRE TEMPORARY INTERFERENCE WITH OR CLOSURE OF ACCESS.
13. ONE SIDEWALK SHALL REMAIN OPEN AT ALL TIMES ALONG TAFT STREET.

Meaning of Symbols on Typical Application Diagrams

Arrow board	Shadow vehicle
Arrow board support or trailer (shown facing down)	Sign (shown facing left)
Changeable message sign or support trailer	Surveyor
Channelizing device	Temporary barrier
Crash cushion	Temporary barrier with warning light
Direction of temporary traffic detour	Traffic or pedestrian signal
Direction of traffic	Truck-mounted attenuator
Flagger	Type 3 barricade
High-level warning device (Flag tree)	Warning light
Longitudinal channelizing device	Work space
Luminaire	Work vehicle
Pavement markings that should be removed for a long-term project	

Meaning of Letter Codes on Typical Application Diagrams

Road Type	Distance Between Signs**		
	A	B	C
Urban (low speed)*	100 feet	100 feet	100 feet
Urban (high speed)*	350 feet	350 feet	350 feet
Rural	500 feet	500 feet	500 feet
Expressway / Freeway	1,000 feet	1,500 feet	2,640 feet

* Speed category to be determined by the highway agency or owner of site roadways open to public travel.

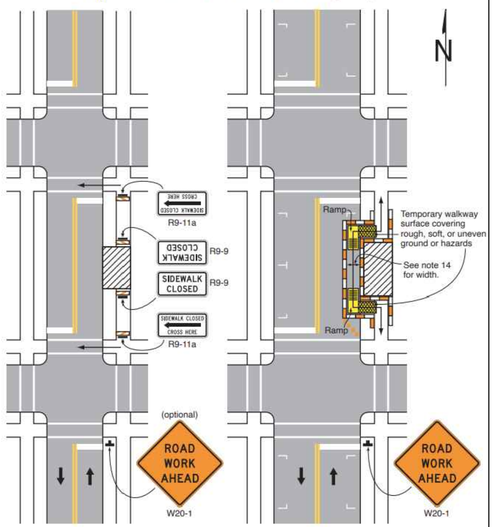
** The column headings A, B, and C are the dimensions shown in Figures 6P-1 through 6P-54. The A dimension is the distance from the transition or point of restriction to the first sign. The B dimension is the distance between the first and second signs. The C dimension is the distance between the second and third signs. (The "first sign" is the sign in a three-sign series that is closest to the TTC zone. The "third sign" is the sign that is furthest upstream from the TTC zone.)

Formulas for Determining Taper Length

Speed (S)	Taper Length (L) in feet
40 mph or less	$L = \frac{WS^2}{60}$
45 mph or more	$L = WS$

Where: L = taper length in feet
W = width of offset in feet
S = posted speed limit, or off-peak 85th-percentile speed prior to work starting, or the anticipated operating speed in mph

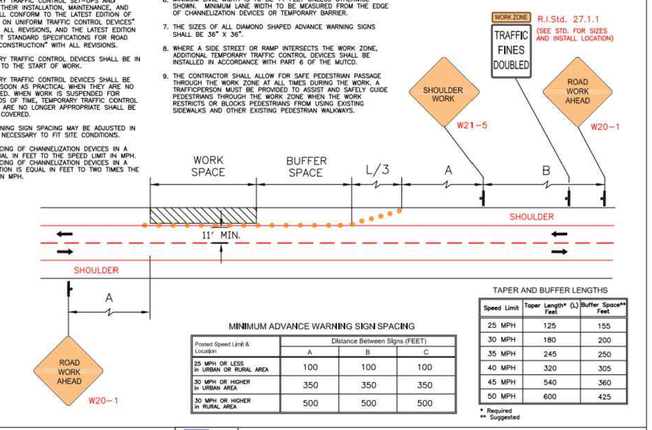
Figure 6P-28. Sidewalk Detour or Diversion (TA-28)



Typical Application 28

Note: SeeTable 6P-2 for the meanings of the symbols used in this figure.

NOTES:
1. ALL TEMPORARY TRAFFIC CONTROL SET-UPS AND DEVICES AND THEIR INSTALLATION, MAINTENANCE, AND REMOVAL SHALL CONFORM TO THE LATEST EDITION OF THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" (MUTCD) WITH ALL REVISIONS, AND THE LATEST EDITION OF THE "RIDOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION" WITH ALL REVISIONS.
2. ALL TEMPORARY TRAFFIC CONTROL DEVICES SHALL BE IN PLACE PRIOR TO THE START OF WORK.
3. ALL TEMPORARY TRAFFIC CONTROL DEVICES SHALL BE REMOVED AS SOON AS PRACTICAL WHEN THEY ARE NO LONGER NEEDED. WHEN WORK IS SUSPENDED FOR SHORT PERIODS OF TIME, TEMPORARY TRAFFIC CONTROL DEVICES THAT ARE NO LONGER APPROPRIATE SHALL BE REMOVED OR COVERED.
4. ADVANCE WARNING SIGN SPACING MAY BE ADJUSTED IN THE FIELD IF NECESSARY TO FIT SITE CONDITIONS.
5. MAXIMUM SPACING OF CHANNELIZATION DEVICES IN A TAPER IS EQUAL IN FEET TO THE SPEED LIMIT IN MPH. MAXIMUM SPACING OF CHANNELIZATION DEVICES IN A TANGENT SECTION IS EQUAL IN FEET TO TWO TIMES THE SPEED LIMIT IN MPH.
6. MINIMUM LANE WIDTH IS TO BE 11 FEET UNLESS OTHERWISE SHOWN. MINIMUM LANE WIDTH TO BE MEASURED FROM THE EDGE OF CHANNELIZATION DEVICES OR TEMPORARY BARRIER.
7. THE SIZES OF ALL DIAMOND SHAPED ADVANCE WARNING SIGNS SHALL BE 36" X 36".
8. WHERE A SIDE STREET OR RAMP INTERSECTS THE WORK ZONE, ADDITIONAL TEMPORARY TRAFFIC CONTROL DEVICES SHALL BE INSTALLED IN ACCORDANCE WITH PART 6 OF THE MUTCD.
9. THE CONTRACTOR SHALL ALLOW FOR SAFE PEDESTRIAN PASSAGE THROUGH THE WORK ZONE AT ALL TIMES DURING THE WORK. A TRAFFICPERSON MUST BE PROVIDED TO ASSIST AND SAFELY GUIDE PEDESTRIANS THROUGH THE WORK ZONE WHEN THE WORK RESTRICTS OR BLOCKS PEDESTRIANS FROM USING EXISTING SIDEWALKS AND OTHER EXISTING PEDESTRIAN WALKWAYS.



MINIMUM ADVANCE WARNING SIGN SPACING

Posted Speed Limit & Location	Distance Between Signs (FEET) A	B	C
25 MPH OR LESS in URBAN OR RURAL AREA	100	100	100
30 MPH OR HIGHER in URBAN AREA	350	350	350
30 MPH OR HIGHER in RURAL AREA	500	500	500

TAPER AND BUFFER LENGTHS

Speed Limit	Taper Length* (L) Feet	Buffer Space** Feet
25 MPH	125	155
30 MPH	180	200
35 MPH	245	250
40 MPH	320	305
45 MPH	540	360
50 MPH	600	425

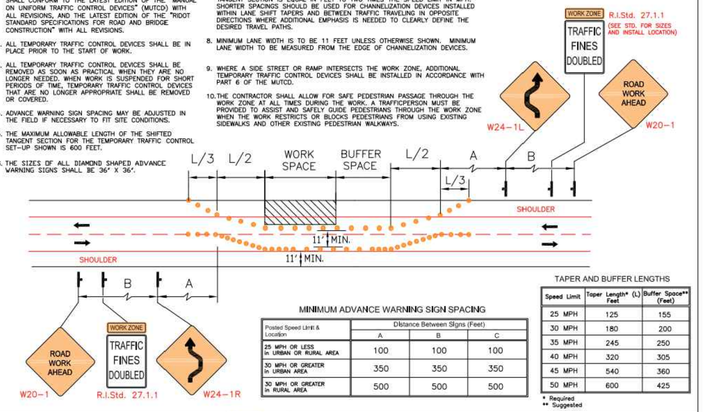
* Required
** Suggested

RHODE ISLAND DEPARTMENT OF TRANSPORTATION
TEMPORARY TRAFFIC CONTROL PLAN

TYPICAL SHOULDER CLOSURE ON TWO–LANE HIGHWAY

NOT TO SCALE DATE: 02-07-13

NOTES:
1. ALL TEMPORARY TRAFFIC CONTROL SET-UPS AND DEVICES AND THEIR INSTALLATION, MAINTENANCE, AND REMOVAL SHALL CONFORM TO THE LATEST EDITION OF THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" (MUTCD) WITH ALL REVISIONS, AND THE LATEST EDITION OF THE "RIDOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION" WITH ALL REVISIONS.
2. ALL TEMPORARY TRAFFIC CONTROL DEVICES SHALL BE IN PLACE PRIOR TO THE START OF WORK.
3. ALL TEMPORARY TRAFFIC CONTROL DEVICES SHALL BE REMOVED AS SOON AS PRACTICAL WHEN THEY ARE NO LONGER NEEDED. WHEN WORK IS SUSPENDED FOR SHORT PERIODS OF TIME, TEMPORARY TRAFFIC CONTROL DEVICES THAT ARE NO LONGER APPROPRIATE SHALL BE REMOVED OR COVERED.
4. ADVANCE WARNING SIGN SPACING MAY BE ADJUSTED IN THE FIELD IF NECESSARY TO FIT SITE CONDITIONS.
5. THE MAXIMUM ALLOWABLE LENGTH OF THE SHIFTED TANGENT SECTION FOR THE TEMPORARY TRAFFIC CONTROL SET–UP SHOWN IS 600 FEET.
6. THE SIZES OF ALL DIAMOND SHAPED ADVANCE WARNING SIGNS SHALL BE 36" X 36".
7. MAXIMUM SPACING OF CHANNELIZATION DEVICES IN A TAPER IS EQUAL IN FEET TO THE SPEED LIMIT IN MPH. MAXIMUM SPACING OF CHANNELIZATION DEVICES IN A TANGENT SECTION IS EQUAL IN FEET TO TWO TIMES THE SPEED LIMIT IN MPH. SHORTER SPACINGS SHOULD BE USED FOR CHANNELIZATION DEVICES INSTALLED WITHIN LANE SHIFT TAPERS AND BETWEEN TRAFFIC TRAVELING IN OPPOSITE DIRECTIONS WHERE ADDITIONAL EMPHASIS IS NEEDED TO CLEARLY DEFINE THE DESIRED TRAVEL PATHS.
8. MINIMUM LANE WIDTH IS TO BE 11 FEET UNLESS OTHERWISE SHOWN. MINIMUM LANE WIDTH TO BE MEASURED FROM THE EDGE OF CHANNELIZATION DEVICES.
9. WHERE A SIDE STREET OR RAMP INTERSECTS THE WORK ZONE, ADDITIONAL TEMPORARY TRAFFIC CONTROL DEVICES SHALL BE INSTALLED IN ACCORDANCE WITH PART 6 OF THE MUTCD.
10. THE CONTRACTOR SHALL ALLOW FOR SAFE PEDESTRIAN PASSAGE THROUGH THE WORK ZONE AT ALL TIMES DURING THE WORK. A TRAFFICPERSON MUST BE PROVIDED TO ASSIST AND SAFELY GUIDE PEDESTRIANS THROUGH THE WORK ZONE WHEN THE WORK RESTRICTS OR BLOCKS PEDESTRIANS FROM USING EXISTING SIDEWALKS AND OTHER EXISTING PEDESTRIAN WALKWAYS.



MINIMUM ADVANCE WARNING SIGN SPACING

Posted Speed Limit & Location	Distance Between Signs (Feet) A	B	C
25 MPH OR LESS in URBAN OR RURAL AREA	100	100	100
30 MPH OR GREATER in URBAN AREA	350	350	350
30 MPH OR GREATER in RURAL AREA	500	500	500

TAPER AND BUFFER LENGTHS

Speed Limit	Taper Length* (L) Feet	Buffer Space** (Feet)
25 MPH	125	155
30 MPH	180	200
35 MPH	245	250
40 MPH	320	305
45 MPH	540	360
50 MPH	600	425

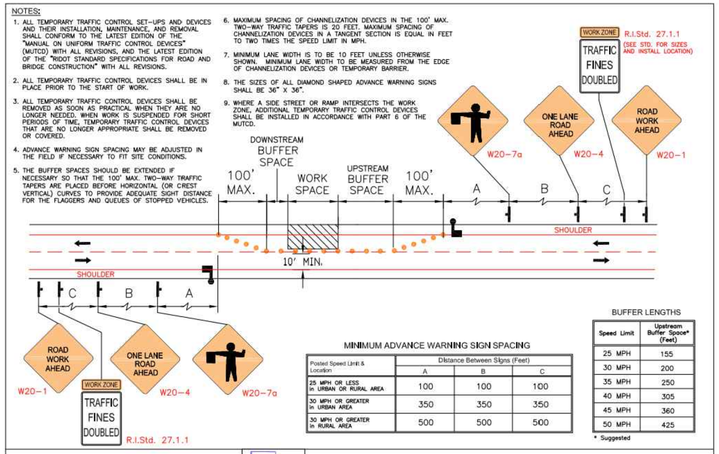
* Required
** Suggested

RHODE ISLAND DEPARTMENT OF TRANSPORTATION
TEMPORARY TRAFFIC CONTROL PLAN

TYPICAL LANE SHIFT ON TWO–LANE ROADWAY

NOT TO SCALE DATE: 02-07-13

NOTES:
1. ALL TEMPORARY TRAFFIC CONTROL SET–UPS AND DEVICES AND THEIR INSTALLATION, MAINTENANCE, AND REMOVAL SHALL CONFORM TO THE LATEST EDITION OF THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" (MUTCD) WITH ALL REVISIONS, AND THE LATEST EDITION OF THE "RIDOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION" WITH ALL REVISIONS.
2. ALL TEMPORARY TRAFFIC CONTROL DEVICES SHALL BE IN PLACE PRIOR TO THE START OF WORK.
3. ALL TEMPORARY TRAFFIC CONTROL DEVICES SHALL BE REMOVED AS SOON AS PRACTICAL WHEN THEY ARE NO LONGER NEEDED. WHEN WORK IS SUSPENDED FOR SHORT PERIODS OF TIME, TEMPORARY TRAFFIC CONTROL DEVICES THAT ARE NO LONGER APPROPRIATE SHALL BE REMOVED OR COVERED.
4. ADVANCE WARNING SIGN SPACING MAY BE ADJUSTED IN THE FIELD IF NECESSARY TO FIT SITE CONDITIONS.
5. THE BUFFER SPACES SHOULD BE EXTENDED IF NECESSARY SO THAT THE 100' MAX. TWO–WAY TRAFFIC TAPERS ARE PLACED BEFORE HORIZONTAL (OR CREST VERTICAL) CURVES TO PROVIDE ADEQUATE SIGHT DISTANCE FOR THE FLAGGERS AND QUEUES OF STOPPED VEHICLES.
6. MAXIMUM SPACING OF CHANNELIZATION DEVICES IN THE 100' MAX. TWO–WAY TRAFFIC TAPERS IS 20 FEET. MAXIMUM SPACING OF CHANNELIZATION DEVICES IN A TANGENT SECTION IS EQUAL IN FEET TO TWO TIMES THE SPEED LIMIT IN MPH.
7. MINIMUM LANE WIDTH IS TO BE 10 FEET UNLESS OTHERWISE SHOWN. MINIMUM LANE WIDTH TO BE MEASURED FROM THE EDGE OF CHANNELIZATION DEVICES OR TEMPORARY BARRIER.
8. THE SIZES OF ALL DIAMOND SHAPED ADVANCE WARNING SIGNS SHALL BE 36" X 36".
9. WHERE A SIDE STREET OR RAMP INTERSECTS THE WORK ZONE, ADDITIONAL TEMPORARY TRAFFIC CONTROL DEVICES SHALL BE INSTALLED IN ACCORDANCE WITH PART 6 OF THE MUTCD.



MINIMUM ADVANCE WARNING SIGN SPACING

Posted Speed Limit & Location	Distance Between Signs (Feet) A	B	C
25 MPH OR LESS in URBAN OR RURAL AREA	100	100	100
30 MPH OR GREATER in URBAN AREA	350	350	350
30 MPH OR GREATER in RURAL AREA	500	500	500

BUFFER LENGTHS

Speed Limit	Upstream Buffer Space* (Feet)
25 MPH	155
30 MPH	200
35 MPH	250
40 MPH	305
45 MPH	360
50 MPH	425

* Suggested

RHODE ISLAND DEPARTMENT OF TRANSPORTATION
TEMPORARY TRAFFIC CONTROL PLAN

TYPICAL LANE CLOSURE ON TWO–LANE ROADWAY

NOT TO SCALE DATE: 02-07-13

PREPARED BY
BETA
www.BETA-Inc.com

REGISTERED PROFESSIONAL
KEVIN M. AGUIAR
No. 6913
REGISTERED PROFESSIONAL ENGINEER
CIVIL

SUBCONSULTANT

PROJECT
Pleasant Street Public Stairway Construction Phase
Bid No. 26-011
Pawtucket, RI

TITLE
TRAFFIC MANAGEMENT PLAN - 2

NO.	REVISIONS	DATE

DRAWN BY: AD
DESIGNED BY: BB
CHECKED BY: KA
ISSUE DATE: 5/13/2026
BETA JOB NO.: 11433

SCALE
20 0 20 40
SCALE IN FEET: 1"=20'

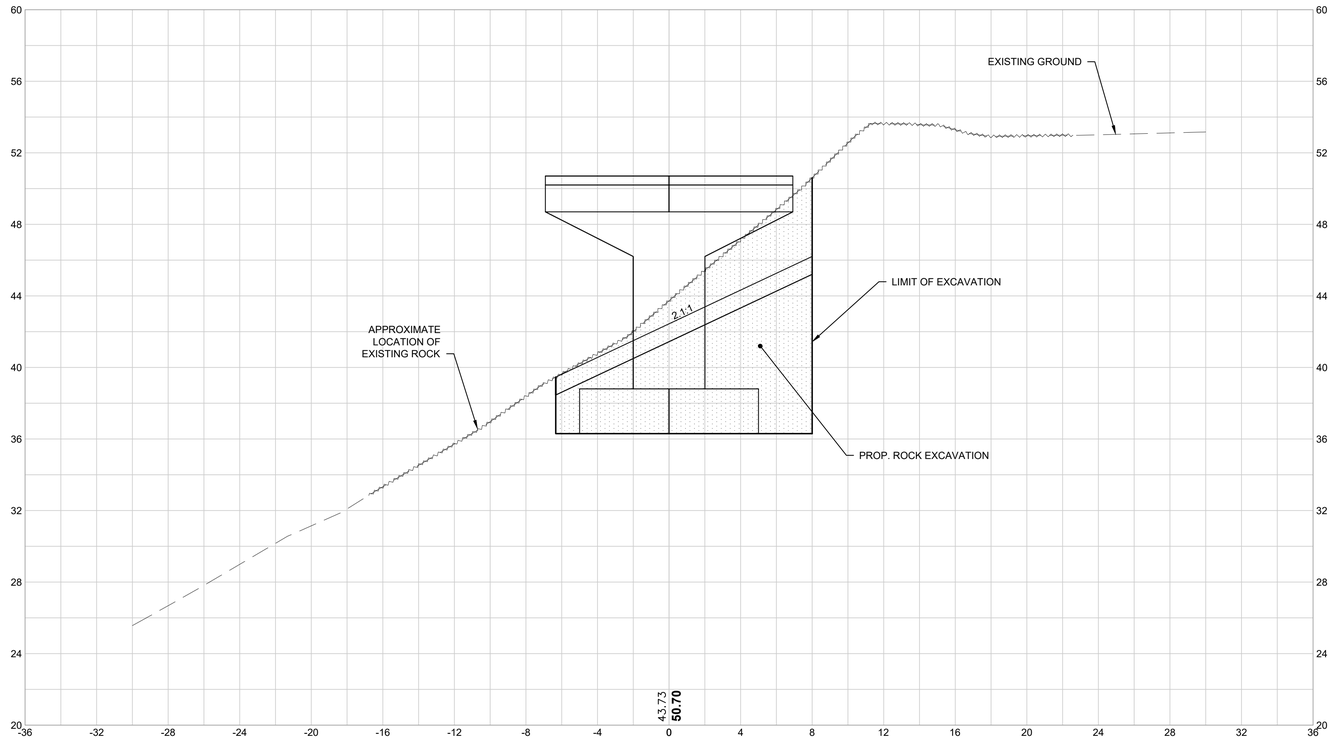
UNLESS OTHERWISE NOTED OR CHANGED BY REPRODUCTION

For Review Only

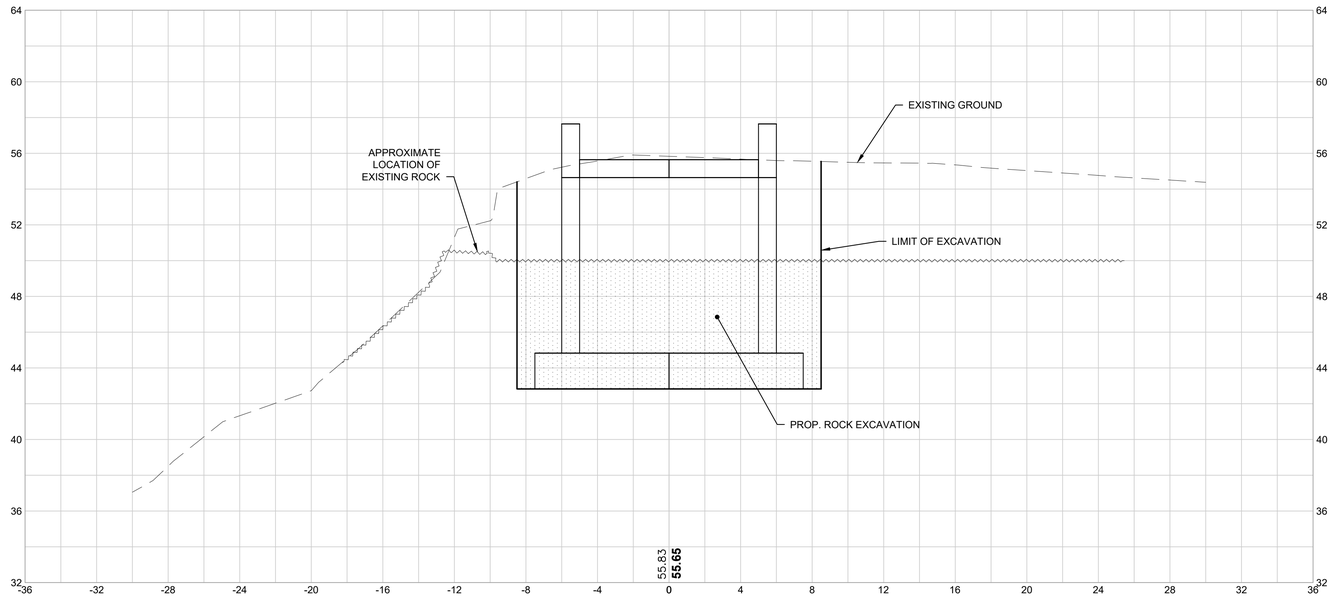
SHEET NO.
22

\\BETA-INC.COM\RI\TRANS\11400\11433 - TIDEWATER PHASE 1\BA\UTOCAD FILES\3_STAIRS\PLANSET\11433 TRAFFIC MANAGEMENT.DWG

10+83.62



10+60



PREPARED BY

BETA
www.BETA-Inc.com

REGISTERED PROFESSIONAL

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No. 6913
REGISTERED
PROFESSIONAL ENGINEER
CIVIL

SUBCONSULTANT

PROJECT

Pleasant Street Public Stairway Construction Phase

Bid No. 26-011

Pawtucket, RI

TITLE

CROSS SECTIONS

NO.	REVISIONS	DATE

DRAWN BY: AD

DESIGNED BY: BB

CHECKED BY: KA

ISSUE DATE: 5/13/2026

BETA JOB NO.: 11433

SCALE

4 0 4 8

SCALE IN FEET: 1"=4'

