



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

# **REQUEST FOR PROPOSALS**

**Item Description: RE-BID SITE IMPROVEMENTS AT GANO ST PARK**

**Procurement/MinuteTraq #: 48167**

**Date to be opened: 2/24/2025**

**Issuing Department: Department of Parks**

## **QUESTIONS**

- Please direct questions related to the bidding process, how to fill out forms, and how to submit a bid (Pages 1-8) to the Purchasing Department.
  - Email: [purchasing@providenceri.gov](mailto:purchasing@providenceri.gov)
    - Please use the subject line “**Solicitation Question**”
- Please direct questions relative to the Minority and Women’s Business Enterprise Program and the corresponding forms (Pages 9-13) to the MBE/WBE Outreach Director for the City of Providence, Grace Diaz
  - Email: [gdiaz@providenceri.gov](mailto:gdiaz@providenceri.gov)
    - Please use subject line “**MBE WBE Forms**”
- Please direct questions relative to the specifications outlined (beginning on page 14) to the issuing department’s subject matter expert:
  - Name: Ilya Iskhakov
  - Title: Landscape Designer
  - Email Address: [iiskhakov@providenceri.gov](mailto:iiskhakov@providenceri.gov)

## **Pre-bid Conference**

There will be a Non-Mandatory Pre-Bid Conference

Pre-Bid Conference will be held on 2/11/2025 on site (meet at entrance to the park at Gano and Power Streets) at 10:00AM

## **Deadline for questions submissions:**

**Five business days prior to bid opening date. Friday, February 14, 2025**



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

**INSTRUCTIONS FOR SUBMISSION**

Bids may be submitted up to **2:15 P.M.** on the above meeting date at the **Department of the City Clerk, Room 311, City Hall, 25 Dorrance Street, Providence.** At 2:15 P.M. all bids will be publicly opened and read at the Board of Contract Meeting in Conference Room 305, on the 3<sup>rd</sup> floor of City Hall.

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

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

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

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

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



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

**BID PACKAGE CHECKLIST**

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

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

- Bid Form 1: Bidder's Blank as the cover page/ 1<sup>st</sup> page (*see page 6 of this document*)
- Bid Form 2: Certification of Bidder as 2<sup>nd</sup> page (*see page 7 of this document*)
- Bid Form 3: Certificate Regarding Public Records (*see page 8 of this document*)
- Bid Form 4: Affidavit of City Vendor (*see pages 9 and 10 of this document*)
- Forms from the Minority and Women Business Enterprise Program: Based on Bidder Category. *See forms and instructions enclosed (pages 11-112) or on:*  
<https://www.providenceri.gov/purchasing/minority-women-owned-business-mbewbe-procurement-program/>

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

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

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

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



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

**NOTICE TO VENDORS**

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



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

**BID TERMS**

1. Financial assurances may be required in order to be a successful bidder for Commodity or Construction and Service contracts. If either of the first two checkboxes below is checked, the specified assurance must accompany a bid, or the bid will not be considered by the Board of Contract and Supply. The third checkbox indicates the lowest responsible bidder will be contacted and required to post a bond to be awarded the contract.
  - a)  A certified check for \$\_\_\_\_\_ must be deposited with the City Clerk as a guarantee that the Contract will be signed and delivered by the bidder.
  - b)  A bid bond in the amount of 5 per centum (%) of the proposed total price, must be deposited with the City Clerk as a guarantee that the contract will be signed and delivered by the bidder; and the amount of such bid bond shall be retained for the use of the City as liquidated damages in case of default. Any person signing a bid bond as an attorney-in-fact shall include with the bid bond an original, or a photocopy or facsimile of an original, power of attorney.
  - c)  A performance and payment bond with a satisfactory surety company will be posted by the bidder in a sum equal to one hundred per centum (100%) of the awarded contract.
  - d)  No financial assurance is necessary for this item.
2. Awards will be made within **ninety (90) days of bid opening**. All bid prices will be considered firm, unless qualified otherwise. Requests for price increases will not be honored.
3. Failure to deliver within the time quoted or failure to meet specifications may result in default in accordance with the general specifications. It is agreed that deliveries and/or completion are subject to strikes, lockouts, accidents, and Acts of God.

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

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

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

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



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

**BID FORM 1: Bidders Blank**

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

\_\_\_\_\_  
Title



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

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

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

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

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

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

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

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

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



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

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

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

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

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

understanding that:

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

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

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

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

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





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

**BID FORM 4: Affidavit of City Vendor**

Per our Code of Ordinances Sec. 21.-28.1 (e), this form applies to a) the business, b) any political action committee whose name includes the name of the business, c) all persons holding ten (10) percent or greater equity interest or five thousand dollars (\$5,000.00) or greater cash value interest in the business at any time during the reporting period, d) all executive officers of the business entity, e) any spouse or dependent child of any individual identified in a) though d) above.

Executive officers who are not residents of the state of Rhode Island are exempted from this requirement.

Per R.I.G.L. § 36-14-2, "Business" means a sole proprietorship, partnership, firm, corporation, holding company, joint stock company, receivership, trust, or any other entity recognized in law through which business for profit or not for profit is conducted.

Name of the person making this affidavit: \_\_\_\_\_

Position in the "Business" \_\_\_\_\_

Name of Entity \_\_\_\_\_

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

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

The number of persons or entities in your entity that are required to report under Sec. 21.-28.1 (e): \_\_\_\_\_

**Read the following paragraph and answer one of the options:**

Within the 12 month period preceding the date of this bid submission with the City of Providence, or with respect to the contracts that are not in writing within the 12 month period preceding the date of notification that the contract has reached the \$100,000 threshold, have you made campaign contributions within a calendar year to (please list all persons or entities required under Sec. 21.-28.1 (e)).

a. Members of the Providence City Council?  Yes  No

- If Yes, please complete the following:

Recipient(s) of the Contribution:

Contribution Date(s):

Contribution Amount(s):

b. Candidates for election or reelection to the Providence City Council?  Yes  No

- If Yes, please complete the following:

Recipient(s) of the Contribution:

Contribution Date(s):

Contribution Amount(s):



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

c. The Mayor of Providence?  Yes  No

- If Yes, please complete the following:

Recipient(s) of the Contribution:

Contribution Date(s):

Contribution Amount(s):

d. Candidates for election or reelection to the office of Mayor of Providence?  Yes  No

- If Yes, please complete the following:

Recipient(s) of the Contribution:

Contribution Date(s):

Contribution Amount(s):

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Signed under the pains and penalties of perjury.

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Position



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

**MBE/WBE Participation Plan**

**Please complete separate forms for each MBE/WBE subcontractor/supplier to be utilized on the solicitation.**

|  |  |                         |             |                         |
|--|--|-------------------------|-------------|-------------------------|
| Bidder's Name:   |  |                         |             |                         |
| Bidder's Address:  |  |                         |             |                         |
| Point of Contact:  |  |                         |             |                         |
| Telephone:   |  |                         |             |                         |
| Email:   |  |                         |             |                         |
| Procurement #:   |  |                         |             |                         |
| Project Name:  |  |                         |             |                         |
| Which one of the following describes your business' status in terms of Minority and/or Woman Owned Business Enterprise certification with the State of Rhode Island? (Check all that apply).   | <input type="checkbox"/> MBE <input type="checkbox"/> WBE <input type="checkbox"/> Neither MBE nor WBE |                         |             |                         |
| <p>This form is intended to capture commitments between the prime contractor/vendor and MBE/WBE subcontractors and suppliers, including a description of the work to be performed and the percentage of the work as submitted to the prime contractor/vendor. Please note that all MBE/WBE subcontractors/suppliers must be certified by the Office of Diversity, Equity and Opportunity at the time of bid. The MBE/WBE Directory can be found <a href="#">here</a>. Please visit, the <a href="#">City's MBE/WBE page</a> for details of the program (e.g. instructions and requirements).</p> <ul style="list-style-type: none"> <li><b>Nonprofit organizations are not required to complete the rest of this form.</b></li> <li><b>Construction projects unable to identify subcontractors prior to bid submission (e.g. Design Build) are required to provide updates to the MBE/WBE Outreach Office</b></li> </ul> |  |                         |             |                         |
| Name of Subcontractor/Supplier:  |  |                         |             |                         |
| Type of RI Certification:  | <input type="checkbox"/> MBE <input type="checkbox"/> WBE <input type="checkbox"/> Neither             |                         |             |                         |
| Address:   |  |                         |             |                         |
| Point of Contact:  |  |                         |             |                         |
| Telephone:   |  |                         |             |                         |
| Email:   |  |                         |             |                         |
| Detailed Description of Work to Be Performed by Subcontractor or Materials to be Supplied by Supplier Per the Scope of Work provided in the RFP  |  |                         |             |                         |
| Total Contract Value (\$):   |  | Subcontract Value (\$): |             | Participation Rate (%): |
| Anticipated Date of Performance:   |  |                         |             |                         |
| I certify under penalty of perjury that the forgoing statements are true and correct.  |  |                         |             |                         |
| <b>Prime Contractor/Vendor Signature</b>   | <b>Title</b>   |                         | <b>Date</b> |                         |
|  |  |                         |             |                         |
| <b>Subcontractor/Supplier Signature</b>  | <b>Title</b>   |                         | <b>Date</b> |                         |
|  |  |                         |             |                         |

**\*If you did not meet the 20% MBE/WBE combined participation goal, submit a Waiver Request Form.**



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

**MBE/WBE Waiver Request Form**

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

Submit this form to the City of Providence MBE/WBE Outreach Director, Grace Diaz, at [gdiaz@providenceri.gov](mailto:gdiaz@providenceri.gov) or [mbe-wbe@providenceri.gov](mailto:mbe-wbe@providenceri.gov), for review **prior to bid submission**. This waiver applies only to the current bid which you are submitting to the City of Providence and does not apply to other bids your company may submit in the future. **In case a waiver is needed, City Department Directors should not recommend a bidder for an award if this form is not included, absent or is not signed by the city of Providence MBE/WBE director.**

Prime Bidder: \_\_\_\_\_ Contact Email and Phone \_\_\_\_\_  
Company Name, Address: \_\_\_\_\_ Trade \_\_\_\_\_  
Project /Item Description (as seen on RFP): \_\_\_\_\_

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

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

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

\_\_\_\_\_  
Signature of Prime Contractor /  
or Duly Authorized Representative

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

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

\_\_\_\_\_  
Signature of City of Providence  
MBE/WBE Outreach Director /  
or Duly Authorized Representative

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

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



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

## **SUPPLEMENTAL INFORMATION**

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

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

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

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

**You must be able to provide:**

- Business Tax ID will be requested after an award is approved by the Board of Contract and Supply.
- Proof of Insurance.
- Certificate of Good Standing with the Rhode Island Secretary of State.
- UEI Number – Registration with SAM.gov for receipt of federal (ARPA) Funds
- Registrations can be made at <https://usfcr.com/sam-registration/>



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

**SUPPLEMENTAL BID FORM**

To whom it may concern:

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

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

Herewith in accordance with the instructions to Bidders.