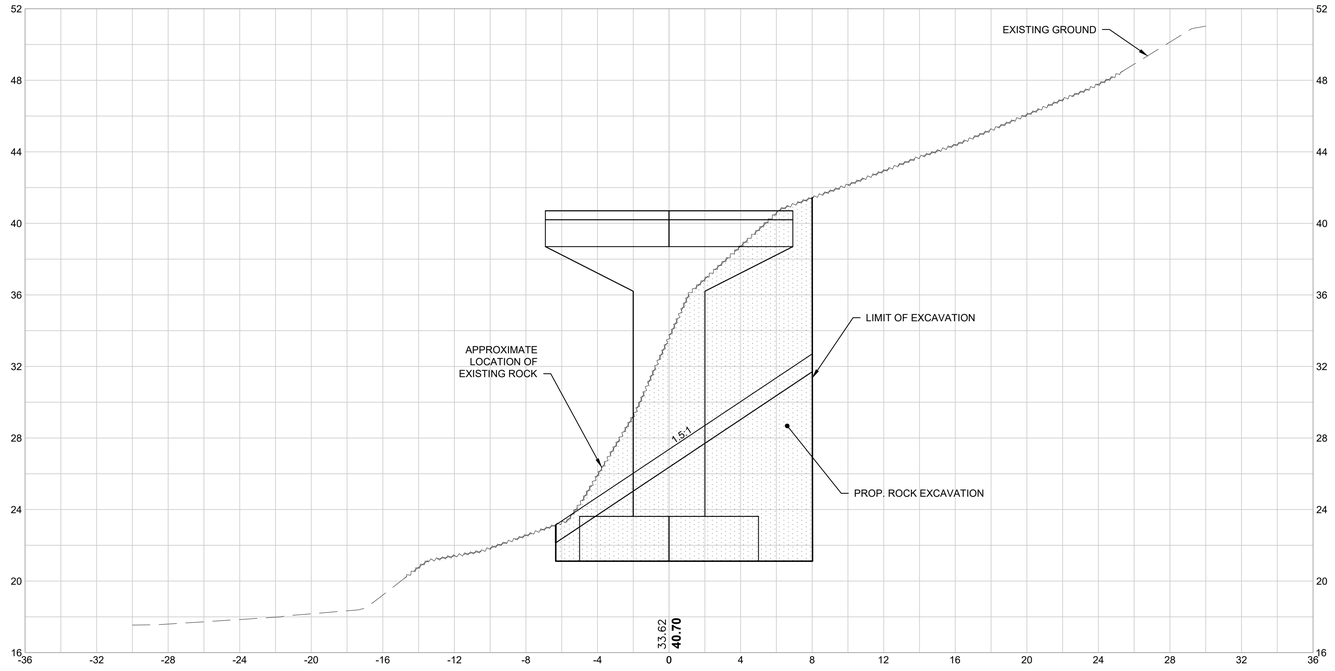
UNLESS OTHERWISE NOTED OR CHANGED BY REPRODUCTION

For Review Only

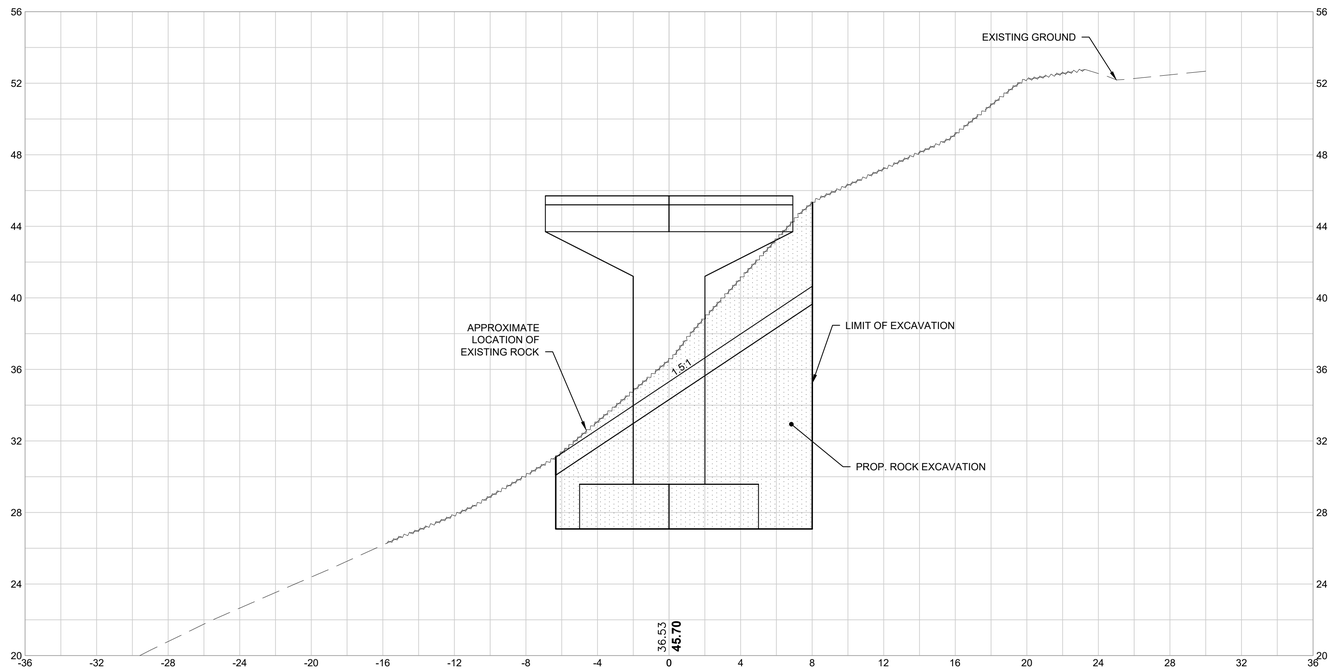
SHEET NO.

23

11+15.95



10+99.78



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PROJECT

Pleasant Street Public Stairway Construction Phase

Bid No. 26-011

Pawtucket, RI

TITLE

CROSS SECTIONS

NO.	REVISIONS	DATE

DRAWN BY: AD

DESIGNED BY: BB

CHECKED BY: KA

ISSUE DATE: 5/13/2026

BETA JOB NO.: 11433

SCALE

4 0 4 8
SCALE IN FEET: 1"=4'

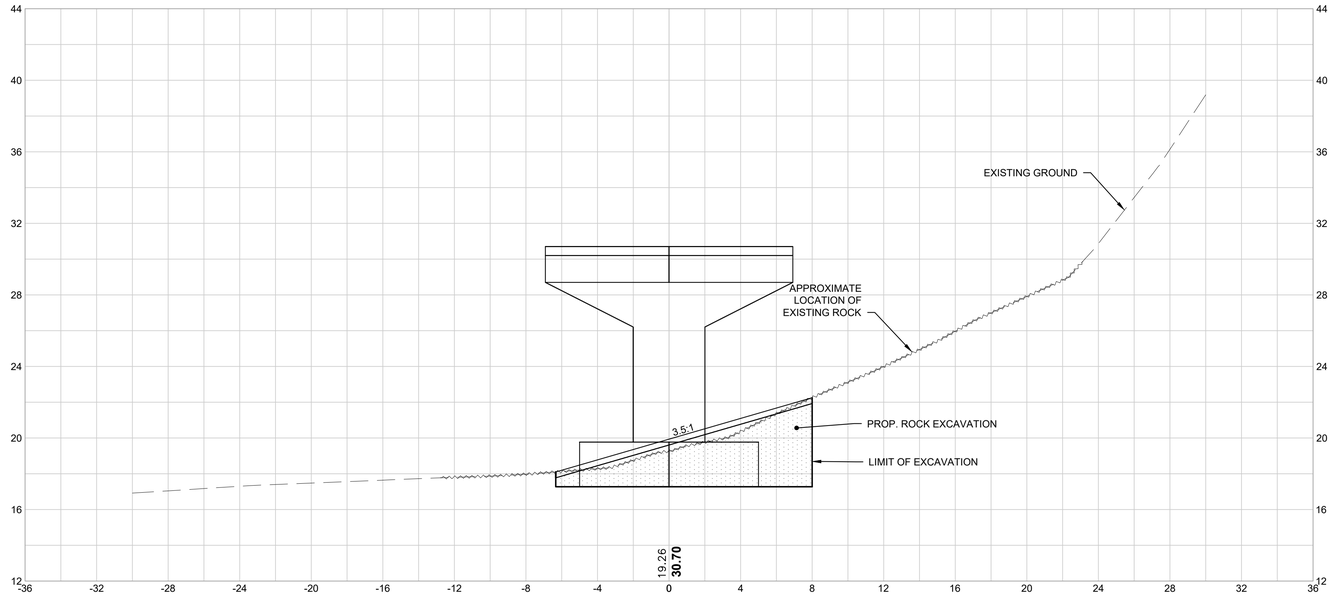
UNLESS OTHERWISE NOTED OR CHANGED BY REPRODUCTION

For Review Only

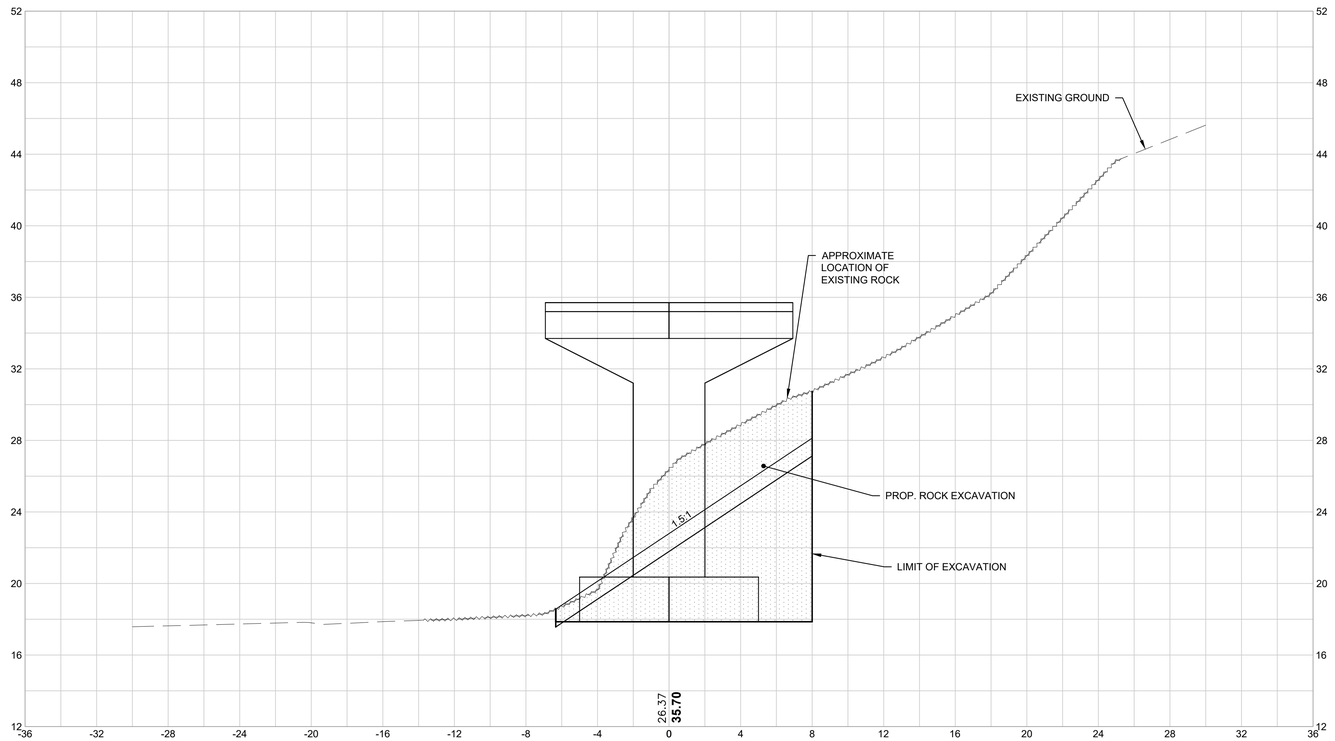
SHEET NO.

24

11+48.28



11+32.12



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Pleasant Street Public Stairway Construction Phase

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Pawtucket, RI

TITLE

CROSS SECTIONS

NO.	REVISIONS	DATE

DRAWN BY: AD

DESIGNED BY: BB

CHECKED BY: KA

ISSUE DATE: 5/13/2026

BETA JOB NO.: 11433

SCALE

4 0 4 8

SCALE IN FEET: 1"=4'

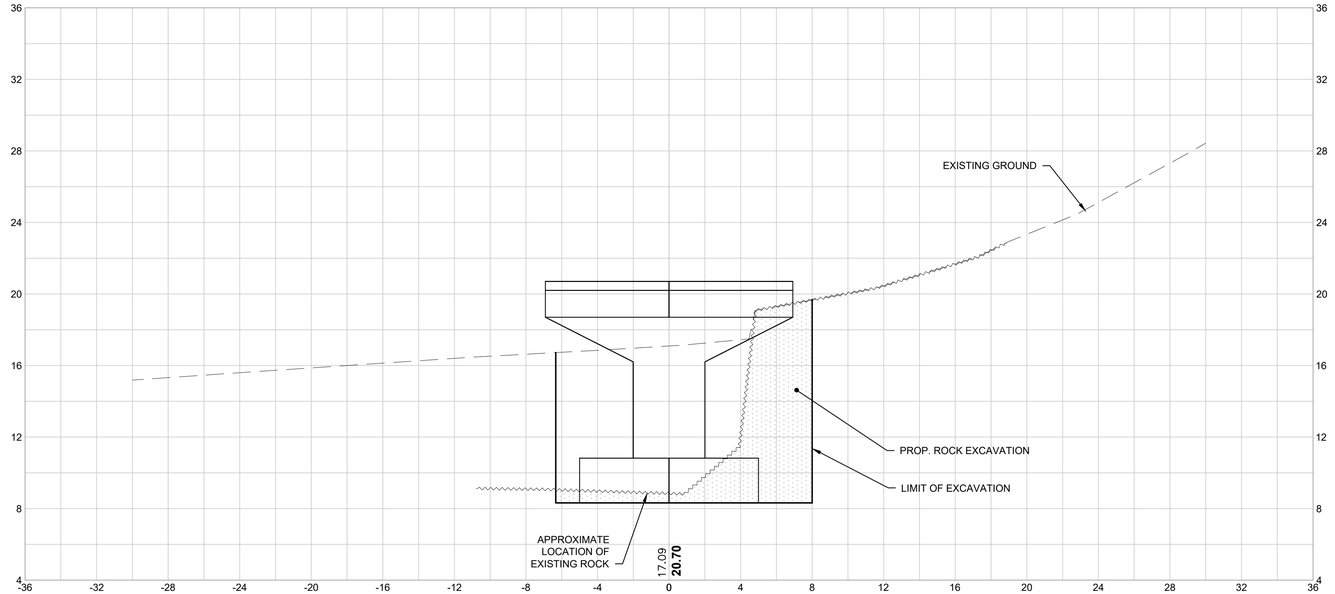
UNLESS OTHERWISE NOTED OR CHANGED BY REPRODUCTION

For Review Only

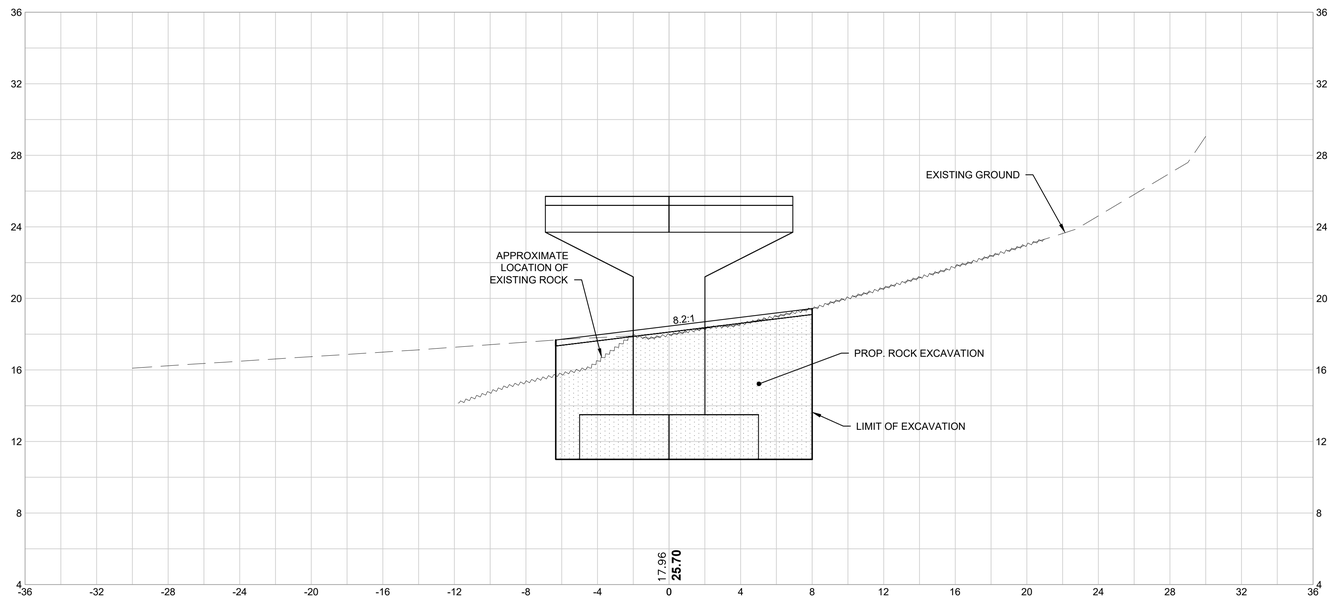
SHEET NO.

25

11+80.62



11+64.45



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PROJECT

Pleasant Street Public Stairway Construction Phase

Bid No. 26-011

Pawtucket, RI

TITLE

CROSS SECTIONS

NO.	REVISIONS	DATE

DRAWN BY: AD
DESIGNED BY: BB
CHECKED BY: KA
ISSUE DATE: 5/13/2026
BETA JOB NO.: 11433

SCALE

4 0 4 8
SCALE IN FEET: 1"=4'

UNLESS OTHERWISE NOTED OR CHANGED BY REPRODUCTION

For Review Only

SHEET NO.

26

PREPARED BY

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REGISTERED PROFESSIONAL

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SUBCONSULTANT

PROJECT

Pleasant Street
Public Stairway
Construction Phase

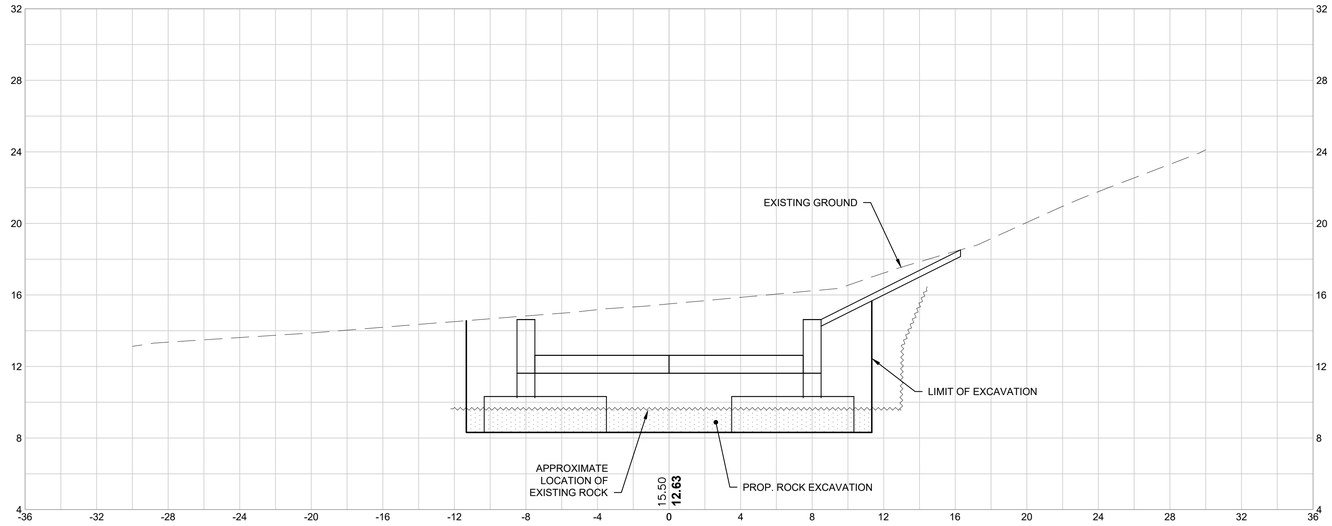
Bid No. 26-011

Pawtucket, RI

TITLE

CROSS
SECTIONS

12+14



NO.	REVISIONS	DATE

DRAWN BY: AD

DESIGNED BY: BB

CHECKED BY: KA

ISSUE DATE: 5/13/2026

BETA JOB NO.: 11433

SCALE

4 0 4 8
SCALE IN FEET: 1"=4'

UNLESS OTHERWISE NOTED OR CHANGED BY REPRODUCTION

For Review Only

SHEET NO.

27

LIGHT LEGEND

- LIGHT TYPE 1 - STAIR LIGHT
- LIGHT TYPE 3 - LIGHT COLUMN
- LIGHT TYPE 4 - SHEPHERDS CROOK LIGHT

TAFT STREET

PLEASANT STREET

DIVISION STREET

OVERHEAD LINES BY RI ENERGY

RISER POLE BY RI ENERGY

UNDERGROUND ELECTRICAL SERVICE

SERVICE PEDESTAL

MHO

1D22 EB

1A21 EA

EA 1A11

1A17 EA

1A6 EA

1A5 EA

1A24 EA

1A3 EA

1A22 EA

1A1 EA

1B11 EA

EB 1C11

TRANSITION FROM PVC CONDUIT TO RIGID STEEL CONDUIT

1B22 EA

EB 1C22

JUNCTION BOX FOR ELECTRICAL CIRCUITS, TYP.

EA 1A28

EA 1A19

HH1

1D11 EB

HH2

STUB & CAP CONDUIT FOR FUTURE RECTANGULAR RAPID FLASHING BEACON

FUTURE RECTANGULAR RAPID FLASHING BEACON (BY OTHERS)

FUTURE RECTANGULAR RAPID FLASHING BEACON (BY OTHERS)

HH3

EC 1D24

EC 1D15

1D26 EC

50048 CBND

CONTRACT 26.011 NBC CONTRACT 308.04C (BY OTHERS)

52473 RIM =11.16

51492 RIM =55.49

51554.69

PREPARED BY

BETA
www.BETA-Inc.com

REGISTERED PROFESSIONAL

ROBERT W. McCLANAGHAN
STATE OF RHODE ISLAND
No. 3419
REGISTERED PROFESSIONAL ENGINEER
5/13/26

SUBCONSULTANT

MC²
MCCLANAGHAN ASSOCIATES, INC.
ELECTRICAL ENGINEERS
178 TREASURE ROAD, NARRAGANSETT, RI 02882
T: 401-524-3457
RWM@RWMENGINEERING.COM

PROJECT

Pleasant Street Public Stairway Construction Phase

Bid No. 26-011

Pawtucket, RI

TITLE

ELECTRICAL PLAN

NO.	REVISIONS	DATE

DRAWN BY: AD

DESIGNED BY:

CHECKED BY: KA

ISSUE DATE: 5/13/2026

BETA JOB NO.: 11433

SCALE

10 0 10 20

SCALE IN FEET: 1"=10'

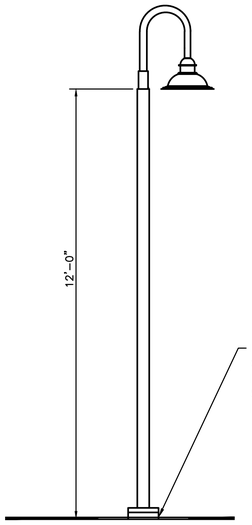
UNLESS OTHERWISE NOTED OR CHANGED BY REPRODUCTION

For Review Only

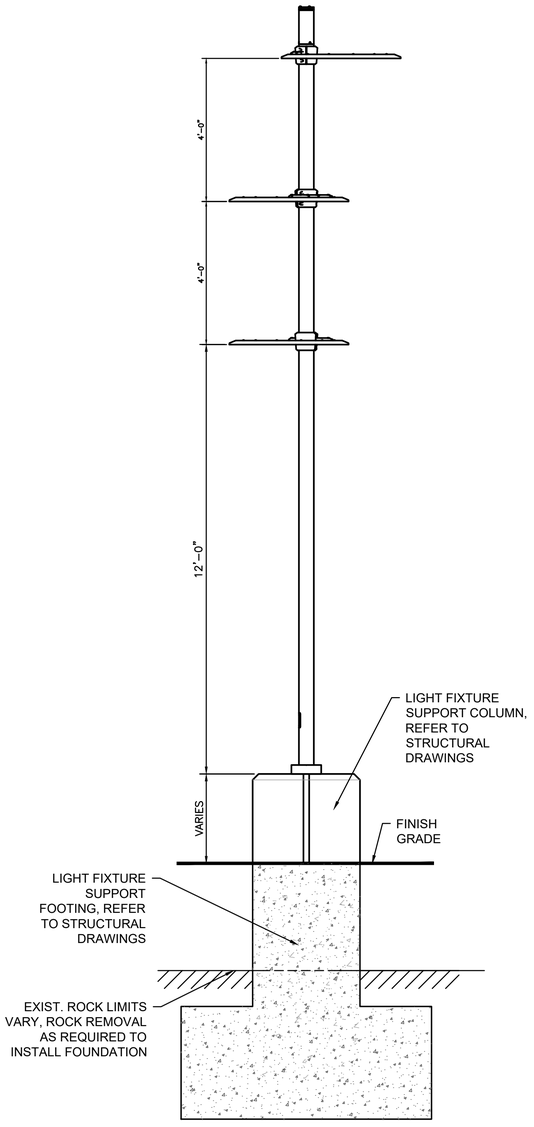
SHEET NO.

28

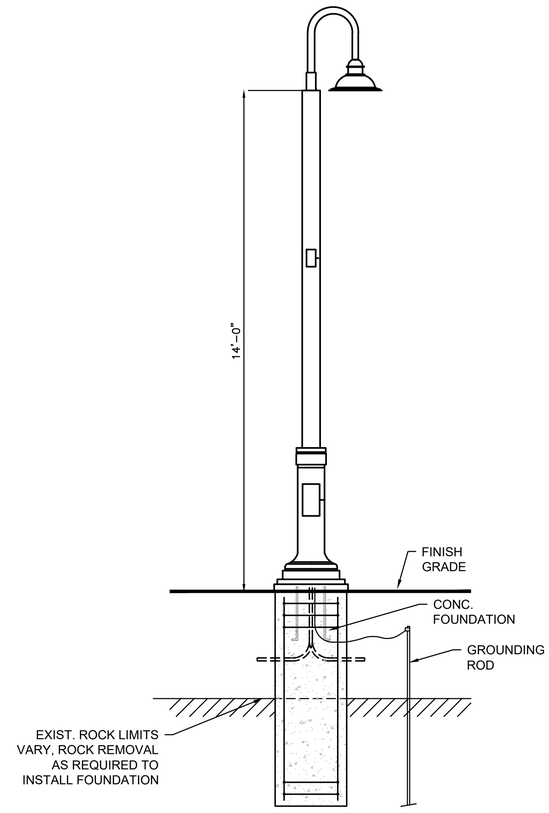
M:\BETA-INC.COM\RI\TRANS\114400\11433 - TIDEWATER PHASE 1\BAUTOCAD FILES\3_STAIRS\PLANSET\11433 ELECTRICAL PLAN.DWG



LIGHT TYPE 1 / EA
SCALE: ½"=1'-0"



LIGHT TYPE 2 / EB
SCALE: ½"=1'-0"



LIGHT TYPE 3 / EC
SCALE: ½"=1'-0"

PREPARED BY

BETA
www.BETA-Inc.com

REGISTERED PROFESSIONAL

ROBERT W. McCLANAGHAN
STATE OF RHODE ISLAND
No. 3419
REGISTERED PROFESSIONAL ENGINEER
5/13/26

SUBCONSULTANT

PROJECT

Pleasant Street Public Stairway Construction Phase

Bid No. 26-011

Pawtucket, RI

TITLE

ELECTRICAL DETAILS - LIGHT FIXTURE TYPES

NO.	REVISIONS	DATE

DRAWN BY: AD
DESIGNED BY:
CHECKED BY: KA
ISSUE DATE: 5/13/2026
BETA JOB NO.: 11433

SCALE

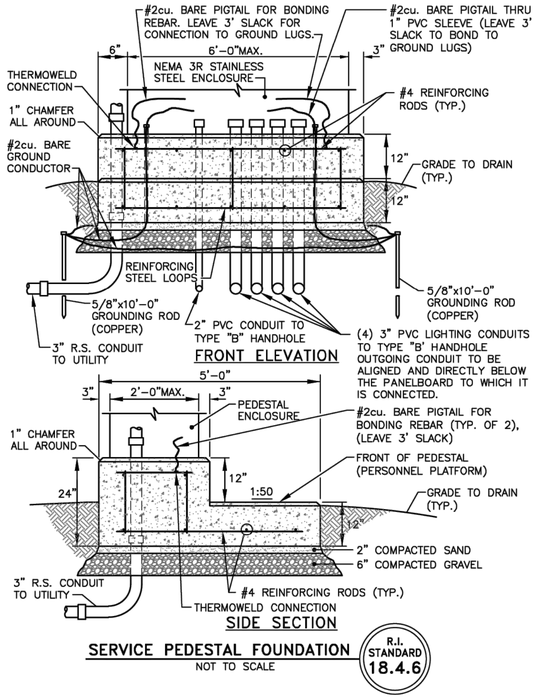
AS SHOWN

UNLESS OTHERWISE NOTED OR CHANGED BY REPRODUCTION

For Review Only

SHEET NO.

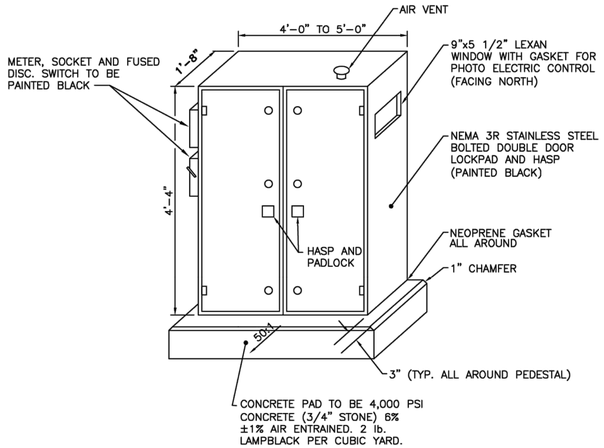
29



SERVICE PEDESTAL FOUNDATION

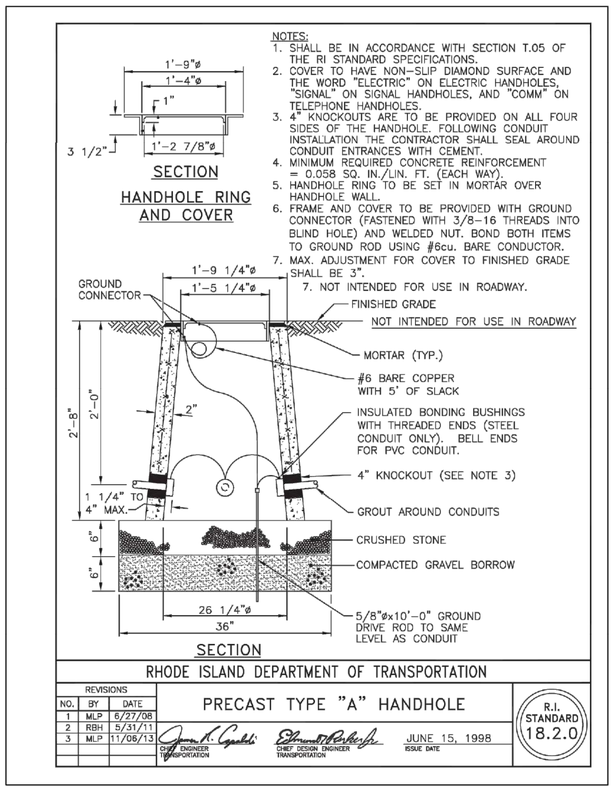
NOT TO SCALE

R.I. STANDARD 18.4.6



SERVICE PEDESTAL

NOT TO SCALE



RHODE ISLAND DEPARTMENT OF TRANSPORTATION

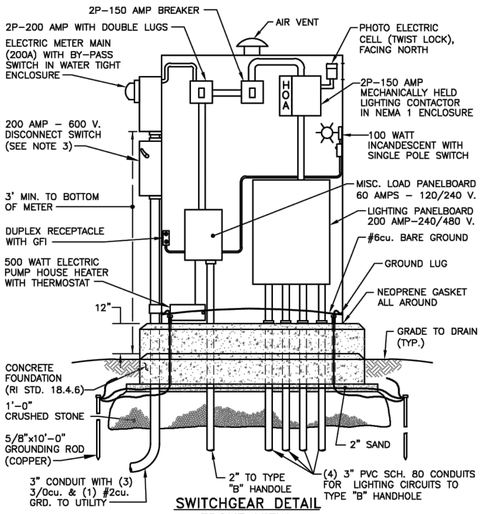
REVISIONS		
NO.	BY	DATE
1	MLP	6/27/08
2	RBH	5/31/11
3	MLP	11/08/13

PRECAST TYPE "A" HANDHOLE

JUNE 15, 1998 (ISSUE DATE)

CHIEF ENGINEER TRANSPORTATION — CHIEF DESIGN ENGINEER TRANSPORTATION

R.I. STANDARD 18.2.0



SWITCHGEAR DETAIL
FRONT VIEW

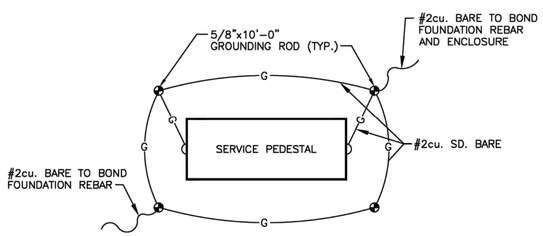
NOTES:
1. SHALL BE IN ACCORDANCE WITH SECTON T.09 OF THE RI STANDARD SPECIFICATIONS.
2. APPROXIMATE DIMENSION 6'-0"(MAX.) x 4'-0" x 1'-6" TO 2'-0"(MAX.).
3. DISCONNECT SWITCH TO MEET UTILITY COLD SEQUENCE REQUIREMENTS. LOCKED BY UTILITY.
4. CONTRACTOR TO INSTALL OUTGOING CONDUITS DIRECTLY UNDERNEATH EACH PANELBOARD.

SERVICE PEDESTAL 120/240 VOLTS - 3W

NOT TO SCALE

R.I. STANDARD 18.4.2

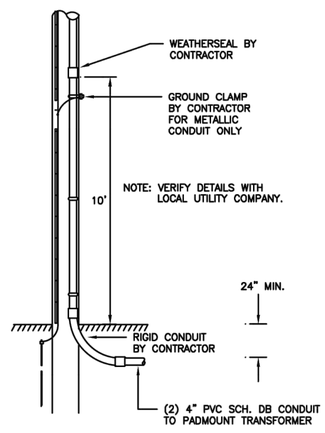
MODIFIED



NOTES:
1. SHALL BE IN ACCORDANCE WITH LATEST NEC AND WITH SECTION T.04 OF THE RI STANDARD SPECIFICATIONS.
2. #2cu. BARE GROUND WIRE 1'-0" BELOW GRADE. ALLOW 3'-0" SLACK LEADS TO BOND AT GROUNDING LUGS IN CABINET.
3. GROUND RODS MUST BE SPACED A MINIMUM OF 6'-0" FROM EACH OTHER.

SERVICE PEDESTAL GROUNDING DETAIL

NOT TO SCALE



RISER POLE DETAILS

PREPARED BY

BETA
www.BETA-Inc.com

REGISTERED PROFESSIONAL

ROBERT W. McCLANAGHAN
STATE OF RHODE ISLAND
No. 3419
REGISTERED PROFESSIONAL ENGINEER

SUBCONSULTANT

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ELECTRICAL ENGINEERS
178 TREASURE ROAD, NARRAGANSETT, RI 02882
T: 401-524-3457
RWM@RWMENGINEERING.COM

PROJECT

Pleasant Street Public Stairway Construction Phase

Bid No. 26-011

Pawtucket, RI

TITLE

ELECTRICAL DETAILS - 2

NO.	REVISIONS	DATE

DRAWN BY:

DESIGNED BY: RWM

CHECKED BY:

ISSUE DATE: 4/1/26

BETA JOB NO.: 11433

SCALE

20 0 20 40

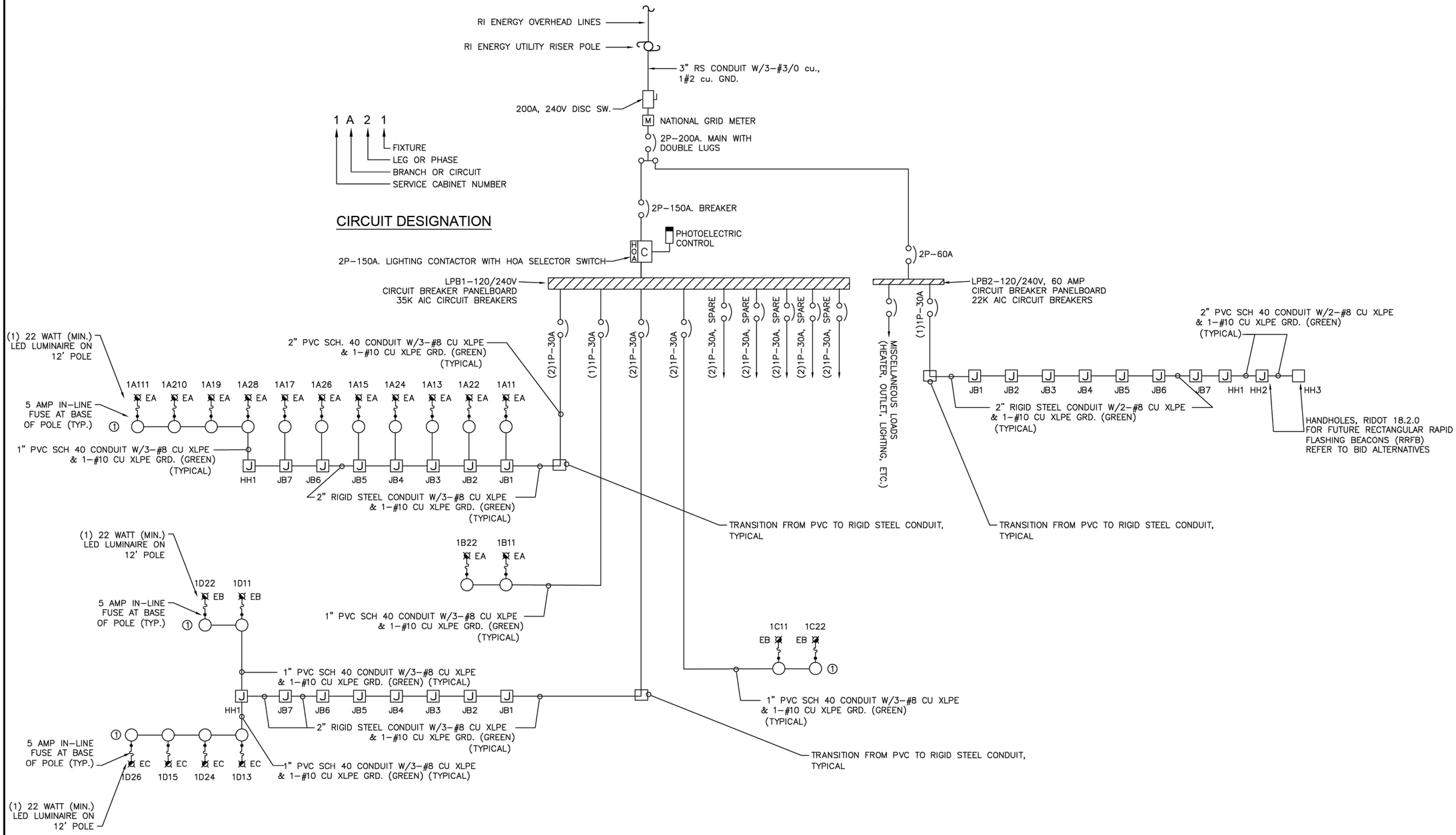
SCALE IN FEET: 1"=20'

UNLESS OTHERWISE NOTED OR CHANGED BY REPRODUCTION

For Review Only

SHEET NO.

30



ELECTRICAL NOTES

1. INSTALL PER MANUFACTURER'S RECOMMENDATIONS.
2. PROVIDE (3) #8 CONDUCTORS FROM LIGHTING CABINET TO HANDHOLE #1 FOR FUTURE LIGHTING.
3. PROVIDE HANDHOLES #1,2,3 IN ACCORDANCE WITH RIDOT STANDARD

NOTE:

① CONTRACTOR TO LIVE CAP UNUSED PHASE CONDUCTOR AT LAST POLE IN EACH CIRCUIT.

ONE LINE WIRING DIAGRAM
SERVICE PEDESTAL #1

NOT TO SCALE

PREPARED BY

BETA
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REGISTERED PROFESSIONAL

ROBERT W. McCLANAGHAN
STATE OF RHODE ISLAND
No. 3419
REGISTERED PROFESSIONAL ENGINEER
5/13/26

SUBCONSULTANT

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178 TREASURE ROAD, NARRAGANSETT, RI 02882
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PROJECT

Pleasant Street Public Stairway Construction Phase

Bid No. 26-011

Pawtucket, RI

TITLE

ELECTRICAL DETAILS - 3

NO.	REVISIONS	DATE

DRAWN BY:
DESIGNED BY: RWM
CHECKED BY:
ISSUE DATE: 4/1/26
BETA JOB NO.: 11433

SCALE

20 0 20 40
SCALE IN FEET: 1"=20'

UNLESS OTHERWISE NOTED OR CHANGED BY REPRODUCTION

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SHEET NO.
31

PANEL SCHEDULE

SERVICE PEDESTAL #1 120/240 VOLT, 1 PHASE, 3 WIRE, 200 AMP MAIN BREAKER RATED 35,000 A.I.C., SURFACE MOUNTED – 24 POSITION 3R STAINLESS STEEL ENCLOSURE

CIRCUIT NO.	NO. OF POLES	TRIPS SETTINGS	DESCRIPTION	K.W.	AMPS L1	AMPS L2	WIRE SIZE	REMARKS
			LIGHTING PANEL 200 AMP – 1 PHASE 120/240 VOLTS–3 WIRE					
1&2	(2–1P)	30	BRANCH A	3	15	15	#8	
3	(1–1P)	30	BRANCH B	.3	2		#8	
4&5	(2–1P)	30	BRANCH C	1	4	4	#8	
6&7	(2–1P)	30	BRANCH D	2	10	10	#8	
10 THRU 24	(2–1P)	30	SPARES					
			SUBTOTAL	6.6	33	31		
			MISC. LOADS PANEL BOARD – 1 PHASE 60 AMP–120/240 VOLTS)					
1&3	2	20	HEATER	0.5	2.08	2.08	#12	INSIDE PANEL
2	1	20	DUPLEX OUTLET/100 WATT INC.	0.70	0	5.8	#12	INSIDE PANEL
4	1	20	RRFB	0.50	4	0	#8	OUTSIDE PANEL
7 THRU 12	1	20	SPARES					
			SUBTOTAL	1.2	6.08	7.88		
			TOTAL	7.8	39.08	38.88		

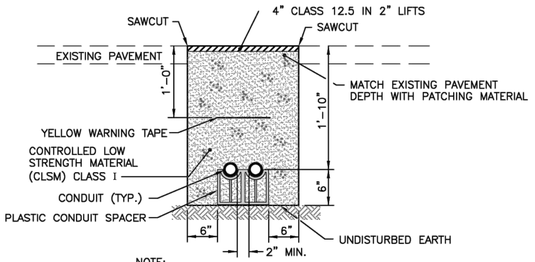
LEGEND

- SERVICE PEDESTAL
- J — WEATHERPROOF JUNCTION BOX, 12"X12"X8"
- 30 WATT (MIN.) LED LUMINAIRE ON 12' ALUMINUM POLE, TYPE 2 PHOTOMETRIC LIGHT DISTRIBUTION, UNLESS NOTED OTHERWISE

GENERAL LIGHTING NOTES

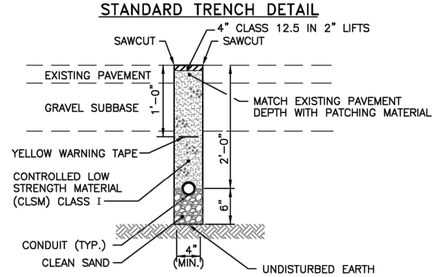
1. ALL WORK SHALL CONFORM TO THE LATEST REVISIONS OF THE NATIONAL ELECTRICAL CODE, THE STATE OF RHODE ISLAND RIDOT STANDARDS, NATIONAL GRID, AND THE REQUIREMENTS OF THE CITY OF PAWTUCKET.

   ALL WORK TO BE COORDINATED WITH THE LOCAL PUBLIC UTILITIES. NO CONSTRUCTION SHALL COMMENCE UNTIL THE CONTRACTOR HAS NOTIFIED "DIG–SAFE" AND ALL UTILITIES HAVE BEEN PROPERLY IDENTIFIED. COORDINATE WORK WITH RI ENERGY THROUGH JOHN CAUSEY, TEL. 1 401 255–7995.
2. LOCATION AND DEPTH OF EXISTING UTILITIES ARE APPROXIMATE AND HAVE BEEN PLOTTED FROM THE BEST AVAILABLE INFORMATION. CONTRACTOR SHALL CHECK AND VERIFY LOCATIONS OF ALL EXISTING UTILITIES BOTH UNDERGROUND AND OVERHEAD. ANY DAMAGE TO THESE UTILITIES SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
3. ALL LIGHTING CONDUITS TO BE 1" PVC SCHEDULE 40 OR SCHEDULE 80 EXCEPT OTHERWISE SHOWN, AND INSTALLED AT A DEPTH OF 24" BELOW GRADE FOR DIRECT BURIED INSTALLATIONS. INSTALL PULLING NYLON ROPE ON ALL SPARE CONDUITS FOR FUTURE USE. SERVICE CONDUIT TO RISER POLE SHALL BE 2" RIGID STEEL. CONDUIT FROM HANDHOLE TO POLE FOUNDATION SHALL BE 2" RIGID STEEL CONDUIT.
4. PROVIDE ENOUGH SLACK (CABLE) AT ALL HANDHOLES AND PULLBOXES TO ALLOW FOR SPLICING AND REPAIRS TO BE MADE.
5. IDENTIFY AND TAG ALL CIRCUITS AT EACH HANDHOLE. PROVIDE NUMBERING TAGS ACCORDING TO CIRCUIT DESIGNATION AND AS SHOWN ON PLANS.
6. CONTRACTOR TO COORDINATE WITH THE ENGINEER AND THE RIDOT LANDSCAPE REPRESENTATIVE FOR ANY NECESSARY TREE TRIMMING IN THE AREAS WHERE TREES INTERFERE WITH THE NEW POLE/LUMINAIRE INSTALLATIONS.
7. COORDINATE ROUTING OF RIGID STEEL CONDUIT SERVING STAIR LIGHTING WITH STRUCTURAL STEEL STAIR FABRICATION. CONDUIT TO RUN ALONG THE UNDERSIDE OF THE STAIR STRINGER AND TERMINATE AT HANDHOLES AS SHOWN. LOCATIONS OF HANDHOLES AND CONDUIT PENETRATIONS SHALL BE COORDINATED WITH STAIR DESIGN PRIOR TO FABRICATION.