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

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

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

**CERTIFICATION OF NON-SEGREGATED FACILITIES**

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

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



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

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

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

Name of Authorized Representative (Contact):  
\_\_\_\_\_

By \_\_\_\_\_  
*(Signature)*  
Title \_\_\_\_\_

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

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

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

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

| <u>Addendum No.</u> | <u>Date</u> | <u>Addendum No.</u> | <u>Date</u> |
|---------------------|-------------|---------------------|-------------|
| _____               | _____, 20__ | _____               | _____, 20__ |
| _____               | _____, 20__ | _____               | _____, 20__ |

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

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

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

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



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

**APPRENTICE REQUIREMENTS**

Attention of prospective bidders is called to the fact that this project is to be bid upon and executed under the City of Providence Code of Ordinances Chapter 21 Art. II Section 21-28.1 c(1) and (2) related to utilizing apprentices in the contract. This ordinance outlines requirements for utilizing not less than 15% of total hours worked by apprentices. The City may lower this percentage only if it determines in writing that compliance is not feasible or that it would be unduly cost prohibitive to the project. The attention of prospective bidders is also called to the fact that reporting the efforts undertaken and progress towards achieving the requirements in this ordinance is a condition for payment. Compliance reporting shall be submitted with any contract payment requisition, in a format to be specified by the City. This demonstration of compliance through such reports shall be a condition of the requisition for payment to be processed. Upon the contract being awarded to the successful bidder, a mandatory meeting will be scheduled to review the project requirements relative to apprenticeship requirements and the process and protocols by which these goals will be achieved. At this meeting, specific forms and procedures for the documentation and achievement of these requirements by the successful bidder will be provided, discussed and agreed upon for the execution of the contract.

**FIRST SOURCE REQUIREMENTS**

Attention of prospective bidders is called to the fact that this project is to be bid upon and executed under the City of Providence Code of Ordinances Chapter 21 Art. III 1/2 First Source Agreements Sec. 21-91 through 21-96. This ordinance outlines requirements for hiring Providence residents to work on this project. The City may waive this requirement only upon a determination in writing that qualified residents of Providence are not available for the project, pursuant to Sec. 21-94(e). The attention of prospective bidders is called to the fact that reporting the efforts undertaken and progress towards achieving the requirements in this ordinance is a condition for payment. Compliance reporting shall be submitted with any contract payment requisition, in a format to be specified by the City. This demonstration of compliance through such reports shall be a condition of the requisition for payment to be processed. Upon the contract being awarded to the successful bidder, a mandatory meeting will be scheduled to review the project requirements relative to the First Source Agreements and the process and protocols by which these goals will be achieved. At this meeting, specific forms and procedures for the documentation and achievement of these requirements by the successful bidder will be provided, discussed and agreed upon for the execution of the contract.





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

**CITY OF PROVIDENCE STANDARD TERMS & CONDITIONS**

1. The terms “you” and “your” contained herein refer to the person or entity that is a party to the agreement with the City of Providence (“the City”) and to such person’s or entity’s employees, officers, and agents.
2. The Request For Proposals (“RFP”) and these Standard Terms and Conditions together constitute the entire agreement of the parties (“the Agreement”) with regard to any and all matters. By your submission of a bid proposal or response to the City’s RFP, you accept these Standard Terms & Conditions and agree that they supersede any conflicting provisions provided by bid or in any terms and conditions contained or linked within a bid and/or response. Changes in the terms and conditions of the Agreement, or the scope of work thereunder, may only be made by a writing signed by the parties.
3. You are an independent contractor and in no way does this Agreement render you an employee or agent of the City or entitle you to fringe benefits, workers’ compensation, pension obligations, retirement or any other employment benefits. The City shall not deduct federal or state income taxes, social security or Medicare withholdings, or any other taxes required to be deducted by an employer, and this is your responsibility to yourself and your employees and agents.
4. You shall not assign your rights and obligations under this Agreement without the prior written consent of the City. Any assignment without prior written consent of the City shall be voidable at the election of the City. The City retains the right to refuse any and all assignments in the City’s sole and absolute discretion.
5. Invoices submitted to the City shall be payable sixty (60) days from the time of receipt by the City. Invoices shall include support documentation necessary to evidence completion of the work being invoiced. The City may request any other reasonable documentation in support of an invoice.
6. The time for payment shall not commence, and invoices shall not be processed for payment, until you provide reasonably sufficient support documentation. In no circumstances shall the City be obligated to pay or shall you be entitled to receive interest on any overdue invoice or payment. In no circumstances shall the City be obligated to pay any costs associated with your collection of an outstanding invoice.
6. For contracts involving construction, alteration, and/or repair work, the provisions of applicable state labor law concerning payment of prevailing wage rates (R.I. Gen. Laws §§ 37-13-1 et seq., as amended) and the City’s First Source Ordinance (Providence Code of Ordinances §§ 21-91 et seq., as amended) apply.
7. With regard to any issues, claims, or controversies that may arise under this Agreement, the City shall not be required to submit to dispute resolution or mandatory/binding arbitration. Nothing prevents the parties from mutually agreeing to settle any disputes using mediation or non-binding arbitration.
8. To the fullest extent permitted by law, you shall indemnify, defend, and hold harmless the City, its employees, officers, agents, and assigns from and against any and all claims, damages, losses, allegations, demands, actions, causes of action, suits, obligations, fines, penalties, judgments, liabilities, costs and expenses, including but not limited to attorneys’ fees, of any nature whatsoever arising out of, in connection with, or resulting from the performance of the work provided in the Agreement.
9. You shall maintain throughout the term of this Agreement the insurance coverage that is required by the RFP or, if none is required in the RFP, insurance coverage that is considered in your industry to be commercially reasonable, and you agree to name the City as an additional insured on your general liability policy and on any umbrella policy you carry.



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

10. The City shall not subject itself to any contractual limitations on liability. The City shall have the time permitted within the applicable statute of limitations, and no less, to bring or assert any and all causes of action, suits, claims or demands the City may have arising out of, in connection with, or resulting from the performance of the work provided in the Agreement, and in no event does the City agree to limit your liability to the price of the Agreement or any other monetary limit.
11. The City may terminate this Agreement upon five (5) days' written notice to you if you fail to observe any of the terms and conditions of this Agreement, or if the City believes your ability to perform the terms and conditions of this Agreement has been materially impaired in any way, including but in no way limited to loss of insurance coverage, lapsing of a surety bond, if required, declaration of bankruptcy, or appointment of a receiver. In the event of termination by the City, you shall be entitled to just and equitable compensation for any satisfactory work completed and expenses incurred up to the date of termination.
12. Written notice hereunder shall be deemed to have been duly served if delivered in person to the individual or member of the firm or entity or to an officer of the entity for whom it was intended, or if delivered at or sent by registered or certified mail to the last business address known by the party providing notice.
13. In no event shall the Agreement automatically renew or be extended without a writing signed by the parties.
14. You agree that products produced or resulting from the performance of the Agreement are the sole property of the City and may not be used by you without the express written permission of the City.
15. For any Agreement involving the sharing or exchange of data involving potentially confidential and/or personal information, you shall comply with any and all state and/or federal laws or regulations applicable to confidential and/or personal information you receive from the City, including but not limited to the Rhode Island Identity Theft Protection Act, R.I. Gen. Laws § 11-49.3-1, during the term of the Agreement. You shall implement and maintain appropriate physical, technical, and administrative security measures for the protection of, and to prevent access to, use, or disclosure of, confidential and/or personal information. In the event of a breach of such information, you shall notify the City of such breach immediately, but in no event later than twenty-four (24) hours after discovery of such breach.
16. The Agreement is governed by the laws of the State of Rhode Island. You expressly submit yourself to and agree that any and all actions arising out of, in connection with, or resulting from the performance of the Agreement or relationship between the parties shall occur solely in the venue and jurisdiction of the State of Rhode Island or the federal court located in Rhode Island.
17. The failure of the City to require performance of any provision shall not affect the City's right to require performance at any time thereafter, nor shall a waiver of any breach or default of this Agreement constitute a waiver of any subsequent breach or default or a waiver of the provision itself.
18. If any term or provision of this Agreement, or the application thereof to any person or circumstance shall, in any extent, be invalid or unenforceable, the remainder of this Agreement shall not be affected thereby, and each term and provision shall be valid and enforceable to the fullest extent permitted by law.



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

**ARPA REQUIREMENTS ADDENDUM**

***Federal and State Contract and Purchasing Requirements***

The following terms and conditions apply to all contractors, vendors, or subrecipients of the City of Providence and all subrecipients of subrecipients of the City of Providence and all contractors or vendors hired by the subrecipient, according to the City's Award Terms and Conditions; by ARPA and its implementing regulations; and as established by the Treasury Department.

**1. Equal Opportunity.**

Contractor shall comply with Executive Order 11246, "Equal Employment Opportunity," as amended by EO 11375, "Amending Executive Order 11246 Relating to Equal Employment Opportunity," and as supplemented by regulations at 41 CFR part 60, "Office of Federal Contract Compliance Programs, Equal Employment Opportunity, Department of Labor."

**2. Minority and Women Business Enterprises (if applicable to this Contract)**

Contractor hereby agrees to comply with the following when applicable: The requirements of Executive Orders 11625 and 12432 (concerning Minority Business Enterprise), and 12138 (concerning Women's Business Enterprise), when applicable. Accordingly, the Contractor hereby agrees to take affirmative steps to assure that women and minority businesses are utilized when possible as sources of supplies, equipment, construction, and services. Affirmative steps shall include the following:

- a) Including qualified women's business enterprises and small and minority businesses on solicitation lists;
- b) Assuring that women's enterprises and small and minority businesses are solicited whenever they are potential sources;
- c) When economically feasible, dividing total requirements into smaller tasks or quantities so as to permit maximum participation by small and minority business, and women's business enterprises;
- d) Where the requirement permits, establishing delivery schedules which will encourage participation by women's business enterprises and small and minority business;
- e) Using the services and assistance of the Small Business Administration, and the U.S. Office of Minority Business Development Agency of the Department of Commerce; and
- f) If any subcontracts are to be let, requiring the prime Contractor to take the affirmative steps in a through e above.