NOTE:
INSTALL SPACERS AT APPROXIMATELY 6' APART.

STANDARD TRENCH DETAIL

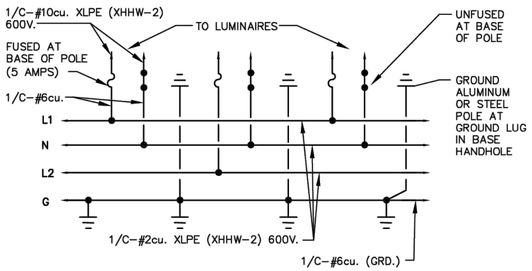


AUTOMATIC TRENCHING MACHINE DETAIL

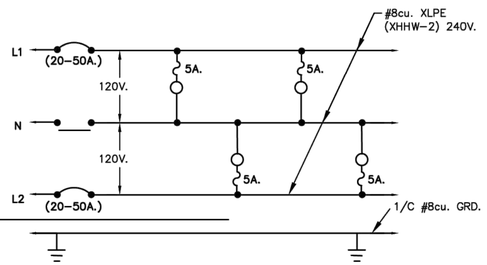
NOTE:
SHALL BE IN ACCORDANCE WITH SECTION T.06 OF THE RI STANDARD SPECIFICATIONS.

TRENCH DETAIL FOR CONDUIT IN EXISTING ROADWAY
(R.I. STD. 18.6.0) - MODIFIED

NOT TO SCALE



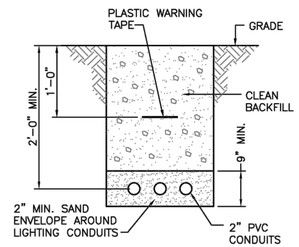
WIRING DIAGRAM DETAIL



TYPICAL LIGHTING CIRCUIT WIRING DIAGRAM DETAIL

TYPICAL WIRING DIAGRAMS
(R.I. STD. 18.3.6 (MODIFIED))

NOT TO SCALE

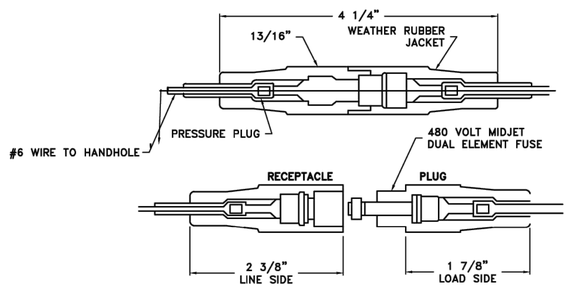


LIGHTING CIRCUIT TRENCH DETAIL

NOT TO SCALE

JOB SPECIFIC LEGEND

18.1.0	CONCRETE LIGHT STANDARD BASE – RIDOT STD. 18.1.0
18.1.1	BREAKAWAY SUPPORT COUPLINGS FOR LIGHT STANDARD – RIDOT STD. 18.1.1
18.2.0	HANDHOLE TYPE A
18.3.1	ALUMINUM POLE – GROUNDING DETAIL – RIDOT STD. 18.3.1
18.3.2	TYPICAL LUMINAIRE – WIRING DIAGRAM – RIDOT STD. 18.3.2
18.4.0	SERVICE PEDESTAL
18.4.1	SERVICE PEDESTAL – GROUNDING DETAIL
18.4.2 (MOD.)	SERVICE PEDESTAL 120/240 VOLTS – 3W
18.4.3 (MOD.)	SERVICE PEDESTAL 120/240 VOLTS – 3W
18.4.6	SERVICE PEDESTAL FOUNDATION
18.7.0	RISER POLE DETAIL



FUSED DISCONNECTING DEVICE
(LOCATED IN HANDHOLE AT BASE OF STANDARD)

PREPARED BY

BETA
www.BETA-Inc.com

REGISTERED PROFESSIONAL

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STATE OF RHODE ISLAND
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REGISTERED PROFESSIONAL ENGINEER
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PROJECT

Pleasant Street Public Stairway Construction Phase

Bid No. 26-011

Pawtucket, RI

TITLE

LIGHTING DETAILS AND
ELECTRICAL DETAILS - 4

NO.	REVISIONS	DATE

DRAWN BY:
DESIGNED BY: RWM
CHECKED BY:
ISSUE DATE: 4/1/26
BETA JOB NO.: 11433

SCALE

20 0 20 40
SCALE IN FEET: 1"=20'

UNLESS OTHERWISE NOTED OR CHANGED BY REPRODUCTION

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SHEET NO.
32

GENERAL NOTES

1. ALL CONSTRUCTION INDICATED ON THESE PLANS SHALL BE IN ACCORDANCE WITH:
   - THE AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (AASHTO) LRFD BRIDGE CONSTRUCTION SPECIFICATIONS, 10th EDITION, 2024, INCLUDING THE LATEST INTERIM REVISIONS.
   - THE SPECIFICATIONS ACCOMPANYING THESE PLANS.
2. DIMENSIONS, STATIONS, AND ELEVATIONS ARE SHOWN TO THE NEAREST ONE–HUNDREDTH OF A FOOT OR ONE–EIGHTH OF AN INCH, EXCEPT STRUCTURAL STEEL DIMENSIONS WHICH ARE TO THE NEAREST ONE–SIXTEENTH OF AN INCH.
3. ALL ELEVATIONS ARE REFERENCED TO THE NATIONAL GEODETIC VERTICAL DATUM OF NAVD 88.
4. COORDINATES USED ON THESE PLANS ARE BASED ON THE STATEWIDE COORDINATE SYSTEM, THE NORTH AMERICAN DATUM OF 1983 (NAD 83).
5. FOR BENCH MARKS AND TIES SEE LOCATION PLAN.
6. ANGLES ARE SHOWN TO THE NEAREST SECOND.
7. ALL FOOTINGS SHALL BE APPROVED BY THE ENGINEER AS TO DIMENSIONS, ELEVATIONS, AND SUITABILITY OF FOUNDATION MATERIAL BEFORE THE PLACING OF CONCRETE.
8. ALL WORKING POINTS ARE SHOWN AT THE CENTERLINES OF BEARINGS AND AT THE CENTERLINES OF PIERS, UNLESS OTHERWISE NOTED.
9. ALL PIERS AND WALLS ARE DRAWN LOOKING AT THE EXPOSED FACES.
10. THE EXISTING UTILITIES SHOWN ON THE PLANS ARE APPROXIMATE AND WERE LOCATED USING THE BEST AVAILABLE INFORMATION. NO BUILDING SERVICE CONNECTIONS (ELECTRIC, TELEPHONE, GAS, WATER, SANITARY AND OTHERS) ARE SHOWN. THE CONTRACTOR IS TO ASSUME THAT SERVICES TO ALL BUILDINGS ARE PRESENT.
11. BOTH FEDERAL AND STATE LAW (RI. GENERAL LAW 39–1.2) REQUIRE NOTIFICATION OF APPROPRIATE UTILITY COMPANIES BEFORE DIGGING, TRENCHING, BLASTING, DEMOLISHING, BORING, BACK FILLING, GRADING, LANDSCAPING, OR OTHER EARTH MOVING OPERATIONS. IT IS THE CONTRACTOR'S RESPONSIBILITY TO NOTIFY ALL UTILITY COMPANIES (INCLUDING THROUGH THE "DIG SAFE" PROGRAM) TO ENSURE THAT ALL UTILITIES, BOTH UNDERGROUND AND OVERHEAD, HAVE BEEN MARKED BEFORE COMMENCEMENT OF SUCH WORK. THE CONTRACTOR SHOULD UNDERSTAND THAT NOT ALL UTILITIES SUBSCRIBE TO THE "DIG SAFE" PROGRAM. ANY DAMAGE TO EXISTING UTILITIES MARKED IN THE FIELD, OR AS A RESULT OF FAILING TO CONTACT THE APPROPRIATE UTILITY COMPANIES, SHALL BE REPAIRED OR REPLACED (AS DEEMED APPROPRIATE BY THE OWNER AND/OR THE IMPACTED UTILITY COMPANY) AT NO ADDITIONAL COST TO THE OWNER.

DESIGN DATA

1. DESIGN SPECIFICATIONS
   - THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, 10TH EDITION, 2024, INCLUDING ALL INTERIM REVISIONS TO DATE.
   - THE RHODE ISLAND LRFD BRIDGE DESIGN MANUAL 2007 EDITION INCLUDING ALL REVISIONS TO DATE.
   - ALL OTHER APPLICABLE DESIGN SPECIFICATIONS ARE REFERENCED IN SECTION 1 OF THE RHODE ISLAND LRFD BRIDGE DESIGN MANUAL DATED 2007
   - IN CASE OF CONFLICT, THE RHODE ISLAND LRFD BRIDGE DESIGN MANUAL SHALL GOVERN.
2. LOAD MODIFIERS

   THE LOAD MODIFIERS FOR THIS PROJECT ARE AS FOLLOWS:
   - THE LOAD MODIFIER FOR DUCTILITY SHALL BE TAKEN AS 1.00 FOR ALL LIMIT STATES.
   - THE LOAD MODIFIER FOR REDUNDANCY SHALL BE TAKEN AS 1.05 FOR NONREDUNDANT MEMBERS, AND 1.00 FOR ALL OTHER LIMIT STATES.
   - THE LOAD MODIFIER FOR OPERATIONAL IMPORTANCE SHALL BE TAKEN AS 1.00 FOR ALL LIMIT STATES
3. LOAD FACTORS

   ALL LOAD FACTORS SHALL BE IN ACCORDANCE WITH THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, EXCEPT AS MODIFIED IN THE RHODE ISLAND LRFD BRIDGE DESIGN MANUAL (SPECIFIED BELOW).
   - THE LOAD FACTOR FOR TEMPERATURE GRADIENT SHALL BE TAKEN AS 0.0 AT THE STRENGTH AND EXTREME EVENT LIMIT STATES AND 1.0 AT THE SERVICE LIMIT STATE.
   - THE LOAD FACTOR FOR LIVE LOAD FOR THE EXTREME EVENT I SHALL BE TAKEN AS ZERO.
   - THE LOAD FACTOR FOR DEAD LOAD FOR THE EXTREME EVENT I AND EXTREME EVENT II SHALL BE TAKEN AS 1.0
   - THE LOAD FACTOR FOR SETTLEMENT FOR ALL LIMIT STATES SHALL BE TAKEN AS 1.0
4. LIVE LOADS
   - THE DESIGN PEDESTRIAN LIVE LOAD SHALL BE 75 PSF.
5. FOUNDATION DESIGN DATA

   SPREAD FOOTINGS:

   ALL FOOTINGS SHALL BEAR DIRECTLY ON LEVEL AND SOUND BEDROCK. THE RECOMMENDED NET ALLOWABLE BEARING CAPACITY OF THE BEDROCK IS 8 KSF.
6. WIND LOADING DESIGN DATA

   THE WIND LOADING DESIGN SHALL BE IN ACCORDANCE WITH THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, THE RHODE ISLAND LRFD BRIDGE DESIGN MANUAL, AND AS MODIFIED HEREIN.
   - EXCEPT DURING CONSTRUCTION, THE DESIGN WIND PRESSURE IS BASED ON A DESIGN WIND SPEED OF 130 MPH.
   - THE DESIGN WIND PRESSURES DURING CONSTRUCTION SHALL BE AS SPECIFIED UNDER THE NOTES TITLED "GENERAL NOTES REGARDING TEMPORARY CONSTRUCTION CONDITIONS".
7. THERMAL DESIGN FORCE DATA

   UNIFORM TEMPERATURE EFFECTS HAVE BEEN TAKEN INTO CONSIDERATION IN ACCORDANCE WITH THE PROCEDURE A OF THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS. THE MINIMUM DESIGN TEMPERATURE SHALL BE 0 DEGREES F, AND THE MAXIMUM TEMPERATURE SHALL BE 80 DEGREES F.
8. SEISMIC DESIGN DATA
   - THE SEISMIC ANALYSIS AND DESIGN SHALL BE IN ACCORDANCE WITH THE RHODE ISLAND LRFD BRIDGE DESIGN MANUAL AND THE GEOTECHNICAL RECOMMENDATIONS REPORT DATED APRIL 2025, BY GEI CONSULTANTS, INC.
   - THE COMBINATION OF SEISMIC FORCE EFFECTS IS IN ACCORDANCE WITH THE RHODE ISLAND LRFD BRIDGE DESIGN MANUAL.
   - THE SITE HAS BEEN CLASSIFIED AS SITE CLASS C.

REINFORCEMENT:

1. REINFORCEMENT SHALL CONFORM TO BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE (ACI 318), ACI DETAILING MANUAL (SP–66), CRSI MANUAL OF STANDARD PRACTICE (MSP), AND THE STRUCTURAL WELDING CODE–REINFORCING STEEL (AWS D1).
2. STEEL REINFORCEMENT SHALL CONFORM TO SECTION S03200 OF THE SPECIFICATIONS.
3. PROVIDE SUPPLEMENTAL BARS AND ACCESSORIES AS REQUIRED TO HOLD REINFORCEMENT SECURELY IN POSITION.
4. ALL CONTINUOUS REINFORCEMENT SHALL BE EXTENDED AROUND CORNERS AND LAPPED AT NECESSARY SPLICES OR HOOKED AT DISCONTINUOUS ENDS.
5. LAPS SHALL BE CLASS B TENSION LAP SPLICES, UNLESS NOTED OTHERWISE.
6. REINFORCEMENT SHALL BE CONTINUOUS THROUGH CONSTRUCTION JOINTS.
7. ALL REINFORCEMENT SHALL BE EPOXY COATED.

CONCRETE NOTES

1. CONCRETE WORK SHALL CONFORM TO BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE (ACI 318) AND SPECIFICATIONS FOR STRUCTURAL CONCRETE FOR BUILDINGS (ACI 301).
2. UNLESS NOTED OTHERWISE, CONCRETE SHALL BE AS FOLLOWS:

		MAX. WATER CEMENT RATIO
FOOTINGS:	5000 P.S.I. (NORMAL WEIGHT)	0.40
HOUSEKEEPING:	5000 P.S.I. (NORMAL WEIGHT)	0.40
ABUTMENTS & RETAINING WALLS:	5000 P.S.I. (NORMAL WEIGHT)	0.45
COLUMN CAPS & COLUMN STEMS:	5000 P.S.I. (NORMAL WEIGHT)	0.45
SLAB–ON–GRADE:	5000 P.S.I. (NORMAL WEIGHT)	0.45

3. CONCRETE EXPOSED TO THE WEATHER SHALL BE AIR ENTRAINED.
4. CONSTRUCTION JOINTS SHOWN ON THE DRAWINGS ARE MANDATORY.
5. SIZE OF CONCRETE PLACEMENTS, UNLESS NOTED OTHERWISE, SHALL CONFORM TO ACI GUIDELINES AND RECOMMENDATIONS.
6. UNLESS OTHERWISE INDICATED ON THE PLANS, ALL MAIN REINFORCING BARS SHALL HAVE THE FOLLOWING MINIMUM COVER:

CONCRETE CAST AGAINST OR PERMANENTLY EXPOSED TO EARTH (FOOTINGS, WALLS, COLUMNS)	3"
ALL OTHER BARS	2"

   COVER TO TIES AND STIRRUPS MAY BE 0.5 INCH LESS THAN THE ABOVE VALUES SPECIFIED FOR MAIN REINFORCING, BUT IN NO CASE LESS THAN 1.5 INCHES.
7. ALL ANCHOR BOLTS SHALL BE SET PRIOR TO PLACEMENT OF CONCRETE UNLESS OTHERWISE AUTHORIZED BY THE ENGINEER.
8. HORIZONTAL CONSTRUCTION JOINTS OTHER THAN THOSE SHOWN ON PLANS WILL NOT BE PERMITTED WITHOUT A WRITTEN REQUEST BY THE CONTRACTOR AND PRIOR AUTHORIZATION BY THE ENGINEER.
9. ALL EXPOSED EDGES AND REENTRANT CORNERS NOT OTHERWISE DETAILED ON THE PLANS SHALL HAVE A MINIMUM 1" CHAMFER.
10. ALL JOINT SEALANT SHALL BE POLYURETHANE, POLYSULFIDE, POLYURETHANE ELASTOMERIC, OR SILICONE SEALANT AS DESIGNATED ON THE PLANS. THE COLOR OF THE JOINT SEALANT, WHERE EXPOSED, SHALL BE NEUTRAL (LIGHT GRAY OR TAN). THE COLOR OF THE SEALANT, WHERE NOT EXPOSED, WILL BE AT THE DISCRETION OF THE CONTRACTOR.
11. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PREVENTING CONCRETE STAINS OR DISCOLORATIONS DURING CONSTRUCTION UNTIL SUCH TIME WHEN THE SURFACES ARE APPROVED AND ACCEPTED. ANY CONCRETE STAINS OR DISCOLORATIONS OCCURRING PRIOR TO ACCEPTANCE OF THE SURFACES SHALL BE REMOVED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE STATE.
12. ALL METAL TIES, NON–METALLIC TIES OR ANCHORAGES WHICH ARE REQUIRED FOR CONCRETE FORMWORK SHALL BE SO CONSTRUCTED THAT THEY CAN BE REMOVED TO AT LEAST ONE INCH BELOW THE EXPOSED SURFACE OF THE CONCRETE WITHOUT CAUSING DAMAGE TO THE CONCRETE SURFACE. SNAP TIES MAY BE USED ONLY IF APPROVED BY THE ENGINEER. IF THE CONTRACTOR PROPOSES TO USE THEM, A CATALOG CUT AND OTHER NECESSARY INFORMATION MUST BE SUBMITTED TO THE ENGINEER TO DEMONSTRATE THAT THE TIES WILL SNAP–OFF FAR ENOUGH INTO THE CONCRETE TO ALLOW FOR PROPER PATCHING. SNAP TIES MUST PROVIDE ADEQUATE STRENGTH TO SUPPORT THE FORMS. ALL CAVITIES SHALL BE FILLED WITH AN APPROVED CEMENT MORTAR MEETING THE REQUIREMENTS OF ASTM C 928.
13. WATER STOPS ARE REQUIRED FOR HORIZONTAL AND VERTICAL CONSTRUCTION JOINTS IN ABUTMENTS AND WALLS WHEN EXPOSED TO BACKFILL EARTH MATERIAL. WATER STOPS SHALL BE INSTALLED AT THE LOCATIONS DETAILED ON THE PLANS, AT THE LOCATIONS AS SPECIFIED ABOVE AND AT ALL LOCATIONS AS DIRECTED BY THE ENGINEER, ALL IN ACCORDANCE WITH SECTION 03252 OF THE SPECIFICATIONS.

FOUNDATIONS:

1. ALL FOOTINGS SHALL BEAR DIRECTLY ON BEDROCK FOR AN ALLOWABLE BEARING PRESSURE OF 8.0 KSF IN ACCORDANCE WITH THE GEOTECHNICAL REPORT DATED APRIL 2025 BY GEI CONSULTANTS INC.
2. SEE THE SPECIFICATIONS FOR ALL RELATED CONSTRUCTION REQUIREMENTS.
3. ALL UNSUITABLE MATERIAL WITHIN FOUNDATIONS AND SLABS SHALL BE REMOVED AND REPLACED AS DIRECTED BY THE ENGINEER.
4. PROVIDE TEMPORARY SUPPORTS AS REQUIRED TO PROTECT NEWLY COMPLETED STRUCTURES.
5. NO RESPONSIBILITY IS ASSUMED BY THE ENGINEER FOR THE VALIDITY OF THE SUBSURFACE CONDITIONS PRESENTED WITHIN THE CONTRACT DOCUMENTS. SUBSURFACE INVESTIGATIONS REFLECT THE CONDITIONS AT THE TIME THEY WERE PERFORMED. SUPPLEMENTAL INVESTIGATIONS SHALL BE PERFORMED BY THE CONTRACTOR AS REQUIRED TO COMPLETE THE WORK.
6. FOUNDATIONS MAY BE ALTERED, IF NECESSARY, TO SUIT CONDITIONS ENCOUNTERED DURING CONSTRUCTION, WITH THE APPROVAL OF THE ENGINEER.
7. CARRY OUT CONTINUOUS CONTROL OF SURFACE AND SUBSURFACE WATER DURING CONSTRUCTION SUCH THAT FOUNDATION WORK IS DONE IN THE DRY.
8. ALL CONCRETE SURFACES SHALL BE FORMED, UNLESS NOTED OTHERWISE ON THE DRAWINGS. DO NOT FORM AGAINST EXCAVATIONS WITHOUT PRIOR APPROVAL FROM THE ENGINEER.
9. NO FOUNDATION CONCRETE SHALL BE PLACED IN FROZEN SUB–GRADE MATERIAL.
10. PLACE BACKFILL BEHIND WALLS ON BOTH SIDES SIMULTANEOUSLY.
11. SLABS ON GRADE SHALL BE PLACED ON 12" OF COMPACTED GRAVEL BORROW.

STAINLESS STEEL:

1. STRUCTURAL STEEL SHALL BE DETAILED IN ACCORDANCE WITH "DG27: STRUCTURAL STAINLESS STEEL" (AISC) AND, WHERE REQUIRED, DESIGNED IN ACCORDANCE WITH THE CITED REFERENCES.
2. STRUCTURAL STAINLESS STEEL SHALL BE NEW STEEL CONFORMING TO THE FOLLOWING:

BARS & SHAPES:	ASTM A276 TYPE 316 GRADE 50
NUTS:	ASTM F594 TYPE 316
BOLTS & THREADED RODS	ASTM F593 TYPE 316 GRADE 65

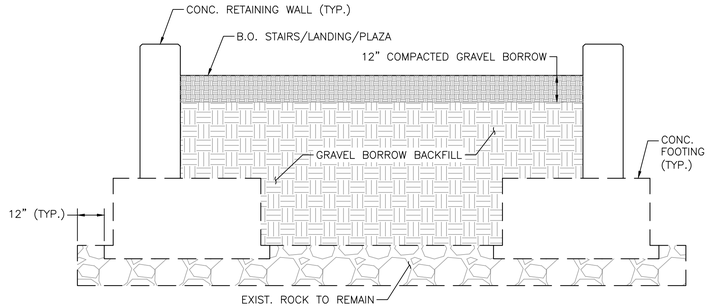
3. FIELD CUTTING OF STRUCTURAL STEEL OR ANY FIELD MODIFICATIONS OF STRUCTURAL STEEL SHALL NOT BE MADE WITHOUT PRIOR WRITTEN APPROVAL.

METAL GRATING NOTES:

1. METAL GRATING SHALL BE CARBON STRUCTURAL STEEL A36, SMOOTH SURFACE UNLESS OTHERWISE NOTED.
2. FASTENERS, ANCHORS, BOLTS NUTS AND WASHERS FOR GRATING SHALL BE TYPE 316 STAINLESS STEEL.
3. BAND ALL GRATING ALONG EDGES WITH CONTINUOUS BAR SAME DEPTH & THICKNESS AS BEARING BARS.
4. ALL GRATING IS TO BE SECURELY FASTENED TO SUPPORTS.