For the purposes of these requirements, a Minority Business Enterprise (MBE) is defined as an enterprise that is at least 51 percent owned and controlled in its daily operation by members of the following groups: Black, Hispanic, Asian or Pacific Islander, Native American, or Alaskan Natives. Women Business Enterprise (WBE) is defined as an enterprise that is at least 51 percent owned and controlled in its daily operation by women.



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

**3. Suspension and Debarment. (Applies to all purchases.)**

- (A) This contract is a covered transaction for purposes of 2 CFR pt. 180 and 2 CFR pt. 3000. As such, the Contractor is required to verify that none of Contractor's principals (defined at 2 CFR § 180.995) or its affiliates (defined at 2 CFR § 180.905) are excluded (defined at 2 CFR § 180.940) or disqualified (defined at 2 CFR § 180.935).
- (B) The Contractor must comply with 2 CFR pt. 180, subpart C and 2 CFR pt. 3000, subpart C, and must include a requirement to comply with these regulations in any lower tier covered transaction it enters into.
- (C) This certification is a material representation of fact relied upon by the City of PROVIDENCE. If it is later determined that the contractor did not comply with 2 CFR pt. 180, subpart C and 2 CFR pt. 3000, subpart C, in addition to remedies available to the City, the Federal Government may pursue available remedies, including but not limited to suspension and/or debarment.
- (D) The Contractor agrees to comply with the requirements of 2 CFR pt. 180, subpart C and 2 CFR pt. 3000, subpart C while this offer is valid and throughout the period of any contract that may arise from this offer. The Contractor further agrees to include a provision requiring such compliance in its lower tier covered transactions.

**4. Byrd Anti-Lobbying Amendment, 31 U.S.C. § 1352, as amended. (Applies to all purchases.)**

Contractor certifies that it will not and has not used Federal appropriated funds to pay any person or organization for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, officer or employee of Congress, or an employee of a Member of Congress in connection with obtaining any Federal contract, grant, or any other award covered by 31 U.S.C. § 1352. Contractor shall also disclose any lobbying with non-Federal funds that takes place in connection with obtaining any Federal award. Such disclosures are forwarded from tier to tier up to the recipient who in turn will forward the certification(s) to the awarding agency.

\*Purchases over \$100,000 - Contractors must sign the certification on the last page of this addendum\*

**5. Access to Records. (Applies to all purchases.)**

- A. The Contractor agrees to provide the City of PROVIDENCE, the U.S. Department of Treasury, the Comptroller General of the United States, or any of their authorized representatives access to any books, documents, papers, and records of the Contractor which are directly pertinent to this contract for the purposes of making audits, examinations, excerpts, and transcriptions. The Contractor agrees to permit any of the foregoing parties to reproduce by any means or to copy excerpts and transcriptions as reasonably needed and agrees to cooperate with all such requests.
- B. The Contractor agrees to provide the Treasury Department or authorized representatives access to construction or other work sites pertaining to the work being completed under the contract.
- C. No language in this contract is intended to prohibit audits or internal reviews by the Treasury Department or the Comptroller General of the United States.

**6. Rights to Inventions Made Under a Contract or Agreement.**

Contracts or agreements for the performance of experimental, developmental, or research work shall provide for the rights of the Federal Government and the recipient in any resulting invention in accordance with 37 CFR part 401, "Rights to



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

Inventions Made by Nonprofit Organizations and Small Business Firms Under Government Grants, Contracts and Cooperative Agreements," and any applicable implementing regulations.

**7. Contract Work Hours and Safety Standards Act (40 U.S.C. 327 through 333) (applies only to purchases over \$100,000, when laborers or mechanics are used.)**

Where applicable, all contracts in excess of \$100,000 that involve the employment of mechanics or laborers shall include a provision for compliance with 40 U.S.C. 3702 and 3704 of the Contract Work Hours and Safety Standards Act, as supplemented by Department of Labor regulations (29 CFR part 5). Under Section 3702 of the Act, each contractor shall be required to compute the wages of every mechanic and laborer on the basis of a standard workweek of 40 hours. Work in excess of the standard workweek is permissible provided that the worker is compensated at a rate of not less than 1 1/2 times the basic rate of pay for all hours worked in excess of 40 hours in the workweek. The requirements of 40 U.S.C. 3704 are applicable to construction work and provides that no laborer or mechanic shall be required to work in surroundings or under working conditions which are unsanitary, hazardous, or dangerous. These requirements do not apply to the purchases of supplies or materials or articles ordinarily available on the open market, or contracts for transportation or transmission of intelligence.

**8. Clean Air Act & Federal Water Pollution Control Act (applies to purchases of more than \$150,000.)**

A. The Contractor agrees to comply with all applicable standards, orders or regulations issued pursuant to the Clean Air Act, as amended, 42 U.S.C. § 7401 et seq.

B. The Contractor agrees to comply with all applicable standards, orders, or regulations issued pursuant to the Federal Water Pollution Control Act, as amended, 33 U.S.C. 1251 et seq.

C. The Contractor agrees to report each violation of the Clean Air Act and the Water Pollution Control Act to the City of PROVIDENCE

D. and understands and agrees that the City will, in turn, report each violation as required to assure notification to the Federal Emergency Management Agency, and the appropriate Environmental Protection Agency Regional Office.

E. Contractor agrees to include these requirements in each subcontract exceeding \$150,000 financed in whole or in part with Federal assistance.

**9. Prohibition on certain telecommunications and video surveillance services or equipment (Huawei and ZTE)**

Contractor is prohibited from obligating or expending loan or grant funds to:

1. Procure or obtain;

2. Extend or renew a contract to procure or obtain; or

3. Enter into a contract (or extend or renew a contract) to procure or obtain equipment, services, or systems that uses covered telecommunications equipment or services as a substantial or essential component of any system, or as critical technology as part of any system. As described in Public Law 115-232, section 889, covered telecommunications equipment is telecommunications equipment produced by Huawei Technologies Company or ZTE Corporation (or any subsidiary or affiliate of such entities).



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

- I. For the purpose of public safety, security of government facilities, physical security surveillance of critical infrastructure, and other national security purposes, video surveillance and telecommunications equipment produced by Hytera Communications Corporation, Hangzhou Hikvision Digital Technology Company, or Dahua Technology Company (or any subsidiary or affiliate of such entities).
- II. Telecommunications or video surveillance services provided by such entities or using such equipment.
- III. Telecommunications or video surveillance equipment or services produced or provided by an entity that the Secretary of Defense, in consultation with the Director of the National Intelligence or the Director of the Federal Bureau of Investigation, reasonably believes to be an entity owned or controlled by, or otherwise connected to, the government of a covered foreign country.

**10. Buy USA - Domestic Preference for certain procurements using federal funds.**

Contractor should, to the greatest extent practicable under a federal award, provide a preference for the purchase, acquisition, or use of goods, products, or materials produced in the United States (including but not limited to iron, aluminum, steel, cement, and other manufactured products). The requirements of this section must be included in all subawards including all contracts and purchase orders for work or products under this award. For purposes of this section:

1. "Produced in the United States" means, for iron and steel products, that all manufacturing processes, from the initial melting stage through the application of coatings, occurred in the United States.
2. "Manufactured products" means items and construction materials composed in whole or in part of non-ferrous metals such as aluminum; plastics and polymer-based products such as polyvinyl chloride pipe; aggregates such as concrete; glass, including optical fiber; and lumber.

**11. Procurement of Recovered Materials: (applies only if the work involves the use of materials)**

- A. In the performance of this contract, the Contractor shall make maximum use of products containing recovered materials that are EPA-designated items unless the product cannot be acquired:
  - I. Competitively within a timeframe providing for compliance with the contract performance schedule;
  - II. Meeting contract performance requirements; or
  - III. At a reasonable price.
- B. Information about this requirement, along with the list of EPA - designated items, is available at EPA's Comprehensive Procurement Guidelines web site, <https://www.epa.gov/smm/comprehensive-procurement-guideline-cpg-program>.
- C. The Contractor also agrees to comply with all other applicable requirements of Section 6002 of the Solid Waste Disposal Act.

**12. Publications.**

Any publications produced with funds from this award must display the following language: "This project [is being] [was] supported, in whole or in part, by federal award number [enter project FAIN] awarded to [name of Recipient] by the U.S. Department of the Treasury."



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

**13. Increasing Seat Belt Use in the United States.**

Pursuant to Executive Order 13043, 62 FR 19217 (Apr. 18, 1997), Contractor is encouraged to adopt and enforce on-the-job seat belt policies and programs for your employees when operating company-owned, rented or personally owned vehicles.

**14. Reducing Text Messaging While Driving.**

Pursuant to Executive Order 13513, 74 FR 51225 (Oct. 6, 2009), Contractor is encouraged to adopt and enforce policies that ban text messaging while driving, and establish workplace safety policies to decrease accidents caused by distracted drivers.

**15. Iran Divestment Act.**

Pursuant to the North Carolina General Assembly (S.L. 2015-118; SB455), The Iran Divestment Act is to implement the authority granted to states by federal law to impose state-level sanctions against companies that engage in certain investment activities in the energy sector of Iran.

***Additional Federal Regulations Applicable to ARPA (is hereby incorporated by reference):***

1. Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards, 2 C.F.R. Part 200, other than such provisions as Treasury may determine are inapplicable to this Award and subject to such exceptions as may be otherwise provided by Treasury. Subpart F – Audit Requirements of the Uniform Guidance, implementing the Single Audit Act, shall apply to this award.
2. Universal Identifier and System for Award Management (SAM), 2 C.F.R. Part 25, pursuant to which the award term set forth in Appendix A to 2 C.F.R. Part 25 is hereby incorporated by reference
3. Reporting Subaward and Executive Compensation Information, 2 C.F.R. Part 170, pursuant to which the award term set forth in Appendix A to 2 C.F.R. Part 170 is hereby incorporated by reference.
4. OMB Guidelines to Agencies on Governmentwide Debarment and Suspension (Non-procurement), 2 C.F.R. Part 180, including the requirement to include a term or condition in all lower tier covered transactions (contracts and subcontracts described in 2 C.F.R. Part 180, subpart B) that the award is subject to 2 C.F.R. Part 180 and Treasury's implementing regulation at 31 C.F.R. Part 19.
5. Recipient Integrity and Performance Matters, pursuant to which the award term set forth in 2 C.F.R. Part 200, Appendix XII to Part 200 is hereby incorporated by reference.
6. Governmentwide Requirements for Drug-Free Workplace, 31 C.F.R. Part 20.
7. New Restrictions on Lobbying, 31 C.F.R. Part 21.
8. Uniform Relocation Assistance and Real Property Acquisitions Act of 1970 (42 U.S.C. §§ 4601-4655) and implementing regulations.
9. Generally applicable federal environmental laws and regulations.



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

***Statutes and regulations prohibiting discrimination applicable to ARPA awards include, without limitation, the following:***

1. Title VI of the Civil Rights Act of 1964 (42 U.S.C. §§ 2000d et seq.) and Treasury's implementing regulations at 31 C.F.R. Part 22, which prohibit discrimination on the basis of race, color, or national origin under programs or activities receiving federal financial assistance;
2. The Fair Housing Act, Title VIII of the Civil Rights Act of 1968 (42 U.S.C. §§ 3601 et seq.), which prohibits discrimination in housing on the basis of race, color, religion, national origin, sex, familial status, or disability;
3. Section 504 of the Rehabilitation Act of 1973, as amended (29 U.S.C. § 794), which prohibits discrimination on the basis of disability under any program or activity receiving federal financial assistance;
4. The Age Discrimination Act of 1975, as amended (42 U.S.C. §§ 6101 et seq.), and Treasury's implementing regulations at 31 C.F.R. Part 23, which prohibit discrimination on the basis of age in programs or activities receiving federal financial assistance; and

Title II of the Americans with Disabilities Act of 1990, as amended (42 U.S.C. §§ 12101 et seq.), which prohibits discrimination on the basis of disability under programs, activities, and services provided or made available by state and local governments or instrumentalities or agencies thereto.





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

**PREVAILING WAGE**

This project qualifies for prevailing wages per the Prevailing Wages Statute or the Davis Bacon Act (HUD). Certified payrolls will need to be submitted to the owner for all hours worked on site for this project.

The Wage Decision for this project shall be as recorded on the Bid Date and is available on the RI Department of Labor website.

Federal Labor Standards

U.S. Department of Housing & Urban Development

**Applicability**

The Project of Program to which the Construction work covered by this contract pertains is being assisted by the United States of America and the following Federal Labor Standards Provisions are included in this Contract pursuant to the provisions applicable to such Federal assistance.

- A.1. (i) Minimum Wages. All laborers and mechanics employed or working up on the site of the work (or under the United States Housing Act of 1937 or under the Housing Act of 1949 in the construction of development of the project) will be paid unconditionally and not less often than once a week, and without subsequent deduction or rebate on any account (except such payroll deductions as are permitted by regulations issued by the Secretary of Labor under the Copeland Act (29 CFR Part 3), the full amount of wages and bona fide fringe benefits (or cash equivalents thereof) due at time of payment computed at rates not less than those contained in the wage determination of the Secretary of labor which is attached hereto and made a part hereof, regardless of any contractual relationship which may be alleged to exist between the contractor and such laborers and mechanics. Contributions made or costs reasonably anticipated for bona fide fringe benefits under Section 1(b)(2) of the Davis-Bacon Act on behalf of laborers of mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of 29 CFR 5.5(a)(1)(iv); also, regular contributions made or costs incurred for more than weekly period (but not less often than quarterly) under plans, funds, or programs, which cover the particular weekly period, are deemed to be constructively made or incurred during such weekly period. Such laborers and mechanics shall be paid the appropriate wage rate and fringe benefits on the wage determination for the classification or work actually performed, without regard to skill, excepts as provided in 29 CFR Part 5.5 (a)(4). Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein: Provided, that the employer's payroll records accurately set forth the time spent in each classification in which work is performed. The wage determination (including any additional classification and wage rates conformed under 29 CFT part 5.5(a)(1)(ii) and the Davis-Bacon poster (WH-1321) shall be posted at all times by the contractor and its subcontractors at the site of the work in a prominent and accessible place where it can be easily seen by the workers.
- (ii) (a) Any class of laborers or mechanics which is not listed in the wage determination and which is to be employed under the contact shall be classified in conformance with the wage determination. HUD shall approve an additional classification and wage rate and fringe benefits therefore only when the following criteria have been met:
- (1) The work to be performed by the classification requested is not performed by a classification in the wage determination; and
  - (2) The classification is utilized in the area by the construction industry; and
  - (3) The proposed wage rate, including any bona fide fringe benefits, bears a relationship to the wage rates contained in the wage determination.
- (b) If the contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and HUD or its designee on the classification and wage rate (including the amount designated for fringe benefits where appropriate), a report of the action taken shall be sent by HUD or its designee to the Administrator of the Wage and Hour Division, Employment Standards Administration, U.S. Department of labor, Washington, D.C. 20210. The Administrator,



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

or an authorized representative, will approve, modify, or disapprove every additional classification action within 30 days of receipt and so advise HUD or its designee or will notify HUD or its designee within the 30-day period that additional time is necessary. (Approved by the Office of Management and Budget under OMB control number 1215-0140.)

- (c) In the event the contractor, the laborers or mechanics to be employed in the classification or their representatives, and HUD or its designee do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), HUD or its designee shall refer the questions, including the views of all interested parties and the recommendation of HUD or its designee to the Administrator for determination. The Administrator, or an authorized representative, will issue a determination within 30 days of receipt and so advise HUD or its designee or will notify HUD or its designee within the 30-day period that additional time is necessary. (Approved by the Office of Management and Budget under OMB Control Number 1215-0140.)
- (d) The wage rate (including fringe benefits where appropriate) determined pursuant to subparagraphs (1)(b) or (c) of this paragraph, shall be paid to all workers performing work in the classification under this contract from the first day on which work is performed in the classification.
- (iii) Whenever the minimum wage rate prescribed in the contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, the contractor shall either pay the benefit as stated in the wage determination or shall pay another bona fide fringe benefit or an hourly cash equivalent thereof.
- (iv) If the contractor does not make payments to a trustee or other third person, the contractor may consider as part of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or program, Provided, That the Secretary of Labor has found, upon the written request of the contractor, that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the contractor to set aside in a separate account assets for the meeting of obligations under the plan or program. (Approved by the Office of Management and Budget under OMB Control Number 1215-0140.)
2. Withholding. HUD or its designee shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld from the contractor under this contract or any other Federal contract with the same prime contractor, or any other Federally-assisted contract subject to Davis-Bacon prevailing wage requirements, which is held by the same prime contractor so much that the accrued payments or advances as may be considered necessary to pay laborers and mechanics, including apprentices, trainees and helpers, employed by the contractor or any subcontractor the full amount of wages required by the contract. In the event of failure to pay any laborer or mechanic, including any apprentice, trainee or helper, employed or working on the site of the work (or under the United States Housing Act of 1937 or under the Housing Act of 1949 in the construction or development of the project), all or part of the wages required by the contract. HUD or its designee may, after written notice to the contractor, sponsor, applicant, or owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations have ceased. HUD or its designee may, after written notice to the contractor, disburse such amounts withheld for and on account of the contractor or subcontractor to the respective employees to whom they are due. The comptroller General shall make such disbursements in the case of direct Davis-Bacon Act contracts.
3. (i) Payrolls and basic records. Payrolls and basic record relating thereto shall be maintained by the contractor during the course of the work preserved for a period of three years thereafter for all laborers and mechanics working at the site of the work (or under the United States Housing Act of 1937, or under the Housing Act of 1949, in the construction or development of the project). Such records shall contain the name, address, and social security number of each such worker, his or her correct classification, hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalents thereof of the types described in Section 1(b)(2)(B) of the Davis-Bacon Act), daily and weekly number of hours worked, deductions made and actual wages paid. Whenever the Secretary of labor has found under 29 CFR 5.5 (a)(1)(iv) that the wages of any laborer or mechanic include the amount of any costs reasonable anticipated in providing benefits under a plan or program described in Section 1(b)(2)(B) or the Davis-Bacon Act, the contractor shall maintain records which show that the commitment to provide such benefits ins enforceable, that the plan or program is financially responsible, and that the plan or program has been communicated in writing to the laborers or mechanics affected, and records which show the costs anticipated or the actual cost incurred in providing such benefits. Contractors employing apprentices or trainees under approved programs shall maintain written evidence of the registration of apprenticeship and certification of trainee programs, the registration of the apprentices and trainees, and the ratios and wage



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

rates prescribed in the applicable programs. (Approved by the Office of Management and Budget under OMB Control Numbers 1215-0140 and 1215-0017.)

- (ii) (a) The contractor shall submit weekly for each in which any contract work is performed a copy of all payrolls to HUD or its designee if the agency is a party to the contract, but if the agency is not such a party, the contractor will submit the payrolls to the applicant, sponsor or owner, as the case may be, for transmission to HUD or its designee. The payrolls submitted shall set out accurately and completely all of the information required to be maintained under 29 CFR Part 5.5(a)(3)(i). This information may be submitted in any form desired. Optional Form WH-34 is available for this purpose and may be purchased from the Superintendent of Documents (Federal Stock Number 029-005-00014-1), Government Printing Office, Washington, Dc 20402. The prime contractor is responsible for the submission of copies of payrolls by all subcontractors. (Approved by the Office of Management and Budget under OMB Control Number 1215-0149.)
- (b) Each payroll submitted shall be accompanied by a "Statement of Compliance," signed by the contractor or his or her agent who pays or supervises the payment of the persons employed under the contract and shall certify the following:
- (1) That the payroll for the payroll period contains the information required to be maintained under 20 CFR Part 5.5 (a)(3)(i) and that such information is correct and complete;
- (2) That each laborer or mechanic (including each helper, apprentice, and trainee) employed on the contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in 29 CFR Part 3;
- (3) That each laborer or mechanic has been paid not less than the applicable wage rates and fringe benefits or cash equivalents for the classification of work performed, as specified in the applicable wage determination incorporated into the contract.
- (c) The weekly submission of a property executed certification set forth on the reverse side of Optional Form WH-347 shall satisfy the requirement for submission of the "Statement of Compliance" required by paragraph AA.3. (ii)(b) of this section.
- (d) The falsification of any of the above certifications may subject the contractor or subcontractor to civil or criminal prosecution under Section 1001 of Title 18 and Section 231 of Title 31 of the United States Code. (iii)  
The contractor or subcontractor shall make the records required under paragraph A.3. (i) of this section available for inspection, copying, or transcription by authorized representatives of HUD or its designee or the Department of Labor, and shall permit such representatives to interview employees during working hours on the job. If the contractor or subcontractor fails to submit the required records or to make them available, HUD or its designee may, after written notice to the contractor, sponsor, applicant, or owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available may be grounds for debarment action pursuant to 29 CFR Part 5.12.
4. (i) Apprentices and Trainees. Apprentices. Apprentices will be permitted to work at less than the predetermined rate for the work they performed when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the U.S. Department of Labor, Employment and Training Administration, Bureau of Apprenticeship and Training, or with a State Apprenticeship Agency recognized by the Bureau, or if a person is employed in his or her first 90 days of probationary employment as an apprentice in such an apprentice program, who is not individually registered in the program, but who has been certified by the Bureau of Apprenticeship and Training or a State Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice. The allowable ratio of apprentices to journeymen on the job site in any craft classification shall not be greater than the ratio permitted to the contractor as to the entire work force under the registered program. Any worker listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated above, shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any apprentice performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. Where a contractor is performing construction on a project in a locality other than that in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyman's hourly rate) specified in the contractor's or subcontractor's registered program shall be observed. Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as a