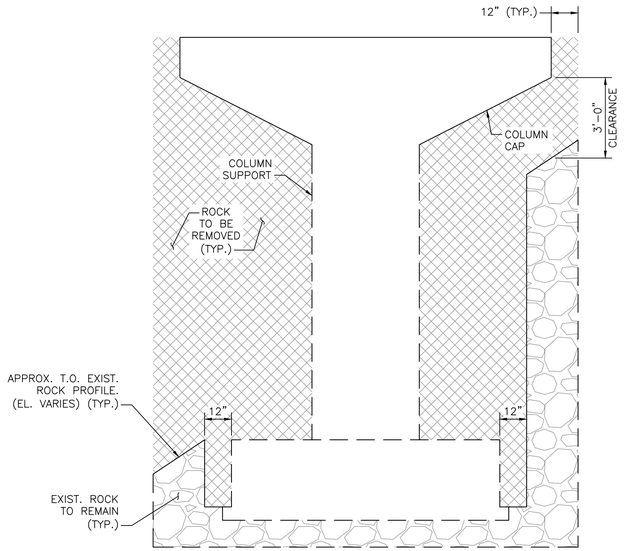
SUBMITTALS, TESTING, AND INSPECTIONS:

1. SUBMITTALS AND TESTING SHALL BE AS REQUIRED BY THE RHODE ISLAND STATE BUILDING CODE AND THESE FOLLOWING REQUIREMENTS.
2. FOR TESTING AGENCY REQUIREMENTS REFER TO SPECIFICATION 01410.
3. THE CONTRACTOR SHALL COORDINATE ALL WORK WITH THE TESTING AGENCY AND THE ENGINEERS OF RECORD ACCORDINGLY.
4. NOTIFY THE ENGINEER OF RECORD PRIOR TO FIRST CONCRETE PLACEMENT.
5. SUBMITTALS INCLUDE BUT ARE NOT LIMITED TO:
   CONCRETE MIX DESIGN
   STEEL REINFORCING
   STRUCTURAL STEEL
   JOINT SEALANT
   GRATING, HANDRAILS, AND ANCHOR ROD SYSTEMS
   CONSTRUCTION & EXPANSION JOINT MATERIAL
6. TESTS/INSPECTIONS INCLUDE BUT NOT LIMITED TO:
   EARTHWORK
   CONCRETE STRENGTH
   REINFORCING STEEL INSTALLATION
   BEDROCK CUTTING
   CONCRETE PLACEMENT AND CURING
   STEEL BOLTING
7. THE CONTRACTOR SHALL KEEP COMPLETE AND ORGANIZED RECORDS OF ALL TESTS AND INSPECTIONS AND PROVIDE THEM TO THE ENGINEER SO THAT THE FINAL AFFIDAVIT CAN BE PREPARED. A BINDER SHALL BE MAINTAINED AT THE JOBSITE AT ALL TIMES FOR THE ENGINEER'S INSPECTION.
8. THE CONTRACTOR SHALL NOTIFY THE ENGINEER, IN ADVANCE, BEFORE CONCEALING ANY WORK THAT WILL REQUIRE OBSERVATION NEEDED TO PREPARE THE FINAL AFFIDAVIT.



LIMITS OF GRAVEL BORROW FOR BACKILLING STRUCTURES

NOT TO SCALE



LIMITS OF ROCK EXCAVATION AT SUPPORT COLUMNS

NOT TO SCALE

PREPARED BY

BETA
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REGISTERED PROFESSIONAL

TODD M. WARZECKI
5/13/26
No. 9414
REGISTERED PROFESSIONAL ENGINEER
CIVIL

SUBCONSULTANT

PROJECT

Pleasant Street Public Stairway Construction Phase

Bid No. 26-011

Pawtucket, RI

TITLE

STRUCTURAL NOTES

NO.	REVISIONS	DATE

DRAWN BY:	KP
DESIGNED BY:	BN
CHECKED BY:	TW
ISSUE DATE:	5/13/2026
BETA JOB NO.:	11433

SCALE

AS SHOWN

UNLESS OTHERWISE NOTED OR CHANGED BY REPRODUCTION

SHEET NO.

S-1

BRIDGE/STRUCTURAL SHOP DRAWING & SUBMITTAL

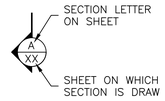
SEE GENERAL PROVISIONS – CONTRACT SPECIFIC OF THE CONTRACT DOCUMENTS

- STRUCTURAL STEEL
- STEEL REINFORCING
- CONCRETE MIX
- ERECTION PROCEDURE
- ROCK REMOVAL PROCEDURE
- MISC METALS/RAILINGS

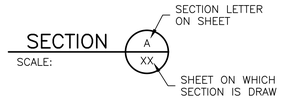
LIST OF ABBREVIATIONS

A	
ABUTMENT	= ABUT.
APPROXIMATE	= APPROX.
AVERAGE	= AVG.
B	
BEARING	= BRG.
BITUMINOUS	= BIT.
BOTTOM	= BOT.
C	
CENTERLINE	= $\mathbb{C}_L$
CLEARANCE	= CL.
CONCRETE	= CONC.
CONSTRUCTION	= CONST.
D	
DETAIL	= DET.
DIAMETER	= DIA.
DIMENSION	= DIM.
DRAWING	= DWG.
E	
EACH	= EA.
ELEVATION	= EL.
EXISTING	= EXIST.
F	
FABRICATE	= FAB.
FOOTING	= FTG.
FRACTURE CRITICAL	= FC
G	
GRADE	= GR.
H	
HOT MIX ASPHALT	= HMA
I	
INCH	= IN.
INVERT	= INV.
J	
JOINT	= JT.
L	
LOAD & RESISTANCE FACTOR DESIGN	= LRFD
M	
MINIMUM	= MIN.
MISCELLANEOUS	= MISC.
N	
NOT TO SCALE	= N.T.S.
NUMBER	= NO.
O	
ON CENTER	= O.C.
P	
POUNDS PER SQUARE INCH	= P.S.I.
POUNDS PER SQUARE FOOT	= P.S.F.
R	
RADIUS	= RAD.
REQUIRED	= REQD.
REINFORCING	= REINF.
REMOVE & DISPOSE	= R & D
S	
SECTION	= SECT.
SCHEDULE	= SCH.
SPACES	= SP.
STATION	= STA.
T	
TYPICAL	= TYP.
V	
VARIES	= VAR.
VERTICAL	= VERT.
W	
WITH	= W/
WORKING POINT	

SECTION & DETAIL DESIGNATIONS



SECTION MARK



SECTION TITLE

PREPARED BY

BETA
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REGISTERED PROFESSIONAL

SUBCONSULTANT

PROJECT

Pleasant Street Public Stairway Construction Phase

Bid No. 26-011

Pawtucket, RI

TITLE

JOB SPECIFIC PLAN SYMBOLS LEGEND & NOTES

NO.	REVISIONS	DATE

DRAWN BY: KP

DESIGNED BY: BN

CHECKED BY: TW

ISSUE DATE: 5/13/2026

BETA JOB NO.: 11433

SCALE

AS SHOWN

UNLESS OTHERWISE NOTED OR CHANGED BY REPRODUCTION

SHEET NO.

S-2

BORING INFORMATION
NORTHING (ft): 287,451 **EASTING (ft):** 359,407
GROUND SURFACE EL. (ft): 15 **DATE START/END:** 2/14/2025 - 2/14/2025
VERT./HORZ. DATUMS: NAVD 88/RI State Plane **DRILLING COMPANY:** Northern Drill Service, Inc.
TOTAL DEPTH (ft): 14.0 **DRILLER NAME:** T. Tucker
LOGGED BY: J. Shelkey **RIG TYPE:** B-53/B-54

BORING
GEI-1
PAGE 1 of 1

DRILLING INFORMATION
HAMMER TYPE: Automatic **CASING I.D./O.D.:** 4 inch/ 4.5 inch **CORE BARREL TYPE:** NX
AUGER I.D./O.D.: NA / NA **DRILL ROD O.D.:** NM **CORE BARREL I.D./O.D.:** 2.15 inch / 2.96 inch
DRILLING METHOD: Rotary - Wash
WATER LEVEL DEPTHS (ft): Not Encountered

ABBREVIATIONS: Pen. = Penetration Length; Rec. = Recovery Length; RQD = Rock Quality Designation = Length of Sound Cores>4 in / Pen.,%; WOR = Weight of Rods; WOH = Weight of Hammer; S = Split Spoon Sample; C = Core Sample; U = Undisturbed Sample; SC = Sonic Core; DP = Direct Push Sample; HSA = Hollow-Stem Auger; Qp = Pocket Penetrometer Strength; Sv = Pocket Torvane Shear Strength; LL = Liquid Limit; PI = Plasticity Index; PID = Photoionization Detector; I.D./O.D.= Inside Diameter/Outside Diameter; NA, NM = Not Applicable, Not Measured; Blows per 6 in.: 140-lb hammer falling 30 inches to drive a 2-inch-O.D. split spoon sampler.

Elev. (ft)	Depth (ft)	Sample No.	Sample Depth (ft)	Pen./ Rec. (in)	Blows per 6 in. or RQD	Drilling Remarks/ Field Test Data	Layer Name	Soil and Rock Description
								S1: 0"- 4": ASPHALT PAVEMENT
		S1	0 to 2	24/16	35-20-12-9		FILL	S1: 4" - 16": NARROWLY GRADED SAND WITH GRAVEL (SP); Brown, dense, fine to medium SAND, some fine gravel, trace of fines, trace of brick and glass.
10	5	S2	4 to 6	24/15	12-7-5-7			S2: WIDELY GRADED SAND WITH GRAVEL (SW); Brown, medium dense, fine to coarse SAND, some fine gravel, trace of asphalt and brick.
						Driller used tri-cone drill bit to advance casing to 9 feet. Encountered top of rock at about 6.5 feet.		Observed Red/brown soil cuttings from tri-cone drilling at 6 feet.
	10	C1	9 to 14	60/60	38	Core Times (min/ft): 3.0, 2.5, 2.0, 1.5, 2.5	BEDROCK	C1: 0" - 30": SILTSTONE, red, hard, fine grained, slightly weathered, highly fractured from 0" to 10", joints spaced every 1/4" to 4" dipping 20°. C1: 30" - 60": CONGLOMERATE, red and grey, hard, fine to medium grained from 1/4" to 4.3" and 48" to 60", fine to coarse grained from 4.3" to 48", slightly weathered, irregular joints spaced 1/2" to 6" dipping 20° to 46°.
0	15							Bottom of borehole at 14 feet. Backfilled borehole with cuttings and topped with asphalt cold patch.
	20							

NOTES:

PROJECT NAME: Tidewater Landing Phase 1B
CITY/STATE: Pawtucket, Rhode Island
GEI PROJECT NUMBER: 2407195

GEI Consultants

GEI WORKFLOW STD 5-NORTH-EAST-LAYER NAME 2407195 TIDEWATER LANDING PHASE 1B.GPJ 4/7/25

BORING INFORMATION
NORTHING (ft): 287,477 **EASTING (ft):** 359,372
GROUND SURFACE EL. (ft): 19 **DATE START/END:** 2/14/2025 - 2/14/2025
VERT./HORZ. DATUMS: NAVD 88/RI State Plane **DRILLING COMPANY:** Northern Drill Service, Inc.
TOTAL DEPTH (ft): 9.0 **DRILLER NAME:** T. Tucker
LOGGED BY: J. Shelkey **RIG TYPE:** Mobile B-53

BORING
GEI-2
PAGE 1 of 1

DRILLING INFORMATION
HAMMER TYPE: Automatic **CASING I.D./O.D.:** 4 inch/ 4.5 inch **CORE BARREL TYPE:**
AUGER I.D./O.D.: NA / NA **DRILL ROD O.D.:** NM **CORE BARREL I.D./O.D.:** NA / NA
DRILLING METHOD: Rotary - Wash
WATER LEVEL DEPTHS (ft): Not Encountered

ABBREVIATIONS: Pen. = Penetration Length; Rec. = Recovery Length; RQD = Rock Quality Designation = Length of Sound Cores>4 in / Pen.,%; WOR = Weight of Rods; WOH = Weight of Hammer; S = Split Spoon Sample; C = Core Sample; U = Undisturbed Sample; SC = Sonic Core; DP = Direct Push Sample; HSA = Hollow-Stem Auger; Qp = Pocket Penetrometer Strength; Sv = Pocket Torvane Shear Strength; LL = Liquid Limit; PI = Plasticity Index; PID = Photoionization Detector; I.D./O.D.= Inside Diameter/Outside Diameter; NA, NM = Not Applicable, Not Measured; Blows per 6 in.: 140-lb hammer falling 30 inches to drive a 2-inch-O.D. split spoon sampler.

Elev. (ft)	Depth (ft)	Sample No.	Sample Depth (ft)	Pen./ Rec. (in)	Blows per 6 in. or RQD	Drilling Remarks/ Field Test Data	Layer Name	Soil and Rock Description
		S1	0 to 2	24/16	12-14-7-6		FILL	S1: NARROWLY GRADED SAND WITH GRAVEL (SP); Tan, medium dense, fine SAND, some fine gravel, trace of fines, trace brick and asphalt.
10	5	S2	4 to 6	24/12	4-4-3-10			S2: NARROWLY GRADED SAND (SP); Brown, dry, loose, fine SAND, little fine gravel, trace of fines. Black coal ash found in top of spoon.
		S3	8.5 to 8.5	0/0	50/0"	Top of rock encountered at 8.5 feet with bouncing refusal. Drilled rock with tri-cone roller bit. Collected reddish brown mudstone cuttings.		S3: Reddish brown mudstone observed in soil cuttings.
0	15							Bottom of borehole at 9 feet. Backfilled borehole with cuttings.
	20							

NOTES:

PROJECT NAME: Tidewater Landing Phase 1B
CITY/STATE: Pawtucket, Rhode Island
GEI PROJECT NUMBER: 2407195

GEI Consultants

GEI WORKFLOW STD 5-NORTH-EAST-LAYER NAME 2407195 TIDEWATER LANDING PHASE 1B.GPJ 4/7/25

BORING INFORMATION
NORTHING (ft): 287,477 **EASTING (ft):** 359,279
GROUND SURFACE EL. (ft): 54 **DATE START/END:** 2/14/2025 - 2/14/2025
VERT./HORZ. DATUMS: NAVD 88/RI State Plane **DRILLING COMPANY:** Northern Drill Service, Inc.
TOTAL DEPTH (ft): 6.3 **DRILLER NAME:** T. Tucker
LOGGED BY: J. Shelkey **RIG TYPE:** Mobile B-53

BORING
GEI-3
PAGE 1 of 1

DRILLING INFORMATION
HAMMER TYPE: Automatic **CASING I.D./O.D.:** 4 inch/ 4.5 inch **CORE BARREL TYPE:**
AUGER I.D./O.D.: NA / NA **DRILL ROD O.D.:** NM **CORE BARREL I.D./O.D.:** NA / NA
DRILLING METHOD:
WATER LEVEL DEPTHS (ft): Not Encountered

ABBREVIATIONS: Pen. = Penetration Length; Rec. = Recovery Length; RQD = Rock Quality Designation = Length of Sound Cores>4 in / Pen.,%; WOR = Weight of Rods; WOH = Weight of Hammer; S = Split Spoon Sample; C = Core Sample; U = Undisturbed Sample; SC = Sonic Core; DP = Direct Push Sample; HSA = Hollow-Stem Auger; Qp = Pocket Penetrometer Strength; Sv = Pocket Torvane Shear Strength; LL = Liquid Limit; PI = Plasticity Index; PID = Photoionization Detector; I.D./O.D.= Inside Diameter/Outside Diameter; NA, NM = Not Applicable, Not Measured; Blows per 6 in.: 140-lb hammer falling 30 inches to drive a 2-inch-O.D. split spoon sampler.

Elev. (ft)	Depth (ft)	Sample No.	Sample Depth (ft)	Pen./ Rec. (in)	Blows per 6 in. or RQD	Drilling Remarks/ Field Test Data	Layer Name	Soil and Rock Description
								Rock probe to determine top of bedrock only.
								Drove split spoon continously to 6.25 feet below grade.
50	5							No soil samples collected.
								No intermediate blow counts taken.
						Refusal encountered on probable top of bedrock at 6.25 feet.		Bouncing refusal at 6.25 feet.
	10							Bottom of borehole at 6.25 feet. Backfilled borehole with cuttings.
40	15							
	20							

NOTES:

PROJECT NAME: Tidewater Landing Phase 1B
CITY/STATE: Pawtucket, Rhode Island
GEI PROJECT NUMBER: 2407195

GEI Consultants

GEI WORKFLOW STD 5-NORTH-EAST-LAYER NAME 2407195 TIDEWATER LANDING PHASE 1B.GPJ 4/7/25

BORING INFORMATION
NORTHING (ft): 287,516 **EASTING (ft):** 359,282
GROUND SURFACE EL. (ft): 54 **DATE START/END:** 2/14/2025 - 2/14/2025
VERT./HORZ. DATUMS: NAVD 88/RI State Plane **DRILLING COMPANY:** Northern Drill Service, Inc.
TOTAL DEPTH (ft): 4.0 **DRILLER NAME:** T. Tucker
LOGGED BY: J. Shelkey **RIG TYPE:** Mobile B-53

BORING
GEI-3B
PAGE 1 of 1

DRILLING INFORMATION
HAMMER TYPE: Automatic **CASING I.D./O.D.:** 4 inch/ 4.5 inch **CORE BARREL TYPE:**
AUGER I.D./O.D.: NA / NA **DRILL ROD O.D.:** NM **CORE BARREL I.D./O.D.:** NA / NA
DRILLING METHOD:
WATER LEVEL DEPTHS (ft): NOT ENCOUNTERED

ABBREVIATIONS: Pen. = Penetration Length; Rec. = Recovery Length; RQD = Rock Quality Designation = Length of Sound Cores>4 in / Pen.,%; WOR = Weight of Rods; WOH = Weight of Hammer; S = Split Spoon Sample; C = Core Sample; U = Undisturbed Sample; SC = Sonic Core; DP = Direct Push Sample; HSA = Hollow-Stem Auger; Qp = Pocket Penetrometer Strength; Sv = Pocket Torvane Shear Strength; LL = Liquid Limit; PI = Plasticity Index; PID = Photoionization Detector; I.D./O.D.= Inside Diameter/Outside Diameter; NA, NM = Not Applicable, Not Measured; Blows per 6 in.: 140-lb hammer falling 30 inches to drive a 2-inch-O.D. split spoon sampler.

Elev. (ft)	Depth (ft)	Sample No.	Sample Depth (ft)	Pen./ Rec. (in)	Blows per 6 in. or RQD	Drilling Remarks/ Field Test Data	Layer Name	Soil and Rock Description
								Rock probe to determine top of bedrock only.
								Drove split spoon continously to 4 feet below grade.
50	5							No soil samples collected.
								No intermediate blow counts taken.
						Refusal encountered on probable top of bedrock at 4 feet.		Encountered bouncing refusal at 4.0 feet below grade. Siltstone in tip of spoon.
	10							Bottom of borehole at 4 feet. Backfilled borehole with cuttings.
40	15							
	20							

NOTES: Rock probe GEI-3B located 30 ft south of GEI-3.

PROJECT NAME: Tidewater Landing Phase 1B
CITY/STATE: Pawtucket, Rhode Island
GEI PROJECT NUMBER: 2407195

GEI Consultants

BORING NOTES:

1. LOCATION OF BORINGS SHOWN ON THE PLAN THUS: ⊕
2. BORINGS ARE TAKEN FOR PURPOSE OF DESIGN AND SHOW CONDITIONS AT BORING POINTS ONLY, BUT DO NOT NECESSARILY SHOW THE NATURE OF THE MATERIALS TO BE ENCOUNTERED DURING CONSTRUCTION.
3. FIGURES IN COLUMNS INDICATE NUMBER OF BLOWS REQUIRED TO DRIVE A 2" O.D. SPLIT SPOON SAMPLER 6" USING A 140 POUND WEIGHT FALLING 30".
4. ALL BORINGS WERE MADE IN FEBRUARY, 2025
5. BORINGS WERE MADE BY NORTHERN DRILL SERVICE, INC., 33 TALBOT RD, NORTHBOROUGH, MA 01532.
6. THE NORTH AMERICAN VERTICAL DATUM (NAVD) OF 1988 IS USED THROUGHOUT.

PREPARED BY

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5/13/26
COMMONWEALTH OF MASSACHUSETTS
No. 9414
REGISTERED PROFESSIONAL ENGINEER
CIVIL

SUBCONSULTANT

PROJECT

Pleasant Street Public Stairway Construction Phase

Bid No. 26-011

Pawtucket, RI

TITLE

BORING LOGS

NO.	REVISIONS	DATE

DRAWN BY: KP
DESIGNED BY: BN
CHECKED BY: TW
ISSUE DATE: 5/13/2026
BETA JOB NO.: 11433

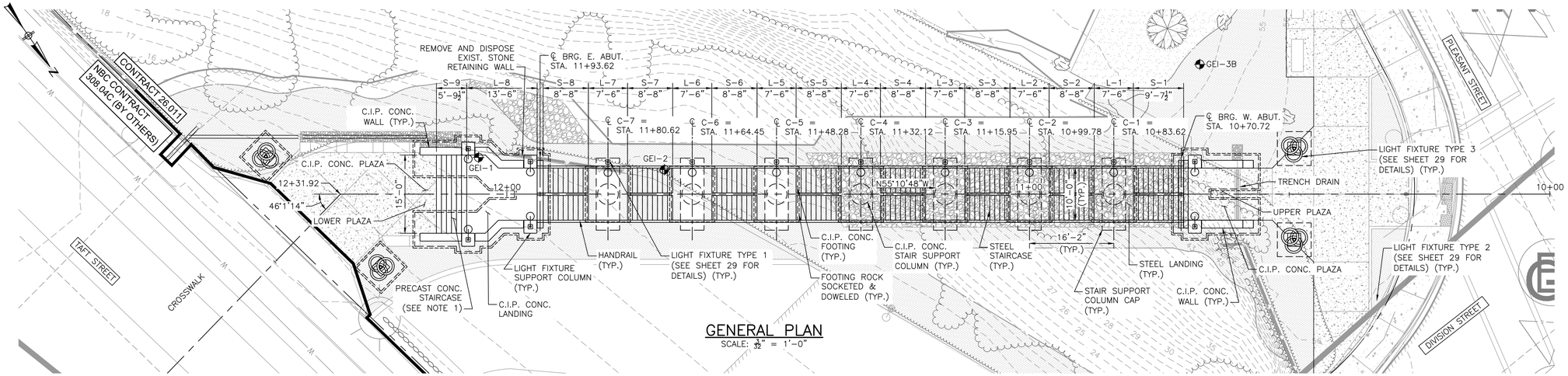
SCALE

AS SHOWN

UNLESS OTHERWISE NOTED OR CHANGED BY REPRODUCTION

SHEET NO.

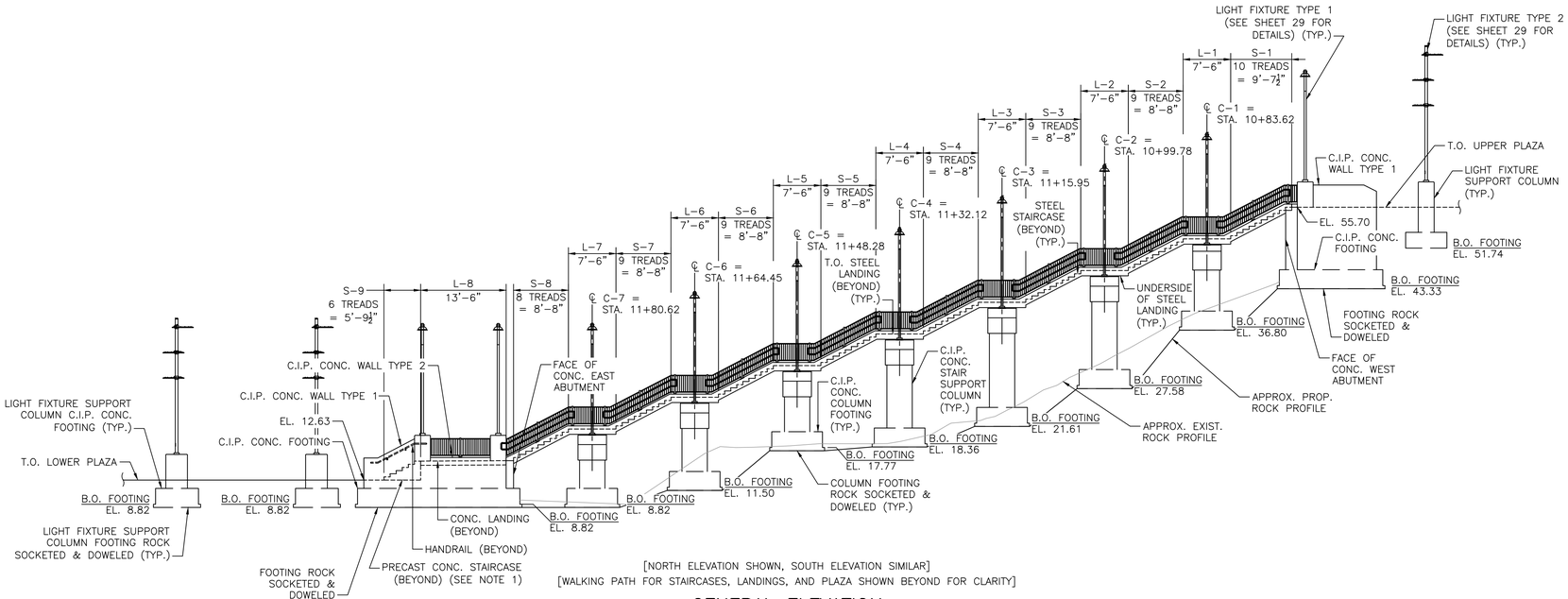
S-3



GENERAL PLAN
SCALE: 1/32" = 1'-0"

NOTES:

1. IF PREFERRED, THE CONTRACTOR MAY USE C.I.P. CONCRETE FOR STAIRCASE S-9. CONTRACTOR SHALL ERECT STAIRCASE AS DETAILED ON SHEET S-10 AND SUBMIT A DESIGN TO THE ENGINEER FOR REVIEW AND APPROVAL.