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

percentage of the journeymen hourly rate specified in the applicable wage determination. Apprentices shall be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the Administrator determines that a different practice prevails for the applicable apprentice classification, fringes shall be paid in accordance with that determination. In the even the Bureau of Apprenticeship and Training, or a State Apprenticeship Agency recognized by the Bureau, withdraws approval of an apprenticeship program, the contractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

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

(iii) Equal employment opportunity. The utilization of apprentices, trainees and journeymen under this part shall be in conformity with the equal employment opportunity requirement of Executive Order 11246, s amended, and 29 CFR Part 30.

5. Compliance with Copeland Act requirements. The contractor shall comply with the requirements of 29 CFR Part 3, which are incorporated by reference in this contract.
6. Subcontracts. The contractor or subcontractor will insert in any subcontract the clauses contained in 29 CFR 5.5(a)(1) through (10) and such other clauses as HUD or its designee may by appropriate instructions require, and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for the compliance by any subcontractor or lower tier subcontractor with all contract clauses in 29 CFR Part 5.5
7. Contracts termination; debarment. A breach of the contract clauses in 29 CFR 5.5 may be grounds for termination of the contract, and for debarment as a contractor as provided in 29 CFR 5.12
8. Compliance with Davis-Bacon and Related Act Requirements. All ruling and interpretations of the Davis-Bacon and Related Act contained in 29 CFR Parts 1, 3, and 5 are herein incorporated by reference in this contract.
9. Disputes concerning labor standards. Disputes arising out of the labor standards provisions of this contract shall not be subject to the general disputes clause of this contract. Such disputes shall be resolved in accordance with the procedures of the Department of Labor set forth in 29 CFR Parts 5, 6, and 7. Disputes within the meaning of this clause include disputes between the contractor (or any of its subcontractors) and HUD or its designee, the U.S. Department of Labor, or the employees or their representatives.
10. (i) Certification of Eligibility. By entering in to this contract, the contractor certifies that neither it (nor he or she) nor any person or firm who has an interest in the contractor's firm is a person or firm ineligible to be awarded Government contracts by virtue of Section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1) or to be awarded HUD contracts or participate in HUD programs pursuant to 24 CFR part 24.  
(ii) No part of this contract shall be subcontracted to any person or firm ineligible for award of a Government contract by virtue of Section 3(a) of the Davis-Bacon Act of 29 CFR 5.12(a)(1) or to be awarded HUD contracts or participate in HUD



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

programs pursuant to 24 CFR Part 24.

(iii) The penalty to making false statements is prescribed in the U.S. Criminal Code, 18 U.S.C. 1001. Additionally, U.S. Criminal Code, Section 1010, Title 18, U.S.C., "Federal Housing Administration transaction", provides in part: "Whoever, for the purpose of ...influencing in any way the action of such Administration...makes, utter or publishes any statement, knowing the same to be false...shall be fined not more than \$5,000 or imprisoned not more than two years, or both."

11. Complaints, Proceedings, or Testimony by Employees. No laborer or mechanic to whom the wage, salary, or other labor standards provisions of this Contract are applicable shall be discharged or in any other manner discriminated against by the Contractor or any subcontractor because such employee has filed any complaint or instituted or caused to be instituted any proceeding or has testified or is about to testify in any proceeding under or relating to the labor standards applicable under this Contract to his employer.

B. Contract Work Hours and Safety Standards Act. As used in this paragraph, the terms "laborers" and "mechanics" include watchmen and guards.

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

(2) Violation; liability for unpaid wages; liquidated damages. In the event of any violation of the clause set forth in subparagraph (1) or this paragraph, the contractor and any subcontractor responsible therefore shall be liable for the unpaid wages. In addition, such contractor and subcontractor shall be liable to the United States (in case of work done under contract for the District of Columbia or a territory, to such District or to such territory), for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic, including watchmen and guards, employed in violation of the clause set forth in subparagraph (1) of this paragraph, in the sum of \$25 for each calendar day on which such individual was required or permitted to work in excess of forty hours without payment of the overtime wages required by the clause set forth in subparagraph (1) of this paragraph.

(3) Withholding for unpaid wages for liquidated damages. HUD or its designees shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold of cause to be withheld from any moneys payable on account of work performed by the contractor or subcontractor under any such contract or any other Federal contract with the same prime contract, or any other Federally-assisted contract subject to the Contract Work Hours and Safety Standards Act, which is held by the same prime contractor such sums as may be determined to be necessary to satisfy any liabilities of such contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in subparagraph (2) of this paragraph.

(4) Subcontracts. The contractor or subcontractor shall insert in any subcontracts the clauses set forth in subparagraph (1) through (4) of this paragraph and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in subparagraphs (1) through (4) of this paragraph.

C. Health and Safety

(1) No laborer or mechanic shall be required to work in surrounding or under working conditions which are unsanitary, hazardous, or dangerous to his health and safety as determined under construction safety and health standards promulgated by the Secretary of Labor by regulation.

(2) The Contractor shall comply with all regulations issued by the Secretary of Labor pursuant to Title 29 Part 1926 (formerly Part 1518) and failure to comply may result in imposition of sanctions pursuant to the Contract Work Hours and Safety Standards Act (Public Law 91-54, 83 Stat. 96).

(3) The Contractor shall include the provisions of this Article in every subcontract so that such provisions will be binding on each subcontractor. The Contractor shall take such action with respect to any subcontract as the Secretary of Housing and Urban Development or the Secretary of Labor shall direct as a means of enforcing such provisions.



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

**BID PACKAGE SPECIFICATIONS**

**Project Description:**

Located in the Fox Point neighborhood of Providence, Gano Street Park is situated along the west bank of Providence River. The scope of work for this project includes the installation of a new Little League Baseball Field and a rehabilitation of existing Basketball Courts.

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

- R&D existing and F&I new Western Baseball Field including, chain link fencing, scoreboard, and irrigation
- R&D ex. Dugout Buildings and F&I Chain Link Dugouts with Corrugated Roofs, Concrete Pads and Players' Benches
- R&D ex. below grade Water Meter and F&I new above grade Water Meter and Enclosure
- F&I Waterline to tie-into Irrigation of Baseball Fields and ex. lines for Soccer Field, Concession Stand and Community Garden
- R&D ex. and F&I new Basketball Courts, including asphalt pavement, basketball backboards and hoops

**ADD ALTERNATES include:**

- R&D and F&I Asphalt Roadway
- F&I Asphalt Paths adjacent to the concession stand
- F&I new Bleacher on Concrete Pad
- F&I Benches, Tables and Trash Receptacles on Concrete Pads and/or Concrete Node
- F&I 2.5-3" cal. Deciduous and Evergreen Trees
- F&I Asphalt Path between Power St and Bike Path, including Vehicle Barrier Gate, Trash Receptacle and Landscape Boulders
- R&D ex. and F&I new Chain Link Side Fencing at Eastern Baseball Field and Batting Enclosure
- F&I Irrigation to Eastern Baseball Field
- F&I Athletic Field Lighting to western field

In addition to stating the Total Base Bid, the bidder shall state Unit Prices for related work listed under each bid item which represents the work items included in the Total Base Bid. The Unit Prices are quoted for computing adjustments to the Base Bid prior to Contract award, as well as during the course of construction, based upon extra work ordered by the City or for work countermanded, reduced or omitted by the City in order to stay within the Project budget.

Base Bid Items and Unit prices are to be Completed prices to be added or deducted on the basis of quantities of work involved, for each item in place in the unit indicated.

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

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

**ALLOWANCE: \$45,000**

**BASE BID W/ ALLOWANCE: \$ \_\_\_\_\_**

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

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



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

**ABBREVIATIONS**

|     |                    |     |                                   |     |                              |
|-----|--------------------|-----|-----------------------------------|-----|------------------------------|
| R&S | Remove & Stockpile | D&I | Deliver & Install, owner provided | F&I | Furnish & Install            |
| R&D | Remove & Dispose   | CY  | Cubic Yard                        | LS  | Lump Sum                     |
| EA  | Each               | TN  | Ton                               | TMR | Thermally Modified Red (oak) |
| LF  | Linear Foot        |     |                                   | R&R | Remove & Reinstall           |
| SF  | Square Foot        |     |                                   |     |                              |

**ADD ALTERNATES:**

- Add Alt #1 – F&I (3) 55gal. Perforated Steel Trash Receptacles, with Dome Lids, and Heavy-Duty Plastic Liners on concrete pads, complete – Per Lump Sum**

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

- Add Alt #2 – F&I Asphalt Roadway Paving, complete – Per Lump Sum**

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

- Add Alt #3 – F&I Asphalt Paths at Concession Stand, complete – Per Lump Sum**

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

- Add Alt #4 – Asphalt Connection Path and accessories between Power St and Bike Path, complete – Per Lump Sum:**
  - **R&D Guard Rail and Vehicle Barrier Gate**
  - **Excavate and R&D surface material to 12"**
  - **F&I Asphalt Paving**
  - **F&I Landscape Boulders**
  - **F&I Trash Receptacle on concrete pad**
  - **F&I Vehicle Barrier Gate**

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

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



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

5. Add Alt #5 – F&I (6) 6' TMR Backless Benches on concrete pads, complete – Per Lump Sum

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

6. Add Alt #6 – F&I Picnic Node, complete – Per Lump Sum:

- F&I 8' ADA TMR Picnic Table surface mount
- F&I 6' TMR Picnic Table surface mount
- F&I 55gal. Perforated Steel Trash Receptacle, including accessories, surface mount

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

7. Add Alt #7 – R&D ex. Wood Bleacher and F&I (1) 4-Row x 15'L Low Rise Bleacher on Concrete Pad, complete. - Per Lump Sum

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

8. Add Alt #8 – F&I Deciduous and Evergreen Trees as per plans, complete. – Per Lump Sum

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

9. Add Alt #9 – F&I Eastern Baseball Field Side Chain Link Fence and F&I Batting Enclosure with 4" Infield Mix and Pedestrian Gates, complete. – Per Lump Sum

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

10. Add Alt #10 – F&I Athletic Field Lighting to Western Baseball Field, complete. – Per Lump Sum

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

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

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





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

**11. Add Alt #11 – F&I Irrigation System to Eastern Baseball Field, complete. – Per Lump Sum**

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

**12. Add Alt #12 – R&D ex. galvanized gooseneck poles and F&I 6x6"x14' square Powder Coated Steel Poles, Backboards and Rims, complete. – Per Lump Sum**

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

**UNIT PRICES – BASE BID:**

**1. F&I Temporary Tree Protection, complete. – Per Linear Foot**

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

**2. F&I Silt Sock, Sedimentation and Erosion controls, complete. – Per Linear Foot**

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

**3. R&R Bleachers on Concrete Pads, complete. – Per Each**

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

**4. R&D Asphalt Paving and Base, complete. – Per Square Foot**

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

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



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

**13. R&D Asphalt Paving only, base to remain, complete. – Per Square Foot**

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

**14. R&D Existing Irrigation Components: Valve Boxes, Sprinkler Heads, Quick Coupling Valves and Isolation Valves, complete. – Per Lump Sum**

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

**15. R&R Baseball Field Fence Stop Protector, complete. – Per Lump Sum**

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

**16. R&D Western Baseball Field, complete. – Per Lump Sum**

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

**17. R&D Basketball Backboards and Hoops, complete. – Per Each**

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

**18. R&D Baseball Infield Mix, complete. – Per Cubic Yard**

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

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



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

**19. R&D Baseball Bases, complete. – Per Lump Sum**

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

**20. R&D Scoreboard, poles to remain, complete. – Per Lump Sum**

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

**21. R&D Wood Posts as per plans, complete. – Per Each**

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

**22. R&D Dugout Buildings at Eastern Baseball Field, complete. – Per Each**

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

**23. Strip Turf and Soil to 6" depth and Dispose, complete. – Per Square Foot**

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

**24. R&D Ex. Water Meter to 18" below grade and backfill with clean fill, complete. – Per Lump Sum**

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

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



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

**25. F&I Water Meter – Backflow Preventer, Dual Check Valve, Drain Valves, Curb Stop and Aluminum Enclosure Box on 4" Concrete Pad, complete – Per Lump Sum**

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

**26. F&I Irrigation System for Baseball Field – Per Lump Sum**

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

**27. F&I 2-1/2" Waterline from the new Water Meter and tie-into Irrigation System in Baseball Fields and existing lines in Soccer Field, Concession Stand and Community Garden, complete – Per Linear Foot**

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

**28. R&R Granite Curbs and Blocks, complete – Per Each**

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

**29. R&S Granite Block, complete – Per Each**

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

**30. F&I Electrical Conduit and Wiring for Scoreboard, complete – Per Linear Foot**

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

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



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

**31. F&I Scoreboard, complete – Per Lump Sum**

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

**32. F&I Chain-Link Dugouts with Corrugated Metal Roofs and Concrete Pads, complete – Per Each**

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

**33. F&I Players' Dugout Benches, surface mount on concrete pads, complete – Per Each**

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

**34. F&I 12' Chain-Link Service Gates, complete – Per Each**

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

**35. F&I 12' Vehicle Barrier Gate, complete – Per Each**

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

**36. F&I Western Baseball Field Fencing, including Backstop and Service Gates, complete – Per Lump Sum**

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

**37. F&I 4" Infield Mix, complete – Per Cubic Yard**

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

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



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

**38. F&I Sod to infield and double-strip (4' W.) to outer edge of infield, complete – Per Square Foot**

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

**39. F&I Baseball Base Sets, including Steel Anchors, Home Plates, and Pitching Rubber, complete – Per Lump Sum**

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

**40. F&I 20' Ht. Foul Poles with Wings, complete – Per Each**

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

**41. F&I Loam and Hyrdoseed with Athletic Field Turf Seed Mix, complete – Per Square Foot**

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

**42. F&I Asphalt Paving and Base, Complete. – Per Square Foot**

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

**43. F&I Asphalt Paving on existing base, Complete. – Per Square Foot**

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

**44. F&I Basketball Breakaway Rims, complete. – Per Each**

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

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



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

**45. F&I Basketball Polycarbonate Backboards, complete. – Per Each**

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

**46. F&I Loam and Hyrdoseed to all disturbed areas, complete – Per Square Foot**

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

**47. F&I Asphalt Sealant and Waterborne Striping to Basketball Courts, complete – Per Lump Sum**

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

**UNIT PRICES – ADD ALTERNATES:**

**1. F&I 6' TMR Picnic Table surface mount on concrete, complete. – Per Each**

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

**2. F&I 8' ADA TMR Picnic Table surface mount on concrete, complete. – Per Each**

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

**3. F&I 6' TMR Backless Bench surface mount on Concrete Pad, complete. – Per Each**

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

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

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



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

**4. F&I 12-14' Ht. *Betula populifolia* – Grey Birch clump, complete. – Per Each**

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

**5. F&I 10-12' Ht. *Chamaecyparis thyoides* – Atlantic White Cedar, complete. – Per Each**

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

**6. F&I 2.5-3" cal. (2.5" min.) *Carpinus caroliniana* – American Hornbeam, complete. – Per Each**

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

**7. F&I 55gal. Perforated Steel Trash Receptacle, with Dome Lid, and Heavy-Duty Plastic Liner surface mount on concrete pad, complete. – Per Each**

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

**8. R&D existing 5-Row Bleachers and F&I 4-Row x 15'L Low Rise Bleachers on Concrete Pad, complete – Per Each**

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

**9. F&I Landscape Boulder, complete – Per Each**

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

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

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





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

**10. R&D Batting Enclosure chain link fence and posts; R&S Gates and Hinges, complete. – Per Lump Sum**

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

**11. R&D 6' Ht. Chain-Link Fencing including, mesh, posts and accessories, complete. – Per Linear Foot**

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

**12. R&D Chain Link Mesh only, complete – Per Square Foot**

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

**13. F&I 5' W. Chain Link Pedestrian Gate, complete – Per Each**

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

**14. F&I 6' Ht. Chain Link Fencing including mesh, posts and footings, complete – Per Linear Foot**

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

**15. F&I Chain Link Mesh only, complete – Per Square Foot**

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

**16. F&I Athletic Field Lighting, complete – Per Each**

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

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

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



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

**17. F&I 4" Concrete and Base, complete – Per Square Foot**

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

**18. F&I Basketball 6x6"x14' square Powder Coated Steel Pole, complete. – Per Each**

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

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

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



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

**BID DOCUMENTS:**

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

**DRAWINGS:**

- L-1 COVER SHEET
- L-2 EXISTING CONDITIONS
- L-3 DEMOLITION PLAN
- L-4 GRADING & UTILITY PLAN
- L-5 IRRIGATION PLAN
- L-6 MATERIALS PLAN
- L-7 LAYOUT PLAN
- L-8 CONSTRUCTION DETAILS 1
- L-9 CONSTRUCTION DETAILS 2
- L-10 CONSTRUCTION DETAILS 3
- L-11 CONSTRUCTION DETAILS 4
- L-12 CONSTRUCTION DETAILS 5 & IRRIGATION DETAILS
- E-1-6 MUSCO ATHLETIC FIELD LIGHTING PLANS
- C 1 MUSCO POLE FOUNDATION

**MUSCO SYSTEM REQUIREMENTS: CONTROL SYSTEM SUMMARY (3 Pages)**

**PREVAILING WAGE DECISION**

**COPY OF THE CONTRACT**

**TECHNICAL SPECIFICATIONS:**

- 010000 GENERAL REQUIREMENTS
- 015639 TEMPORARY TREE AND PLANT PROTECTION
- 024119 SELECTIVE DEMOLITION
- 033000 CAST-IN-PLACE CONCRETE
- 116833 ATHLETIC FIELD EQUIPMENT
- 133416 GRANDSTANDS AND BLEACHERS
- 260000 ELECTRICAL
- 260533.13 CONDUITS FOR ELECTRICAL SYSTEMS
- 265668 EXTERIOR ATHLETIC LIGHTING - MUSCO
- 312000 EARTH MOVING
- 312213 ROUGH GRADING
- 312316.13 TRENCHING
- 312500 EROSION AND SEDIMENTATION CONTROLS
- 321216 ASPHALT PAVING



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

- **321220.10 BASKETBALL COURT FINISHING**
- **321313 CONCRETE PAVING**
- **321823.10 INFIELD SKIN SURFACE**
- **323113 CHAIN LINK FENCES AND GATES**
- **323119.53 SINGLE SWING GATE**
- **323300 SITE FURNISHINGS**
- **328400 PLANTING IRRIGATION**
- **329113 SOIL PREPARATION**
- **329119 LANDSCAPE GRADING**
- **329200 TURF AND GRASSES**
- **329223 SODDING**
- **329300 PLANTS**
- **331413 PUBLIC WATER UTILITY DISTRIBUTION PIPING**

**ADDITIONAL INFORMATION REQUIRED WITH BID:**

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

**PROVISIONS OF THIS PROJECT:**

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



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

**CLOSE OUT DOCUMENTS:**

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

**QUALIFICATIONS:**

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

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

Questions regarding this bid package shall be submitted via e-mail to Purchasing at [purchasing@providenceri.gov](mailto:purchasing@providenceri.gov) and **Ilya Iskhakov, Landscape Designer** at [iiskhakov@providenceri.gov](mailto:iiskhakov@providenceri.gov), no later than five (5) working days before the bid opening date.