[NORTH ELEVATION SHOWN, SOUTH ELEVATION SIMILAR]
[WALKING PATH FOR STAIRCASES, LANDINGS, AND PLAZA SHOWN BEYOND FOR CLARITY]

GENERAL ELEVATION
SCALE: 1/32" = 1'-0"

PREPARED BY

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CIVIL

SUBCONSULTANT

PROJECT

Pleasant Street Public Stairway Construction Phase

Bid No. 26-011

Pawtucket, RI

TITLE

GENERAL PLAN & ELEVATION

NO.	REVISIONS	DATE

DRAWN BY:	KP
DESIGNED BY:	BN
CHECKED BY:	TW
ISSUE DATE:	5/13/2026
BETA JOB NO.:	11433

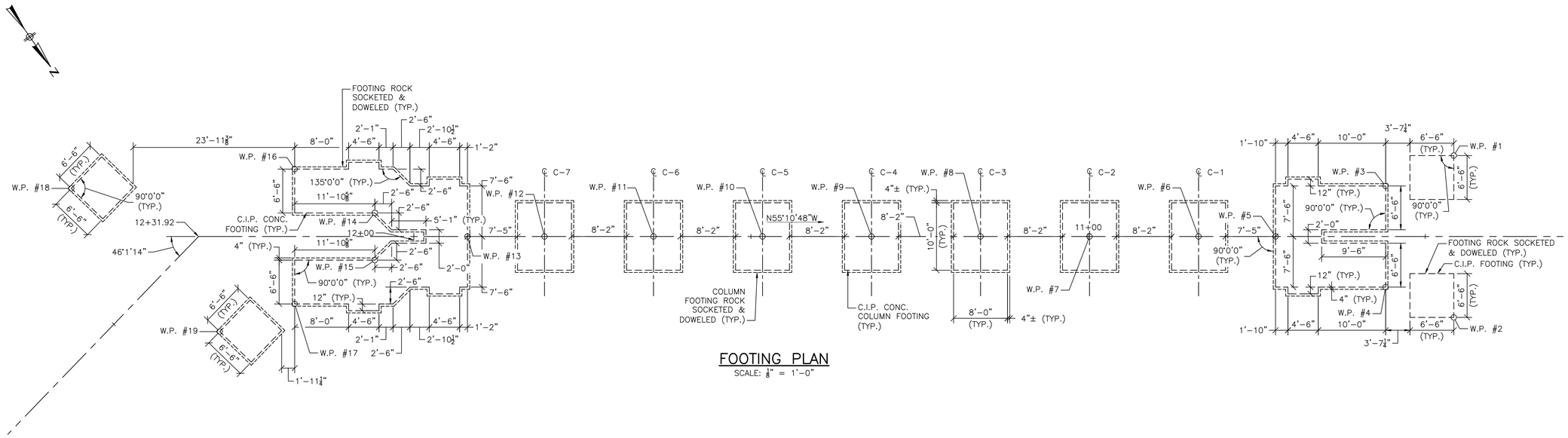
SCALE

AS SHOWN

UNLESS OTHERWISE NOTED OR CHANGED BY REPRODUCTION

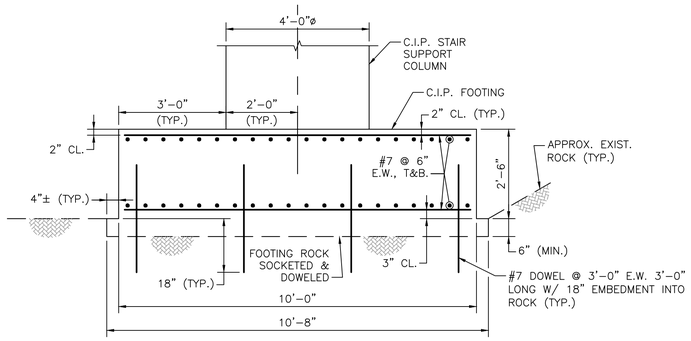
SHEET NO.

S-4



FOOTING PLAN

SCALE: ⅛" = 1'-0"



COLUMN FOOTINGS BEARING ON ROCK DETAIL

SCALE: ½" = 1'-0"

	STATION	OFFSET	NORTHING	EASTING
W.P. #1	10+45.77	12.00 RT	287538.1665	359271.1508
W.P. #2	10+45.77	12.00 LT	287557.8696	359284.8550
W.P. #3	10+55.87	7.50 RT	287536.0936	359282.0125
W.P. #4	10+55.87	7.50 LT	287548.4079	359290.5775
W.P. #5	10+72.20	0.00	287532.9244	359299.7038
W.P. #6	10+83.62	0.00	287526.4055	359309.0763
W.P. #7	10+99.78	0.00	287517.1743	359322.3484
W.P. #8	11+15.95	0.00	287507.9432	359335.6204
W.P. #9	11+32.12	0.00	287498.7120	359348.8924
W.P. #10	11+48.28	0.00	287489.4808	359362.1645
W.P. #11	11+64.45	0.00	287480.2497	359375.4365
W.P. #12	11+80.62	0.00	287471.0185	359388.7085
W.P. #13	11+92.03	0.00	287464.4997	359398.0811
W.P. #14	12+5.78	3.50 RT	287453.7798	359407.3627
W.P. #15	12+5.78	3.50 LT	287459.5280	359411.3595
W.P. #16	12+17.66	10.00 RT	287441.6580	359413.4079
W.P. #17	12+17.66	10.00 LT	287458.0773	359424.8281
W.P. #18	12+39.89	18.55 RT	287425.0816	359442.2450
W.P. #19	12+39.89	12.05 LT	287455.0902	359436.3027

NOTES:

1. ALL FOOTINGS SHALL BEAR DIRECTLY ON LEVEL AND SOUND BEDROCK. THE RECOMMENDED NET ALLOWABLE BEARING CAPACITY OF THE BEDROCK IS 8 KSF.

   THE FACTORED BEARING PRESSURE = 4.15 KSF AS PER AASHTO LRFD BRIDGE DESIGN SPECIFCATIONS UNDER STRENGTH V LOAD COMBINATION.

2. ALL FOOTING CONCRETE SHALL BE CLASS 5000 PSI.

3. ALL REINFORCEMENT SHALL BE AASHTO DESIGNATION M 31, GRADE 60 EPOXY COATED.

PREPARED BY

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REGISTERED PROFESSIONAL

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No. 9414
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CIVIL

SUBCONSULTANT

PROJECT

Pleasant Street Public Stairway Construction Phase

Bid No. 26-011

Pawtucket, RI

TITLE

FOOTING PLAN & DETAILS

NO.	REVISIONS	DATE

DRAWN BY: KP

DESIGNED BY: BN

CHECKED BY: TW

ISSUE DATE: 5/13/2026

BETA JOB NO.: 11433

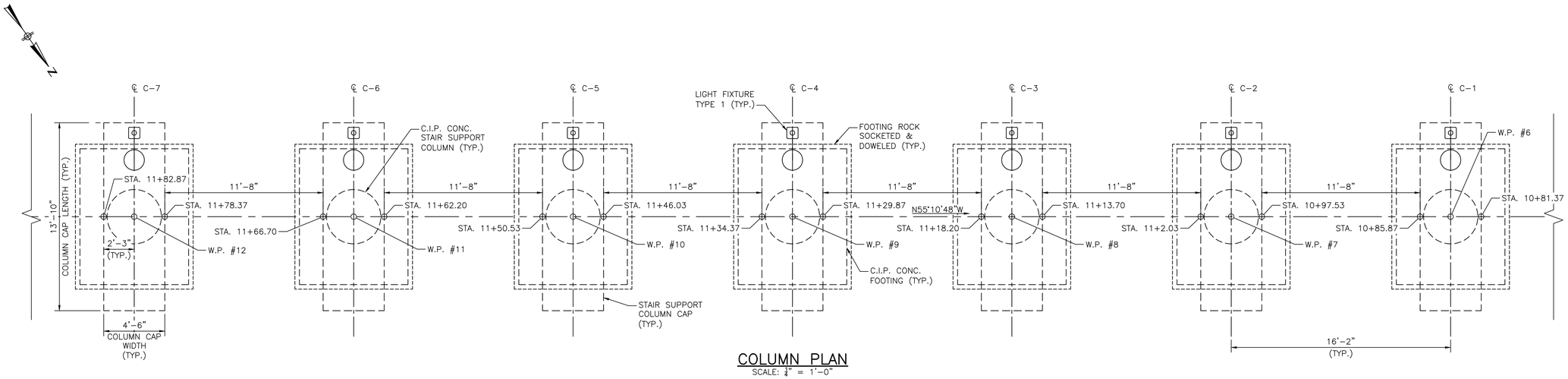
SCALE

AS SHOWN

UNLESS OTHERWISE NOTED OR CHANGED BY REPRODUCTION

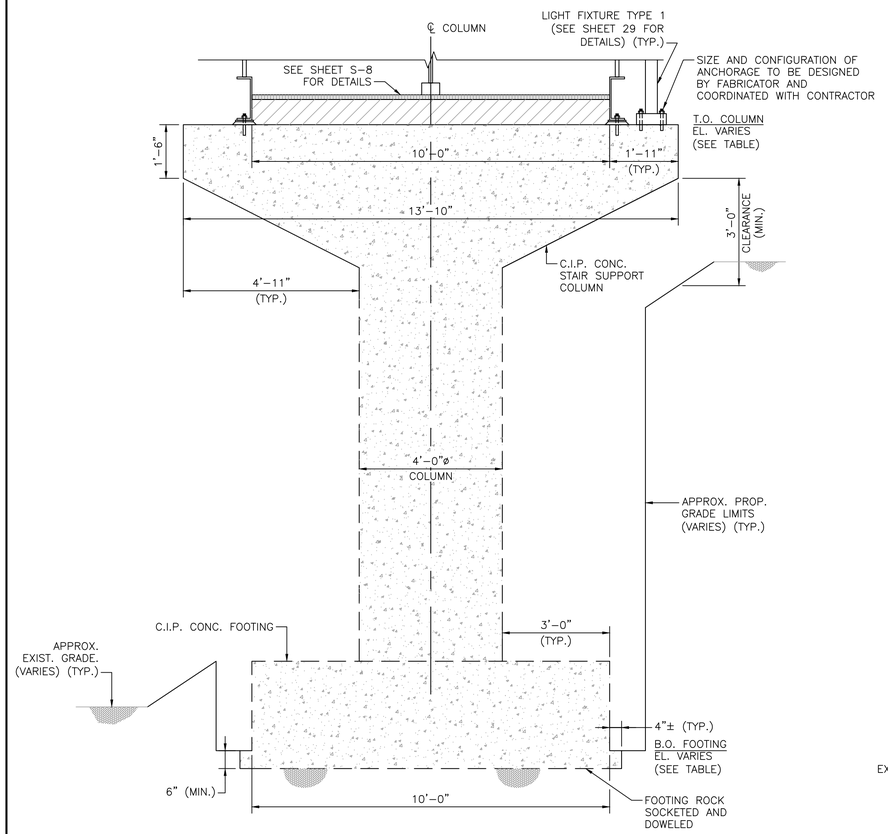
SHEET NO.

S-5

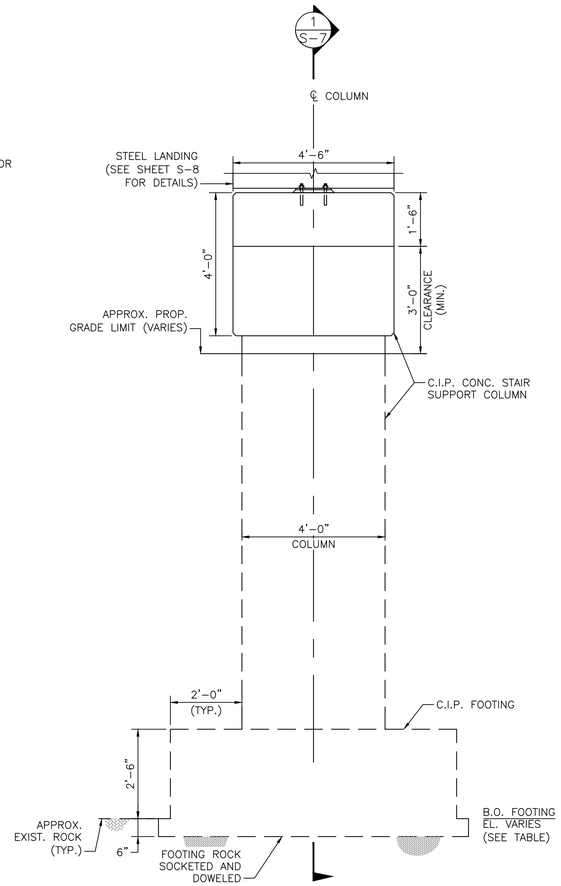


COLUMN PLAN
SCALE: 1" = 1'-0"

NOTES:
1. T.O. COLUMN ELEVATIONS MAY VARY BASED ON LANDING CONFIGURATION AND ANCHORAGE, WHICH IS DETERMINED BY THE MANUFACTURER. CONTRACTOR IS RESPONSIBLE FOR COORDINATING WITH MANUFACTURER TO ENSURE WALKING SURFACE ELEVATIONS AS SHOWN ON THE PLANS ARE MAINTAINED.



TYPICAL STAIR SUPPORT COLUMN
SCALE: 1/2" = 1'-0"



TYPICAL STAIR SUPPORT COLUMN SIDE ELEVATION
SCALE: 1/2" = 1'-0"

COLUMN ELEVATIONS			
	T.O. COLUMN	B.O. FOOTING	B.O. SOCKET
C-1	49.74*	36.80	36.30
C-2	44.74*	27.58	27.08
C-3	39.74*	21.61	21.11
C-4	34.74*	18.36	17.86
C-5	29.74*	17.77	17.27
C-6	24.74*	11.50	11.00
C-7	19.74*	8.82	8.32

*SEE NOTE 1

	STATION	OFFSET	NORTHING	EASTING
W.P. #6	10+83.62	0.00	287526.4055	359309.0763
W.P. #7	10+99.78	0.00	287517.1743	359322.3484
W.P. #8	11+15.95	0.00	287507.9432	359335.6204
W.P. #9	11+32.12	0.00	287498.7120	359348.8924
W.P. #10	11+48.28	0.00	287489.4808	359362.1645
W.P. #11	11+64.45	0.00	287480.2497	359375.4365
W.P. #12	11+80.62	0.00	287471.0185	359388.7085

PREPARED BY

BETA
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REGISTERED PROFESSIONAL

TODD M. WARZECKI 5/13/26
No. 9414
REGISTERED PROFESSIONAL ENGINEER
CIVIL

SUBCONSULTANT

PROJECT

Pleasant Street Public Stairway Construction Phase

Bid No. 26-011

Pawtucket, RI

TITLE

STAIR SUPPORT COLUMN DETAILS (1 OF 2)

NO.	REVISIONS	DATE

DRAWN BY: KP
DESIGNED BY: BN
CHECKED BY: TW
ISSUE DATE: 5/13/2026
BETA JOB NO.: 11433

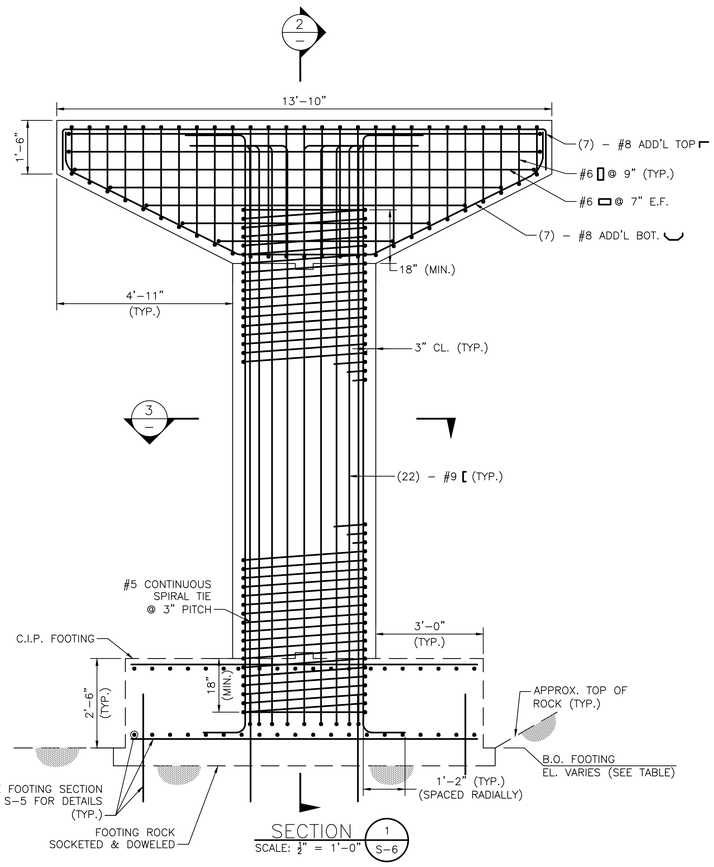
SCALE

AS SHOWN

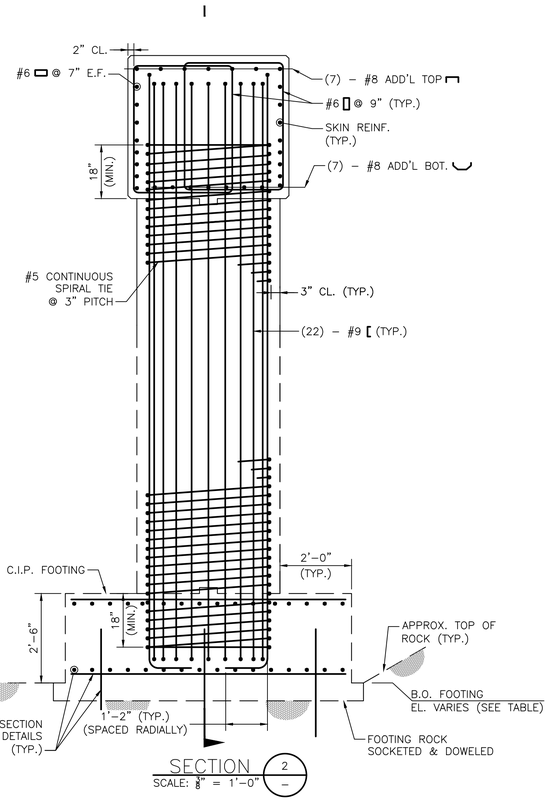
UNLESS OTHERWISE NOTED OR CHANGED BY REPRODUCTION

SHEET NO.

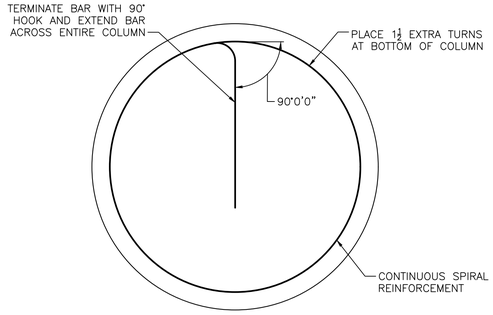
S-6



SECTION
SCALE: 1/2" = 1'–0" (1 / S–6)

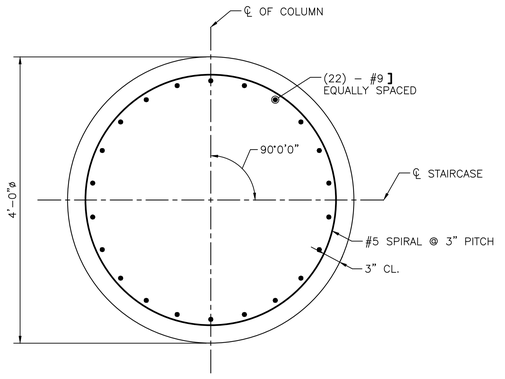


SECTION
SCALE: 3/8" = 1'–0" (2 / –)



NOTE: COLUMN VERTICAL REINFORCEMENT NOT SHOWN FOR CLARITY.

SPIRAL REINFORCEMENT TERMINATION DETAIL
SCALE: 1" = 1'–0"



SECTION
SCALE: 1" = 1'–0" (3 / –)

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REGISTERED PROFESSIONAL

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Pleasant Street
Public Stairway
Construction Phase

Bid No. 26-011

Pawtucket, RI

TITLE

STAIR SUPPORT
COLUMN DETAILS
(2 OF 2)

NO.	REVISIONS	DATE

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CHECKED BY: TW
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BETA JOB NO.: 11433

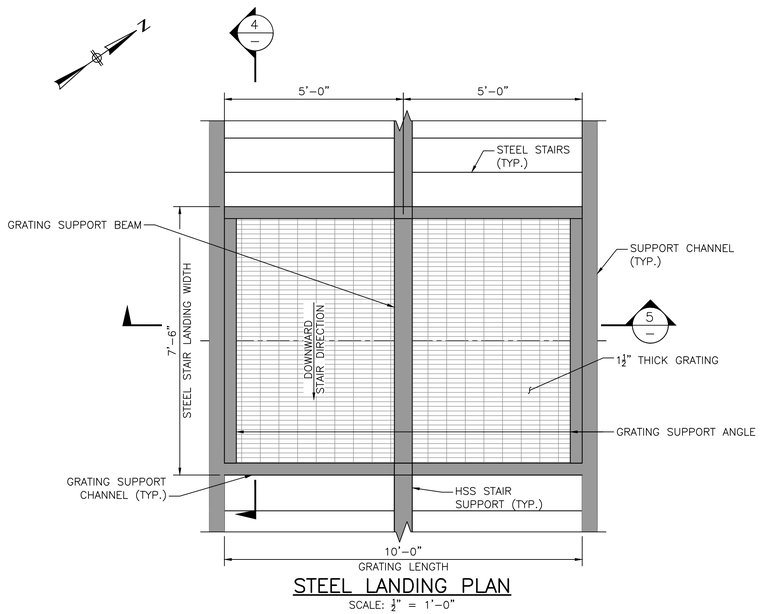
SCALE

AS SHOWN

UNLESS OTHERWISE NOTED OR CHANGED BY REPRODUCTION

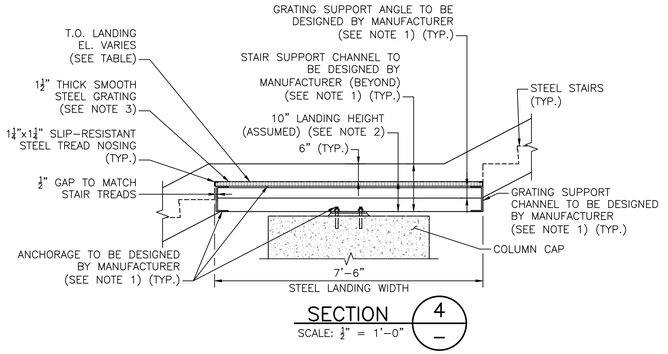
SHEET NO.

S-7



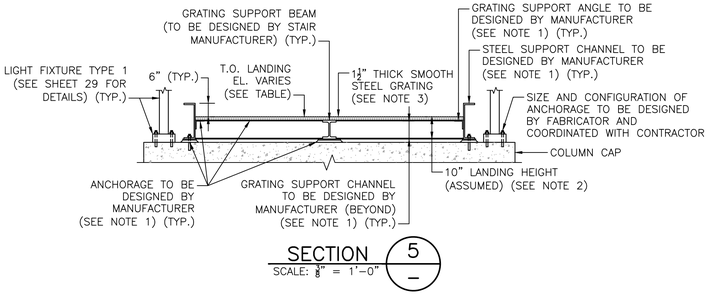
STEEL LANDING PLAN

SCALE: ½" = 1'–0"



SECTION 4

SCALE: ½" = 1'–0"



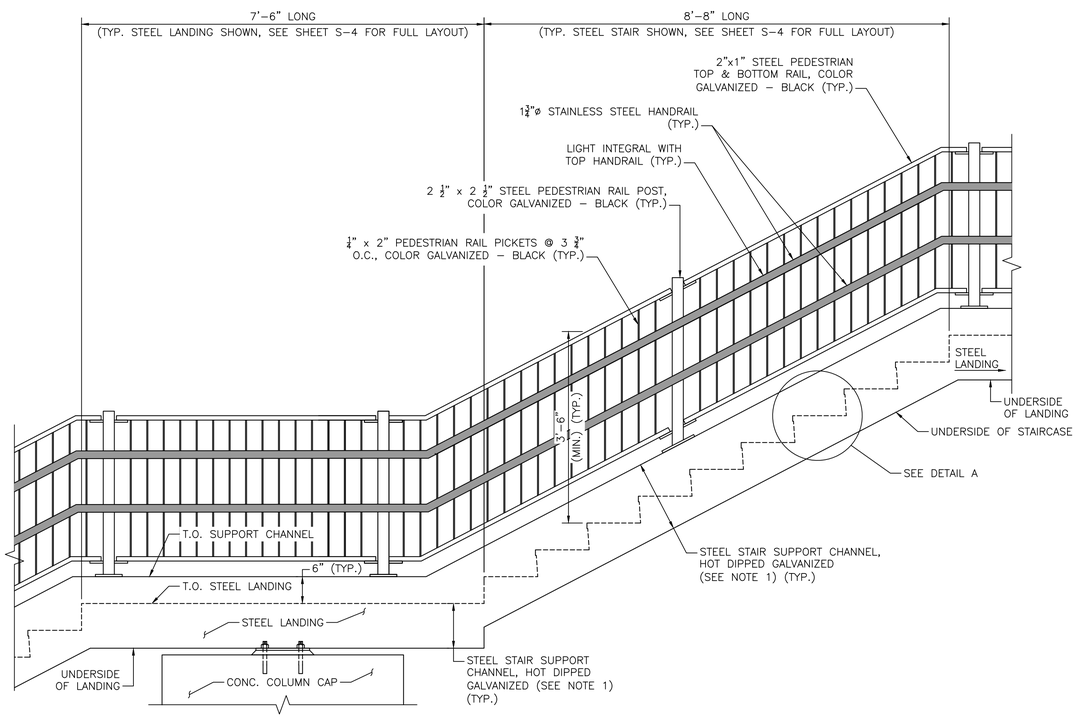
SECTION 5

SCALE: ⅜" = 1'–0"

NOTES:

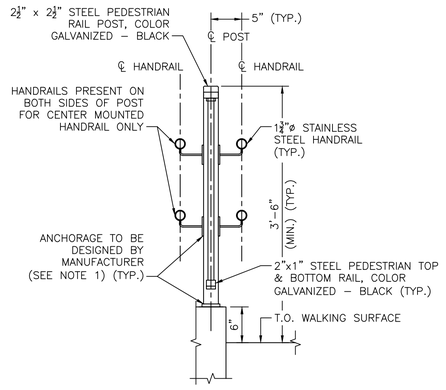
1. STEEL STAIRS, LANDINGS, & GRATING SUPPORTS TO BE DESIGNED BY THE MANUFACTURER. SIZE AND CONFIGURATION OF ALL ANCHORAGES TO BE DESIGNED BY THE MANUFACTURER. CONTRACTOR SHALL COORDINATE WITH MANUFACTURER TO SUBMIT DESIGN AND ANCHORAGE OF STAIRS, LANDING, AND GRATING SUPPORTS TO THE ENGINEER FOR REVIEW AND APPROVAL.
2. LANDING CONFIGURATION MAY VARY FROM THE CONCEPT SHOWN. CONTRACTOR IS RESPONSIBLE FOR COORDINATING WITH MANUFACTURER TO ENSURE WALKING SURFACE ELEVATIONS AS SHOWN ON THE PLANS ARE MAINTAINED.
3. GRATING SURFACES FOR THE TREADS AND LANDINGS SHALL HAVE A MAXIMUM CLEAR SPACE OF ¼" THROUGHOUT.

STEEL LANDING ELEVATIONS	
	T.O. LANDING
L–1	50.70
L–2	45.70
L–3	40.70
L–4	35.70
L–5	30.70
L–6	25.70
L–7	20.70



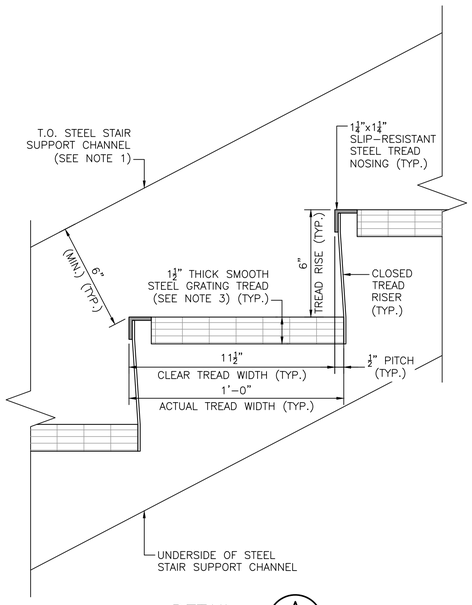
TYPICAL STEEL STAIRCASE ELEVATION

SCALE: ¾" = 1'–0"



TYPICAL STEEL HANDRAIL ELEVATION

NOT TO SCALE



DETAIL A

SCALE: 3" = 1'–0"

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SUBCONSULTANT

PROJECT

Pleasant Street Public Stairway Construction Phase

Bid No. 26-011

Pawtucket, RI

TITLE

STEEL STAIR SECTIONS & DETAILS (1 OF 2)

NO.	REVISIONS	DATE

DRAWN BY:	KP
DESIGNED BY:	BN
CHECKED BY:	TW
ISSUE DATE:	5/13/2026
BETA JOB NO.:	11433

SCALE

AS SHOWN

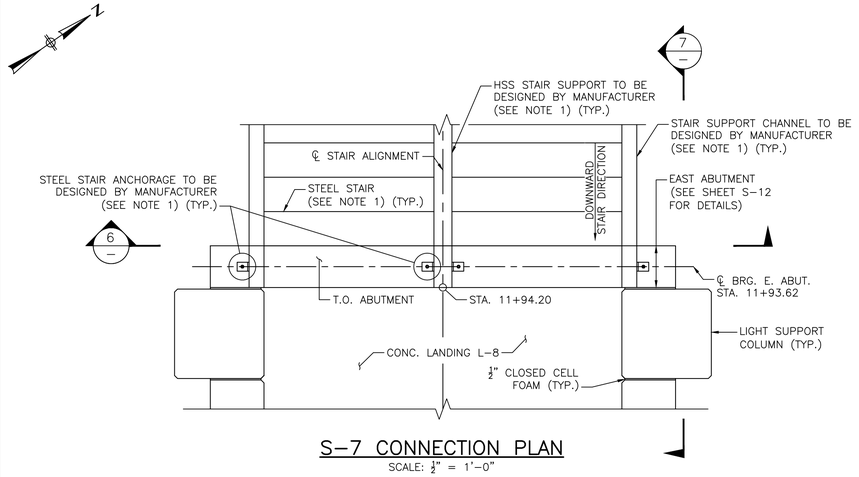
UNLESS OTHERWISE NOTED OR CHANGED BY REPRODUCTION

SHEET NO.

S-8

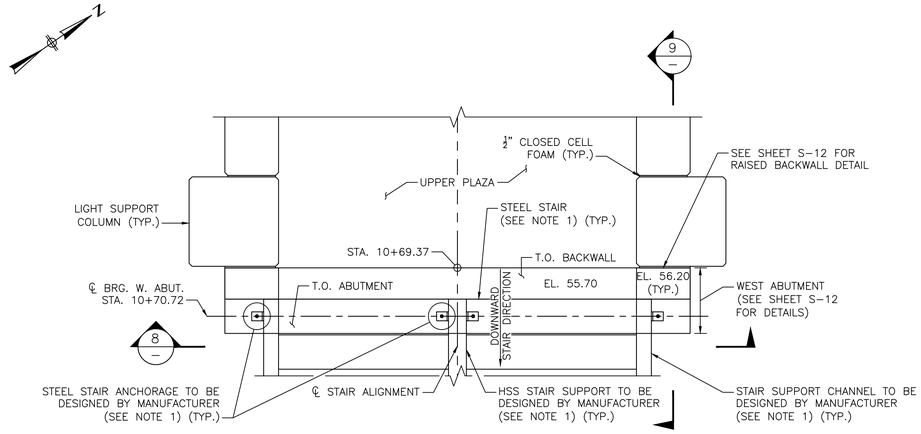
NOTES:

1. STEEL STAIRS, LANDINGS, & GRATING SUPPORTS TO BE DESIGNED BY THE MANUFACTURER. SIZE AND CONFIGURATION OF ALL ANCHORAGES TO BE DESIGNED BY THE MANUFACTURER. CONTRACTOR SHALL COORDINATE WITH MANUFACTURER TO SUBMIT DESIGN AND ANCHORAGE OF STAIRS, LANDING, AND GRATING SUPPORTS TO THE ENGINEER FOR REVIEW AND APPROVAL.



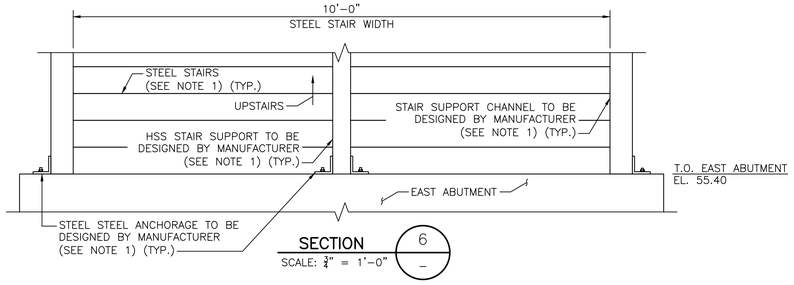
S-7 CONNECTION PLAN

SCALE: ½" = 1'-0"



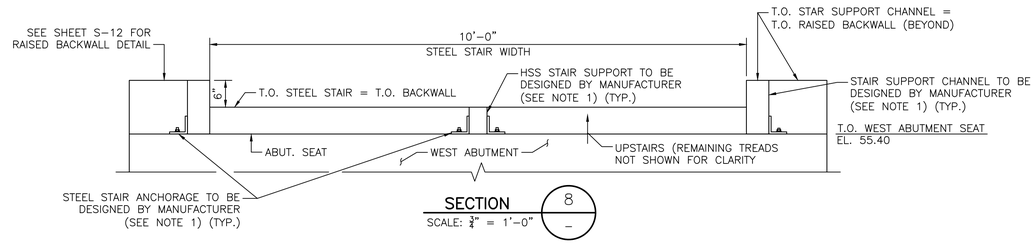
S-1 CONNECTION PLAN

SCALE: ½" = 1'-0"



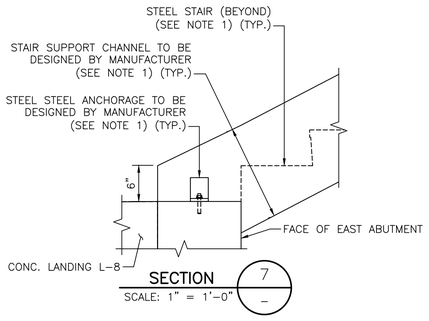
SECTION 6

SCALE: ¼" = 1'-0"



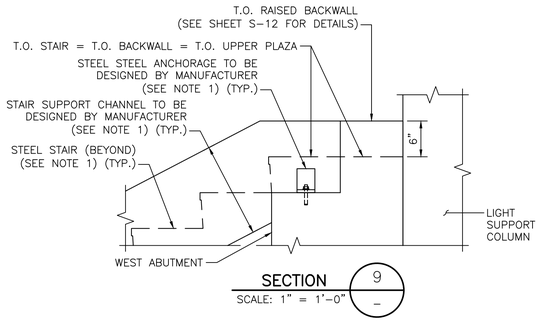
SECTION 8

SCALE: ¾" = 1'-0"



SECTION 7

SCALE: 1" = 1'-0"



SECTION 9

SCALE: 1" = 1'-0"

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REGISTERED PROFESSIONAL ENGINEER
CIVIL

SUBCONSULTANT

PROJECT

Pleasant Street Public Stairway Construction Phase

Bid No. 26-011

Pawtucket, RI

TITLE

STEEL STAIR SECTIONS & DETAILS (2 OF 2)

NO.	REVISIONS	DATE

DRAWN BY:	KP
DESIGNED BY:	BN
CHECKED BY:	TW
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BETA JOB NO.:	11433

SCALE

AS SHOWN

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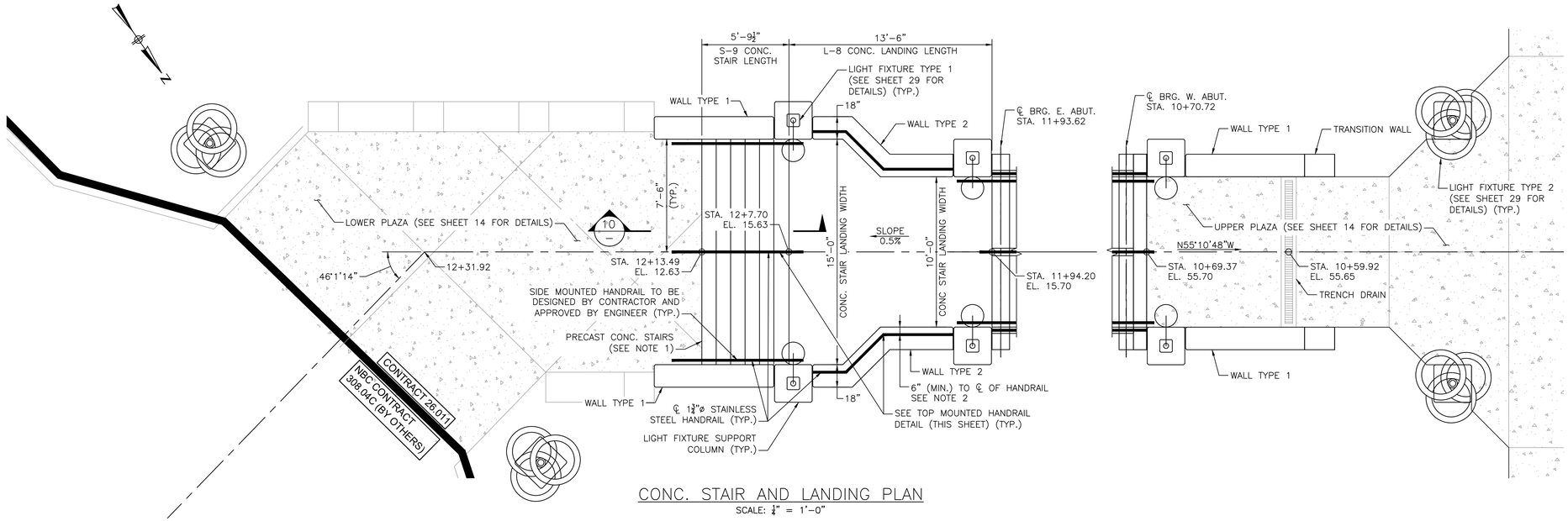
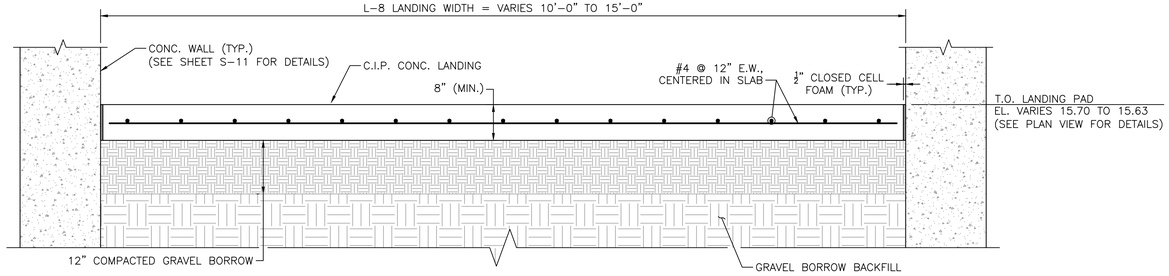
SHEET NO.

S-9



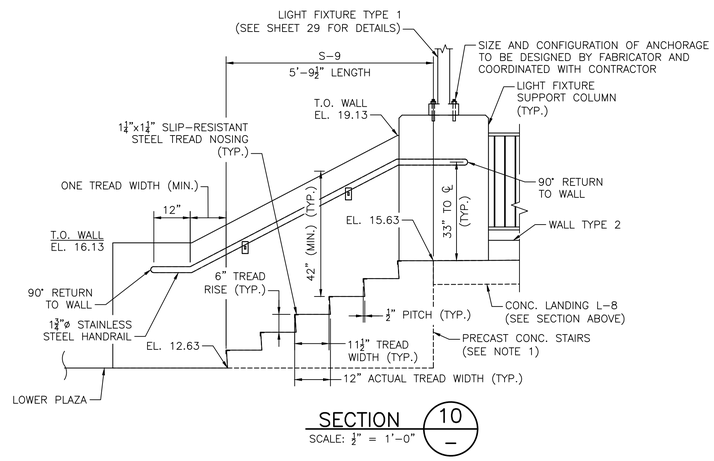
CONC. STAIR AND LANDING PLAN

SCALE: ¼" = 1'-0"



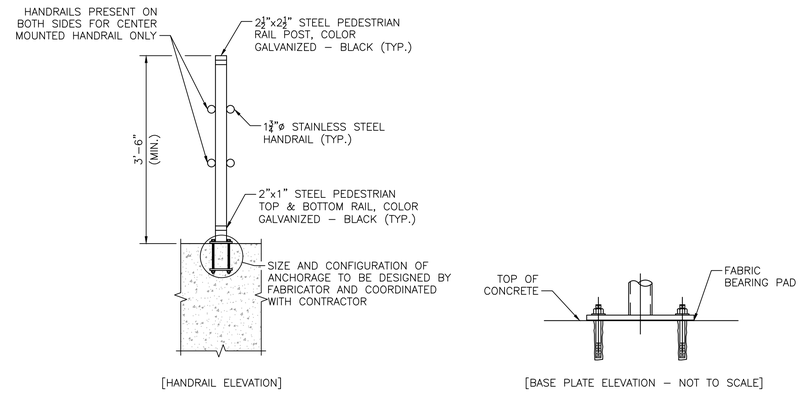
TYPICAL L-8 LANDING PAD SECTION

SCALE: ½" = 1'-0"



SECTION 10/—

SCALE: ½" = 1'-0"



TOP MOUNTED HANDRAIL DETAIL

NOT TO SCALE

NOTES:

1. IF PREFERRED, THE CONTRACTOR MAY USE C.I.P. CONCRETE FOR STAIRCASE S-9. CONTRACTOR SHALL ERECT STAIRCASE AS DETAILED ON SHEET S-10 AND SUBMIT A DESIGN TO THE ENGINEER FOR REVIEW AND APPROVAL.
2. HANDRAIL ANCHORAGE CONFIGURATION MAY VARY FROM CONCEPT SHOWN. CONTRACTOR IS RESPONSIBLE FOR COORDINATING WITH MANUFACTURER TO ENSURE MINIMUM ANCHORAGE CLEARANCES ARE MET.

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SUBCONSULTANT

PROJECT

Pleasant Street Public Stairway Construction Phase

Bid No. 26-011

Pawtucket, RI

TITLE

CONCRETE STAIR & LANDING DETAILS

NO.	REVISIONS	DATE

DRAWN BY: KP
DESIGNED BY: BN
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BETA JOB NO.: 11433

SCALE

AS SHOWN

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SHEET NO.

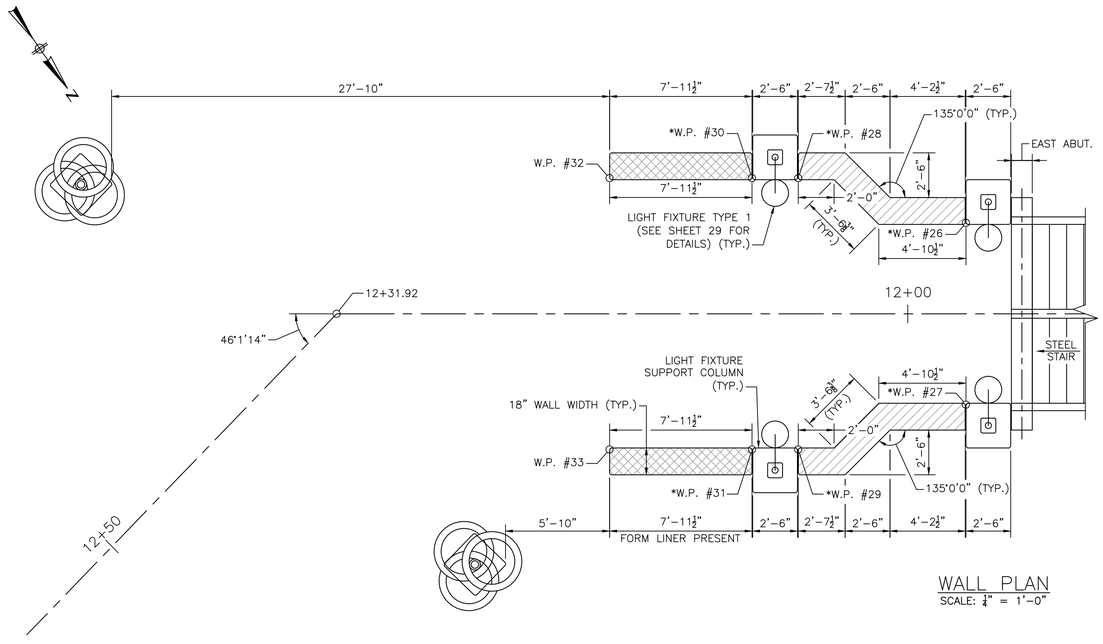
S-10

LOWER PLAZA WALL ELEVATIONS			
WALL TYPE/LOCATION		T.O. WALL	B.O. FOOTING
WALL TYPE 2	STA. 11+96.78 – STA. 12+6.12	16.20	8.82
WALL TYPE 1 @ STAIRS	STA. 12+8.70 – STA. 12+13.49	SEE SECTION 10	8.82
WALL TYPE 1	STA. 12+13.49 – STA. 12+16.66	16.20	8.82

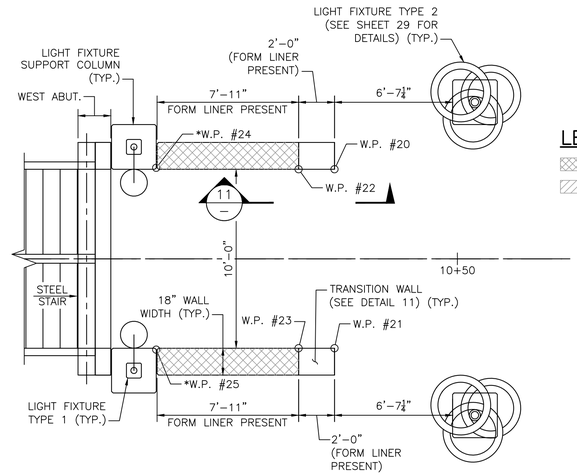
UPPER PLAZA WALL ELEVATIONS			
WALL TYPE/LOCATION		T.O. WALL	B.O. FOOTING
TRANSITION WALL	STA. 10+56.87 – STA. 10+58.87	SEE SECTION 11	43.33
WALL TYPE 1	STA. 10+58.87 – STA. 10+66.78	59.20	43.33

NOTES:

1. 4"ø WEEP HOLES 10'–0" O.C. LOCATED 12" ABOVE THE HEEL OF THE FOOTING SLOPING 1" PER FOOT TOWARDS THE FRONT FACE. PROVIDE 1 CUBIC YARD OF CRUSHED STONE AT EACH END OF WEEP HOLE.
2. HANDRAIL ANCHORAGE CONFIGURATION MAY VARY FROM CONCEPT SHOWN. CONTRACTOR IS RESPONSIBLE FOR COORDINATING WITH MANUFACTURER TO ENSURE MINIMUM ANCHORAGE CLEARANCES ARE MET.