# System Requirements: Control System Summary

Project Name: Gano Park Baseball | Project #: 237520

Control System ID: 1 of 1

Distribution Panel Location/ID: Softball

## Project Information

### Control System

Control System ID: 1 of 1

Control System Type: Control-Link® Control and Monitoring System

Communication Type: PowerLine-ST

### Power Requirements

#### Control cabinet(s):

Control voltage (phase to neutral) 120/60

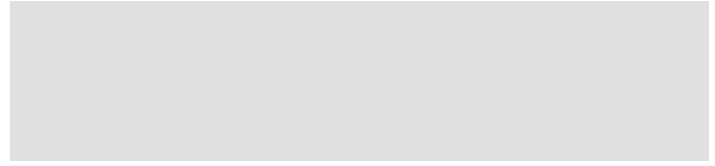
VA loading - Inrush 1553.0

VA loading - Sealed 180.0

#### Lighting Circuits:

Voltage/Hertz/Phase 208/60/3

### Project Notes:



### Equipment Listing

| Description                              | Qty | Size (in) |
|--|-----|-----------|
| Control and monitoring cabinet - primary | 1   | 24 X 48   |
| Contactors, 30 amperes                   | 4   | -         |
| Off/On/Auto switches                     | 1   | -         |

### Important Notes:

1. Please confirm that the lighting circuit voltage listed above is accurate for this facility. This is the voltage/phase being connected and utilized at each lighting pole's electrical components enclosure disconnect. Inaccurate voltage/phase can result in additional costs and delays. Contact your Musco sales representative to confirm this item.
2. In a 3 phase design, all 3 phases are to be run to each pole location. Musco's single phase luminaires come pre-wired to utilize all 3 phases across the entire facility.
3. One contactor is required for each circuit at each pole location. Contactors are 3 pole and 100% rated for the published continuous load.
4. If the lighting system will be fed from more than one distribution location, additional equipment may be required. Contact your Musco sales representative.
5. Size overcurrent devices using the full load amps column of the Circuit Summary by Switch chart (Minimum power factor is 0.9). Size conduit per code unless otherwise specified as larger to allow for harness connectors.
6. Avoid use of in-ground junction/pull boxes when possible. If used, all wire connectors must be UL listed for Wet Locations to prevent leakage current.
7. Control power wiring must be in separate conduit from line or load power wiring. Communication cables must be in separate conduit from any power wiring.
8. Refer to Installation Instructions for more details on equipment information and the installation requirements.

# System Requirements: Control System Summary

Project Name: Gano Park Baseball | Project #: 237520

Control System ID: 1 of 1

Distribution Panel Location/ID: Softball

## Equipment Layout and Connection Details



Lighting system

Control cabinet location(s)



### Connection Details

| ID | Description  |
|----|--|
| 1a | Line power to contactors, and equipment grounding conductor. Requires one circuit per contactor, size wiring per load and voltage drop.      |
| 1b | Load power from contactors, and equipment grounding conductor. Requires one circuit per contactor, size wiring per load and voltage drop.    |
| 2a | Control power with equipment ground to control cabinet. Requires dedicated 20 A circuit. Provide transformer if control voltage not present. |

### Equipment

| ID | Description                              |
|----|--|
| 1  | Control and monitoring cabinet - primary |

# System Requirements: Control System Summary

Project Name: Gano Park Baseball | Project #: 237520

Control System ID: 1 of 1

Distribution Panel Location/ID: Softball

## Circuit Summary

### Switching Schedule

| Field/Switch Description | Switches |
|--------------------------|----------|
| Softball 1               | 1        |

**Control Module ID: 1**

**Lighting Circuit Voltage: 208/60/3**

### Circuit Summary by Switch

| Switch | Zone Description | Pole ID | Qty of Fixtures | Full load amperes | Contactor Size (Amps) | Cabinet # | Contactor ID |
|--------|------------------|---------|-----------------|-------------------|-----------------------|-----------|--------------|
| 1      | Softball 1       | A1      | 4               | 13.41             | 30                    | 1         | C1           |
|        | Softball 1       | A2      | 4               | 13.41             | 30                    | 1         | C2           |
|        | Softball 1       | B1      | 5               | 22.14             | 30                    | 1         | C3           |
|        | Softball 1       | B2      | 5               | 22.14             | 30                    | 1         | C4           |



"General Decision Number: RI20250001 01/03/2025

Superseded General Decision Number: RI20240001

State: Rhode Island

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

Counties: Rhode Island Statewide.

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

Note: Contracts subject to the Davis-Bacon Act are generally required to pay at least the applicable minimum wage rate required under Executive Order 14026 or Executive Order 13658. Please note that these Executive Orders apply to covered contracts entered into by the federal government that are subject to the Davis-Bacon Act itself, but do not apply to contracts subject only to the Davis-Bacon Related Acts, including those set forth at 29 CFR 5.1(a)(1).

|  |  |
|--|--|
| <p>If the contract is entered into on or after January 30, 2022, or the contract is renewed or extended (e.g., an option is exercised) on or after January 30, 2022:</p> | <ul style="list-style-type: none"> <li>. Executive Order 14026 generally applies to the contract.</li> <li>. The contractor must pay all covered workers at least \$17.75 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.</li> </ul> |
| <p>If the contract was awarded on or between January 1, 2015 and January 29, 2022, and the contract is not renewed or extended on or after January 30, 2022:</p>         | <ul style="list-style-type: none"> <li>. Executive Order 13658 generally applies to the contract.</li> <li>. The contractor must pay all covered workers at least \$13.30 per hour (or the applicable wage rate listed on this wage determination,</li> </ul>  |

|  |   |
|--|---|
|  | if it is higher) for all hours spent performing on that contract in 2025. |
|--|---|

The applicable Executive Order minimum wage rate will be adjusted annually. If this contract is covered by one of the Executive Orders and a classification considered necessary for performance of work on the contract does not appear on this wage determination, the contractor must still submit a conformance request.

Additional information on contractor requirements and worker protections under the Executive Orders is available at <http://www.dol.gov/whd/govcontracts>.

|                     |                  |
|---------------------|------------------|
| Modification Number | Publication Date |
| 0                   | 01/03/2025       |

ASBE0006-006 09/01/2024

|   | Rates    | Fringes |
|---|----------|---------|
| HAZARDOUS MATERIAL HANDLER<br>(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<br>Includes application of all insulating materials, protective coverings, coatings & finishes to all types of mechanical systems. | \$ 49.91 | 36.63   |

BOIL0029-001 01/01/2021

|                  | Rates    | Fringes |
|------------------|----------|---------|
| BOILERMAKER..... | \$ 45.87 | 29.02   |

-----  
BRRIO003-001 06/01/2022

|  | Rates    | Fringes |
|--|----------|---------|
| Bricklayer, Stonemason,<br>Pointer, Caulker & Cleaner..... | \$ 46.86 | 29.14   |

-----  
BRRIO003-002 09/01/2022

|  | Rates    | Fringes |
|--|----------|---------|
| Marble Setter, Terrazzo<br>Worker & Tile Setter..... | \$ 46.54 | 30.34   |

-----  
BRRIO003-003 09/01/2022

|  | Rates    | Fringes |
|--|----------|---------|
| Marble, Tile & Terrazzo<br>Finisher..... | \$ 38.78 | 29.61   |

-----  
CARP0330-001 06/03/2024

|   | Rates    | Fringes |
|---|----------|---------|
| CARPENTER (Includes Soft<br>Floor Layer)..... | \$ 45.13 | 30.25   |
| Diver Tender.....                             | \$ 44.88 | 30.25   |
| DIVER.....                                    | \$ 57.03 | 30.25   |
| Piledriver.....                               | \$ 41.53 | 29.35   |
| WELDER.....                                   | \$ 44.88 | 30.25   |

FOOTNOTES:

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

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

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

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

hour additional.

-----  
CARP1121-002 01/02/2023

|                 | Rates    | Fringes |
|-----------------|----------|---------|
| MILLWRIGHT..... | \$ 41.54 | 30.73   |

-----  
ELEC0099-002 06/01/2024

|                                | Rates    | Fringes      |
|--------------------------------|----------|--------------|
| ELECTRICIAN.....               | \$ 52.11 | 47.25%       |
| Teledata System Installer..... | \$ 39.09 | 11.02%+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 01/01/2024

|                        | Rates    | Fringes    |
|------------------------|----------|------------|
| ELEVATOR MECHANIC..... | \$ 61.88 | 37.885+a+b |

FOOTNOTES:

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

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

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ENGI0057-001 12/01/2024

|  | 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..... | \$ 49.05 | 29.70 |
| GROUP 2..... | \$ 47.05 | 29.70 |
| GROUP 3..... | \$ 42.67 | 29.70 |
| GROUP 4..... | \$ 39.82 | 29.70 |
| GROUP 5..... | \$ 46.10 | 29.70 |
| GROUP 6..... | \$ 36.90 | 29.70 |
| GROUP 7..... | \$ 30.90 | 29.70 |
| GROUP 8..... | \$ 42.75 | 29.70 |
| GROUP 9..... | \$ 46.67 | 29.70 |

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.

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ENGI0057-003 12/01/2024

BUILDING CONSTRUCTION

|                          | Rates    | Fringes |
|--------------------------|----------|---------|
| Power Equipment Operator |          |         |
| GROUP 1.....             | \$ 48.32 | 28.45   |
| GROUP 2.....             | \$ 46.32 | 28.45   |
| GROUP 3.....             | \$ 46.10 | 28.45   |
| GROUP 4.....             | \$ 42.10 | 28.45   |
| GROUP 5.....             | \$ 39.25 | 28.45   |
| GROUP 6.....             | \$ 45.40 | 28.45   |
| GROUP 7.....             | \$ 44.97 | 28.45   |
| GROUP 8.....             | \$ 42.29 | 28.45   |

a. BOOM LENGTHS, INCLUDING JIBS:

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

a. PAID HOLIDAYS: New Year's Day, President's Day, Memorial

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

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

POWER EQUIPMENT OPERATORS CLASSIFICATIONS

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

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

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

GROUP 4: Fireman & oiler on cranes

GROUP 5: Oiler on crawler backhoe

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

GROUP 7: Well point installation crew

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

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ENGI0057-005 11/01/2024

|  |       |         |
|--|-------|---------|
|  | 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..... | \$ 44.20 | 29.45 |
|--------------|----------|-------|

|              |          |       |
|--------------|----------|-------|
| GROUP 2..... | \$ 42.20 | 29.45 |
| GROUP 3..... | \$ 36.90 | 29.45 |
| GROUP 4..... | \$ 23.50 | 29.45 |
| GROUP 5..... | \$ 30.90 | 29.45 |
| GROUP 6..... | \$ 37.48 | 29.45 |
| GROUP 7..... | \$ 41.18 | 29.45 |
| GROUP 8..... | \$ 36.45 | 29.45 |

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

-----  
IRON0037-001 09/16/2024



|                 | Rates    | Fringes |
|-----------------|----------|---------|
| IRONWORKER..... | \$ 41.59 | 32.98   |