WALL PLAN
SCALE: ¼" = 1'–0"

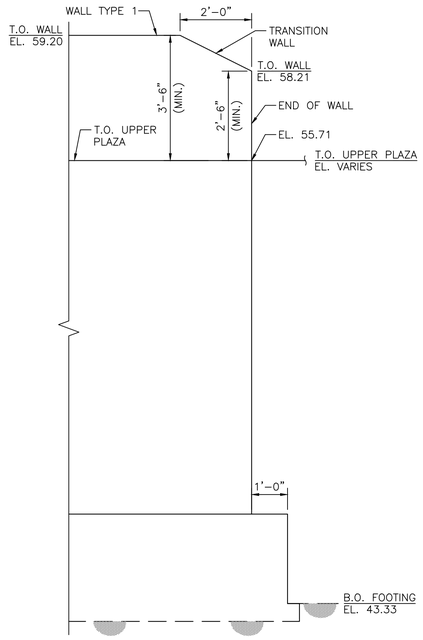


LEGEND:

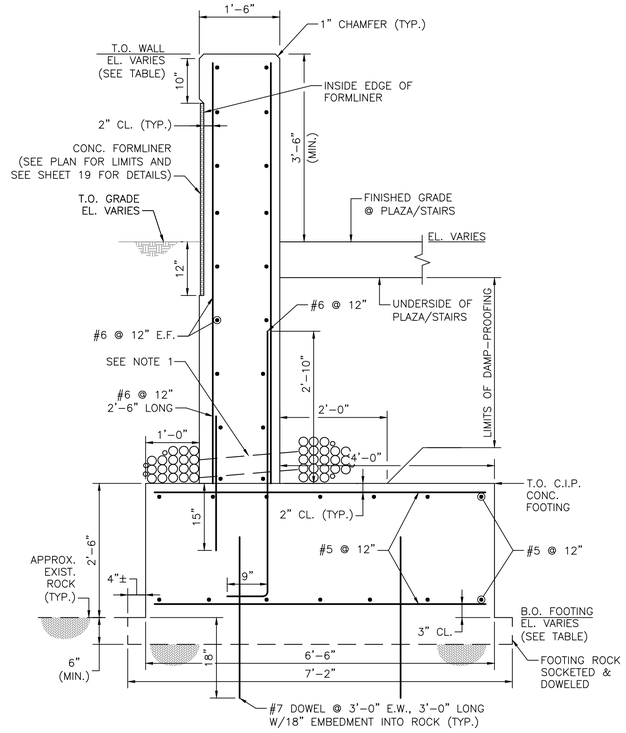
- WALL TYPE 1
- WALL TYPE 2

*NOTE: W.P.'s ARE REFERENCED FROM WALL NOT LIGHT COLUMN

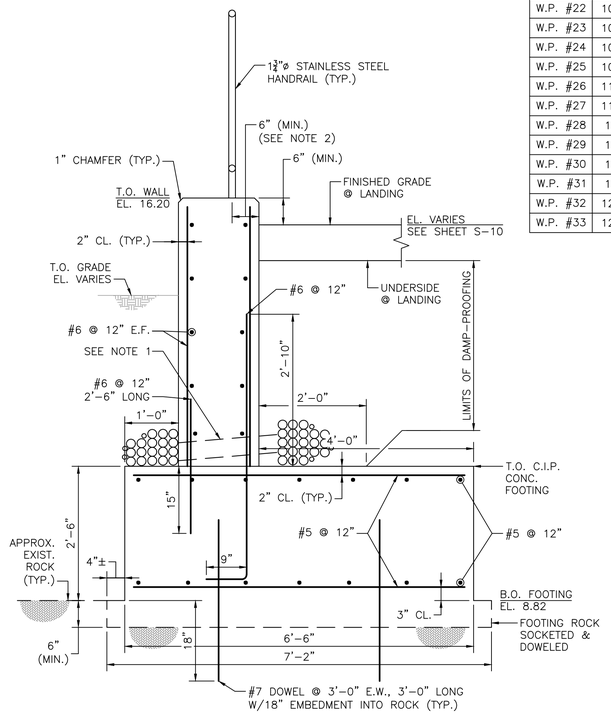
	STATION	OFFSET	NORTHING	EASTING
W.P. #20	10+56.87	5.00 RT	287537.5750	359284.2609
W.P. #21	10+56.87	5.00 LT	287545.7845	359289.9709
W.P. #22	10+58.87	5.00 RT	287536.4330	359285.9028
W.P. #23	10+58.87	5.00 LT	287544.6425	359291.6128
W.P. #24	10+66.83	5.08 RT	287531.8443	359292.3545
W.P. #25	10+66.83	5.08 LT	287540.1904	359298.1595
W.P. #26	11+96.74	5.08 RT	287457.6142	359399.0779
W.P. #27	11+96.74	5.08 LT	287465.9614	359404.8837
W.P. #28	12+6.12	7.58 RT	287450.2323	359405.3127
W.P. #29	12+6.12	7.58 LT	287462.6849	359413.9739
W.P. #30	12+8.70	7.58 RT	287448.7572	359407.4335
W.P. #31	12+8.70	7.58 LT	287461.2085	359416.0938
W.P. #32	12+16.66	7.58 RT	287444.2130	359413.9669
W.P. #33	12+16.66	7.58 LT	287456.6643	359422.6272



SECTION 11/–
SCALE: ½" = 1'–0"



TYPICAL WALL TYPE 1 SECTION
SCALE: ¾" = 1'–0"



TYPICAL WALL TYPE 2 SECTION
SCALE: ¾" = 1'–0"

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Bid No. 26-011

Pawtucket, RI

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WALL PLAN & DETAILS

NO.	REVISIONS	DATE

DRAWN BY: KP
DESIGNED BY: BN
CHECKED BY: TW
ISSUE DATE: 5/13/2026
BETA JOB NO.: 11433

SCALE

AS SHOWN

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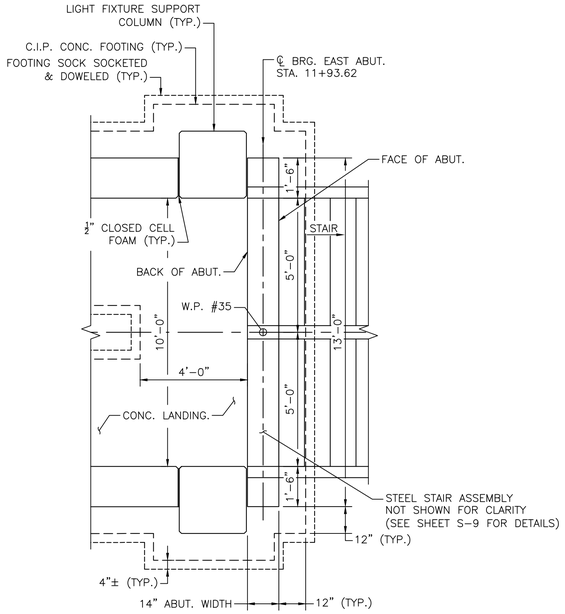
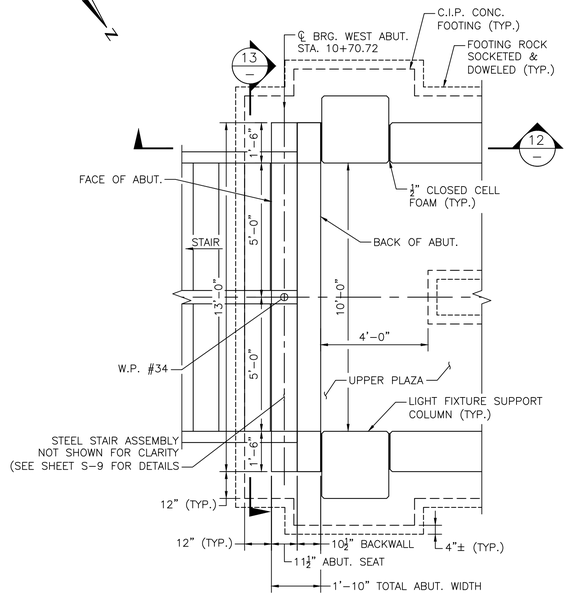
SHEET NO.

S-11



EAST ABUTMENT PLAN

SCALE: ⅜" = 1'-0"



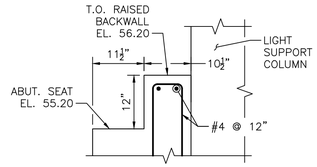
WEST ABUTMENT PLAN

SCALE: ⅜" = 1'-0"

NOTES:

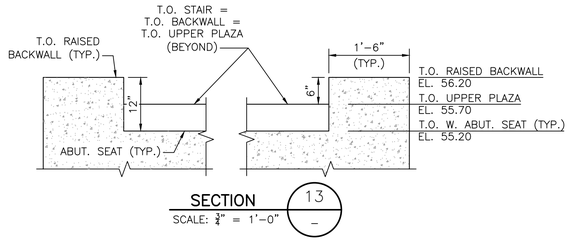
1. 4"ø WEEP HOLES 10'-0" O.C. LOCATED 12" ABOVE THE HEEL OF THE FOOTING SLOPING 1" PER FOOT TOWARDS THE FRONT FACE. PROVIDE 1 CUBIC YARD OF CRUSHED STONE AT EACH END OF WEEP HOLE.

	STATION	OFFSET	NORTHING	EASTING
W.P. #34	10+70.72	0.00	287533.7690	359298.4895
W.P. #35	11+93.62	0.00	287463.5956	359399.3809

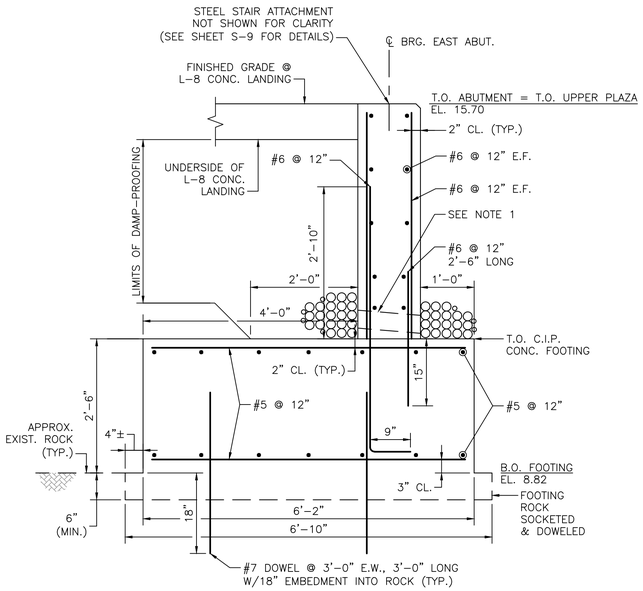


[ABUTMENT REINFORCEMENT NOT SHOWN FOR CLARITY]

SECTION 12/– SCALE: ¾" = 1'-0"

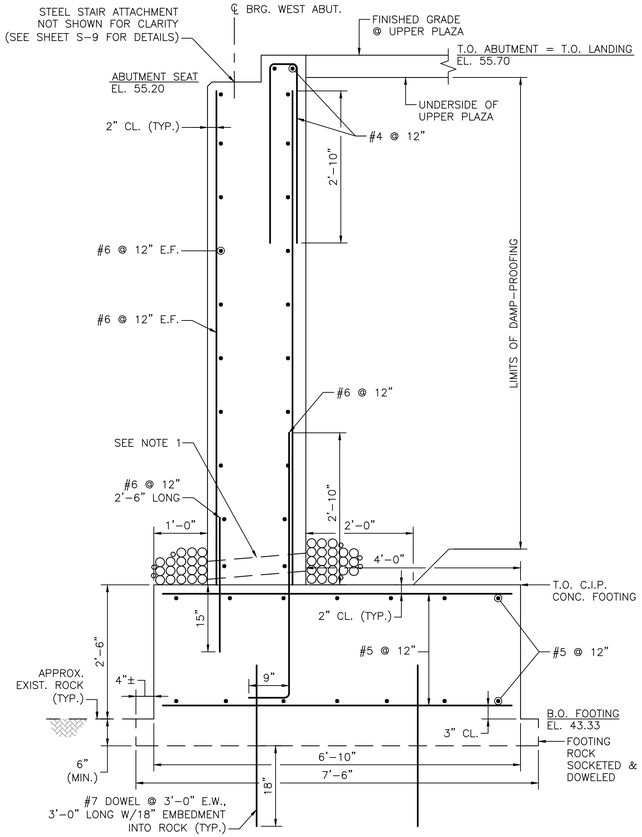


SECTION 13/– SCALE: ¾" = 1'-0"



EAST ABUTMENT SECTION

SCALE: ¾" = 1'-0"



WEST ABUTMENT SECTION

SCALE: ¾" = 1'-0"

PREPARED BY

BETA
www.BETA-Inc.com

REGISTERED PROFESSIONAL

TODD M. WARZECKI 5/13/26
No. 9414
REGISTERED PROFESSIONAL ENGINEER CIVIL

SUBCONSULTANT

PROJECT

Pleasant Street Public Stairway Construction Phase

Bid No. 26-011

Pawtucket, RI

TITLE

ABUTMENT PLANS & DETAILS

NO.	REVISIONS	DATE

DRAWN BY: KP

DESIGNED BY: BN

CHECKED BY: TW

ISSUE DATE: 5/13/2026

BETA JOB NO.: 11433

SCALE

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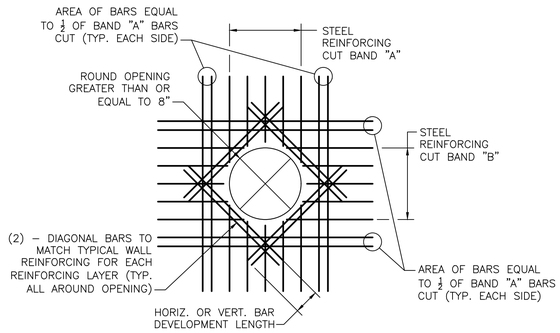
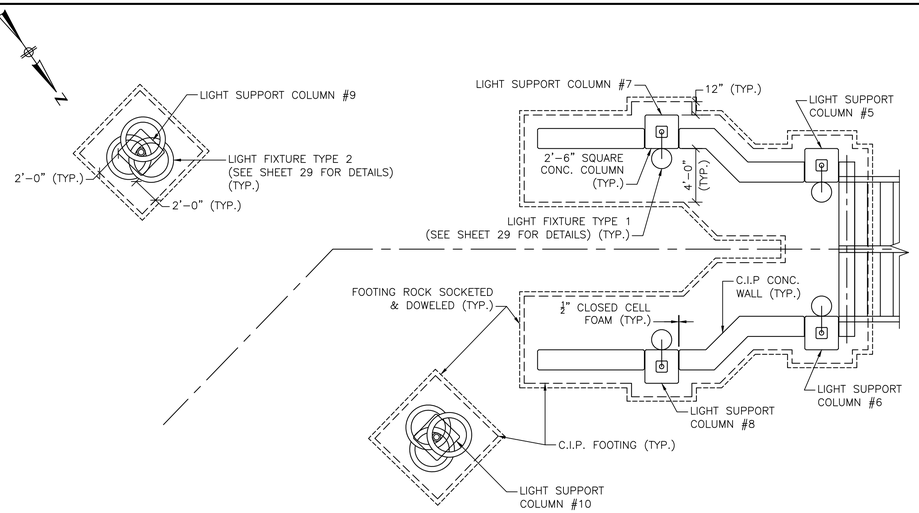
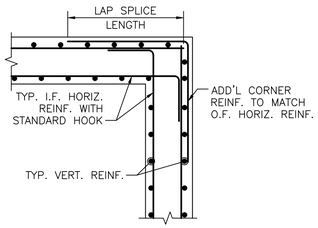


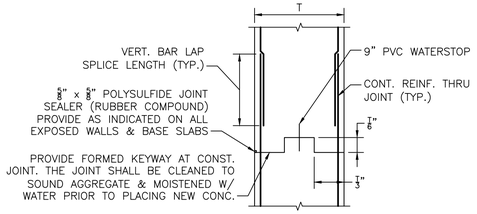
TYPICAL PENETRATION REINFORCING
NOT TO SCALE



TYPICAL LIGHT SUPPORT COLUMN PLAN
SCALE: ⅜" = 1'–0"

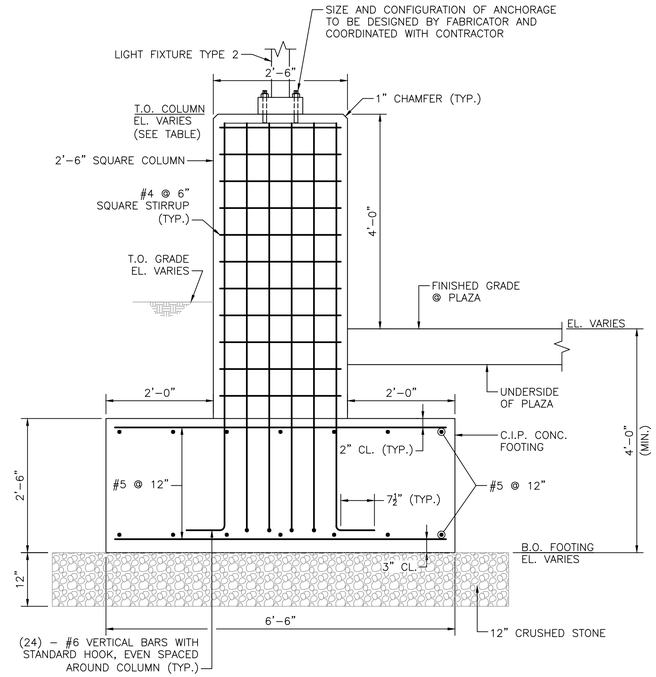


TYPICAL CORNER REINFORCING
NOT TO SCALE

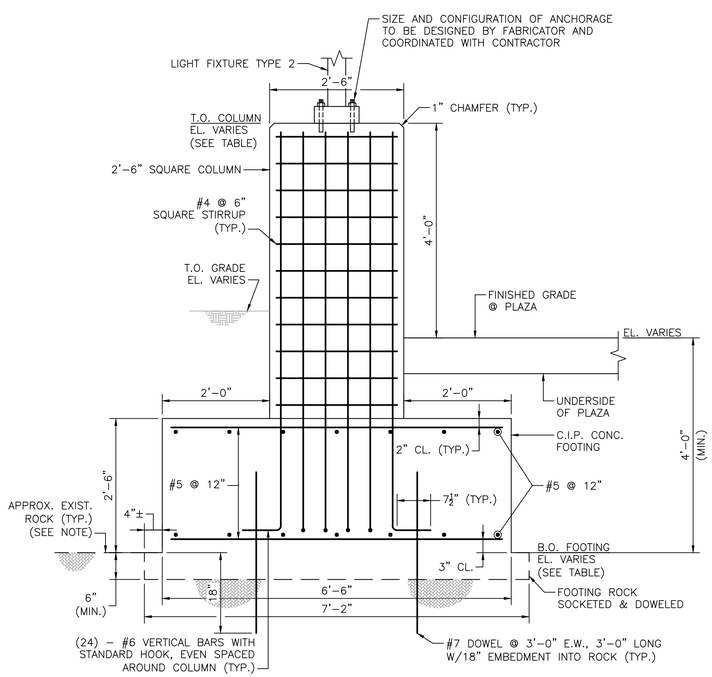


TYPICAL CONST. JOINT / PVC WATERSTOP DETAIL
SCALE: ½" = 1'–0"

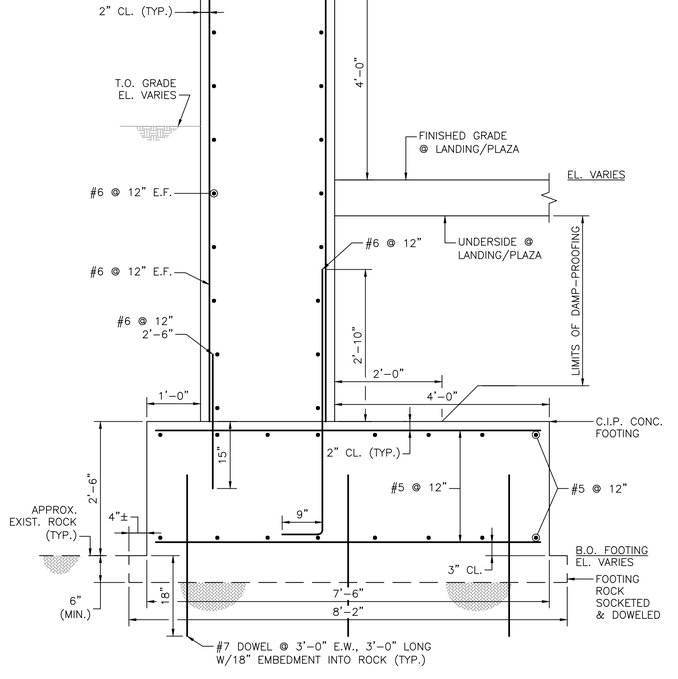
LIGHT SUPPORT COLUMNS						
COLUMN #	CENTER OF COLUMN WORKING POINTS				T.O. COLUMN ELEVATION	B.O. FOOTING ELEVATION
	STATION	OFFSET	NORTHING	EASTING		
COLUMN #1	10+49.02	8.75 RT	287538.9788	359275.6746	59.98±	51.81±
COLUMN #2	10+49.02	8.75 LT	287553.3458	359285.6674	59.91±	51.74±
COLUMN #3	10+68.08	6.25 RT	287530.1490	359292.7487	59.70	43.33
COLUMN #4	10+68.08	6.25 LT	287540.4106	359299.8861	59.70	43.33
COLUMN #5	11+95.49	6.25 RT	287457.3939	359397.3514	19.70	8.82
COLUMN #6	11+95.49	6.25 LT	287467.6558	359404.4889	19.70	8.82
COLUMN #7	12+07.41	8.75 RT	287448.5369	359405.7069	19.70	8.82
COLUMN #8	12+07.41	8.75 LT	287462.9038	359415.6996	19.70	8.82
COLUMN #9	12+36.64	15.30 RT	287427.6383	359438.4256	17.00±	8.82
COLUMN #10	12+24.19	14.02 LT	287457.6470	359432.4833	17.00±	8.82



TYPICAL LIGHT SUPPORT COLUMN SECTION
COLUMN #1, & #2
SCALE: ¾" = 1'–0"



TYPICAL LIGHT SUPPORT COLUMN SECTION
COLUMN #9, & #10
SCALE: ¾" = 1'–0"



TYPICAL LIGHT SUPPORT COLUMN SECTION
COLUMN #3 THRU #8
SCALE: ¾" = 1'–0"

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TITLE

MISCELLANEOUS DETAILS

NO.	REVISIONS	DATE

DRAWN BY: KP

DESIGNED BY: BN

CHECKED BY: TW

ISSUE DATE: 5/13/2026

BETA JOB NO.: 11433

SCALE

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S-13