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

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LAB00271-002 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,<br>UNDERPINNING WORK AND<br>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 06/01/2024

|   | Rates    | Fringes |
|---|----------|---------|
| PAINTER   |          |         |
| Brush and Roller.....   | \$ 38.07 | 25.80   |
| Epoxy, Tanks, Towers,<br>Swing Stage & Structural<br>Steel..... | \$ 40.07 | 25.80   |
| Spray, Sand & Water<br>Blasting.....                            | \$ 41.07 | 25.80   |
| 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 07/01/2024

BUILDING CONSTRUCTION

|                                   | Rates    | Fringes |
|-----------------------------------|----------|---------|
| CEMENT MASON/CONCRETE FINISHER... | \$ 44.00 | 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 07/01/2024

HEAVY AND HIGHWAY CONSTRUCTION

|                                   | Rates    | Fringes |
|-----------------------------------|----------|---------|
| CEMENT MASON/CONCRETE FINISHER... | \$ 39.45 | 25.30   |

-----  
PLAS0040-003 07/01/2024

|                | Rates    | Fringes |
|----------------|----------|---------|
| PLASTERER..... | \$ 44.00 | 29.10   |

-----  
PLUM0051-002 08/26/2024

|                               | Rates    | Fringes |
|-------------------------------|----------|---------|
| Plumbers and Pipefitters..... | \$ 52.49 | 33.60   |

-----  
ROOF0033-004 12/01/2024

|             | Rates    | Fringes |
|-------------|----------|---------|
| ROOFER..... | \$ 45.77 | 31.01   |

-----  
SFRI0669-001 04/01/2024

|                       | Rates    | Fringes |
|-----------------------|----------|---------|
| SPRINKLER FITTER..... | \$ 49.98 | 32.85   |

-----  
SHEE0017-002 06/01/2024

|                         | Rates    | Fringes |
|-------------------------|----------|---------|
| Sheet Metal Worker..... | \$ 42.69 | 38.45   |

-----  
TEAM0251-001 05/01/2024

HEAVY AND HIGHWAY CONSTRUCTION

|              | Rates    | Fringes     |
|--------------|----------|-------------|
| TRUCK DRIVER |          |             |
| GROUP 1..... | \$ 30.71 | 36.9125+A+B |
| GROUP 2..... | \$ 30.86 | 36.9125+A+B |

|               |          |             |
|---------------|----------|-------------|
| GROUP 3.....  | \$ 30.91 | 36.9125+A+B |
| GROUP 4.....  | \$ 30.96 | 36.9125+A+B |
| GROUP 5.....  | \$ 31.06 | 36.9125+A+B |
| GROUP 6.....  | \$ 31.46 | 36.9125+A+B |
| GROUP 7.....  | \$ 31.66 | 36.9125+A+B |
| GROUP 8.....  | \$ 31.16 | 36.9125+A+B |
| GROUP 9.....  | \$ 31.41 | 36.9125+A+B |
| GROUP 10..... | \$ 31.21 | 36.9125+A+B |

FOOTNOTES:

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

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

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

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

TRUCK DRIVER CLASSIFICATIONS

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

GROUP 2: Two-axle on low beds

GROUP 3: Two-axle dump truck

GROUP 4: Three-axle dump truck

GROUP 5: Four- and five-axle equipment

GROUP 6: Low-bed or boom trailer.

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

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

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

GROUP 10: Tractor trailer

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

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

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

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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.

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### 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](mailto: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](mailto: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](mailto: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.

=====  
END OF GENERAL DECISION"

# DRAFT AIA® Document A104™ - 2017

## Standard Abbreviated Form of Agreement Between Owner and Contractor

AGREEMENT made as of the «XXth» day of «Month» in the year «Year»  
(In words, indicate day, month and year.)

BETWEEN the Owner:  
(Name, legal status, address and other information)

«Providence Public Building Authority»  
« »

and the Contractor:  
(Name, legal status, address and other information)

«Vendor Name»  
«Street Address»  
«City, State Zip»  
« »

for the following Project:  
(Name, location and detailed description)

«Project Name»  
Project Street Address  
Providence, RI « »

The Architect:  
(Name, legal status, address and other information)

«Providence Parks Department»  
« »

The Owner and Contractor agree as follows.

**ADDITIONS AND DELETIONS:**  
The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An *Additions and Deletions Report* that notes added information as well as revisions to the standard form text is available from the author and should be reviewed.

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.



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**TABLE OF ARTICLES**

- 1 THE WORK OF THIS CONTRACT**
- 2 DATE OF COMMENCEMENT AND SUBSTANTIAL COMPLETION**
- 3 CONTRACT SUM**
- 4 PAYMENT**
- 5 DISPUTE RESOLUTION**
- 6 ENUMERATION OF CONTRACT DOCUMENTS**
- 7 GENERAL PROVISIONS**
- 8 OWNER**
- 9 CONTRACTOR**
- 10 ARCHITECT**
- 11 SUBCONTRACTORS**
- 12 CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS**
- 13 CHANGES IN THE WORK**
- 14 TIME**
- 15 PAYMENTS AND COMPLETION**
- 16 PROTECTION OF PERSONS AND PROPERTY**
- 17 INSURANCE AND BONDS**
- 18 CORRECTION OF WORK**
- 19 MISCELLANEOUS PROVISIONS**
- 20 TERMINATION OF THE CONTRACT**
- 21 CLAIMS AND DISPUTES**



**EXHIBIT A DETERMINATION OF THE COST OF THE WORK**

**ARTICLE 1 THE WORK OF THIS CONTRACT**

The Contractor shall execute the Work described in the Contract Documents, except as specifically indicated in the Contract Documents, as listed in Article 6 of this Agreement or reasonably inferable by the Contractor from the Contract Documents as necessary to produce the results intended by the Contract Documents, to be the responsibility of others.

**ARTICLE 2 DATE OF COMMENCEMENT AND SUBSTANTIAL COMPLETION – See EXHIBIT A, Project Schedule**

**§ 2.1** The date of commencement of the Work shall be:

*(Check one of the following boxes.)*

[  ] The date of this Agreement.

A date set forth in a notice to proceed issued by the Owner.

Established as follows:  
(Insert a date or a means to determine the date of commencement of the Work.)

If a date of commencement of the Work is not selected, then the date of commencement shall be the date of this Agreement.

§ 2.2 The Contract Time shall be measured from the date of commencement.

### § 2.3 Substantial Completion

§ 2.3.1 Subject to adjustments of the Contract Time as provided in the Contract Documents, the Contractor shall achieve Substantial Completion of the entire Work: The Contractor shall achieve Substantial Completion including, without limitation, the completion of any so-called punch list items reasonably soon thereafter, but in no event longer than fourteen (14) days following Substantial Completion. TIME IS OF THE ESSENCE.

(Check the appropriate box and complete the necessary information.)

Not later than  () weeks from the date of commencement of the Work. Project Schedule attached hereto as **EXHIBIT A**.

By the following date: **«Date of Project Completion»**

§ 2.3.2 Subject to adjustments of the Contract Time as provided in the Contract Documents, if portions of the Work are to be completed prior to Substantial Completion of the entire Work, the Contractor shall achieve Substantial Completion of such portions by the following dates:

| Portion of Work | Substantial Completion Date |
|-----------------|-----------------------------|
|                 |                             |

§ 2.3.3 If the Contractor fails to achieve Substantial Completion as provided in this Section 2.3, liquidated damages, if any, shall be assessed as set forth in Section 3.5. N/A

## ARTICLE 3 CONTRACT SUM

§ 3.1 The Owner shall pay the Contractor the Contract Sum in current funds for the Contractor's performance of the Contract. The Contract Sum shall be one of the following:

(Check the appropriate box.)

Stipulated Sum, in accordance with Section 3.2 below

Cost of the Work plus the Contractor's Fee, in accordance with Section 3.3 below

Cost of the Work plus the Contractor's Fee with a Guaranteed Maximum Price, in accordance with Section 3.4 below

(Based on the selection above, complete Section 3.2, 3.3 or 3.4 below.)

§ 3.2 The Stipulated Sum shall be **«Award Amount in writing - Dollars and 00/100 »** (\$ **«xxx,xxx.xx»**), subject to additions and deductions as provided in the Contract Documents.

§ 3.2.1 The Stipulated Sum is based upon the following alternates, if any, which are described in the Contract Documents and are hereby accepted by the Owner:

(State the numbers or other identification of accepted alternates. If the bidding or proposal documents permit the Owner to accept other alternates subsequent to the execution of this Agreement, attach a schedule of such other alternates showing the amount for each and the date when that amount expires.)

§ 3.2.2 Unit prices, if any: See Contractor's Proposal dated (Bid Due Date), EXHIBIT B  
(Identify the item and state the unit price and the quantity limitations, if any, to which the unit price will be applicable.)

| Item         | Units and Limitations | Price per Unit (\$0.00) |
|--------------|-----------------------|-------------------------|
| See Bid Form |                       |                         |

Unit prices shall be complete and include without limitation:

- (i) All materials, equipment, labor, delivery, installation, overhead and profit; and
- (ii) Any other costs or expenses in connection with or incidental to the performance of the portion of the work to which such unit prices apply.

§ 3.2.3 Allowances, if any, included in the stipulated sum: See Contractor's Proposal dated 2/13/2023 , EXHIBIT B  
(Identify each allowance.)

| Item               | Price       |
|--------------------|-------------|
| Allowance (If Any) | \$xx,xxx.xx |

The allowance amounts are complete and include without limitation:

- (i) All materials, equipment, labor, delivery, installation, overhead and profit; and
- (ii) Any other costs or expenses in connection with or incidental to the performance of that portion of the work to which such allowance applies.

§ 3.3 Cost of the Work Plus Contractor's Fee N/A

§ 3.3.1 The Cost of the Work is as defined in Exhibit A, Determination of the Cost of the Work.

§ 3.3.2 The Contractor's Fee:

(State a lump sum, percentage of Cost of the Work or other provision for determining the Contractor's Fee and the method of adjustment to the Fee for changes in the Work.)

« »

§ 3.4 Cost of the Work Plus Contractor's Fee With a Guaranteed Maximum Price N/A

§ 3.4.1 The Cost of the Work is as defined in Exhibit A, Determination of the Cost of the Work.

§ 3.4.2 The Contractor's Fee:

(State a lump sum, percentage of Cost of the Work or other provision for determining the Contractor's Fee and the method of adjustment to the Fee for changes in the Work.)

« »

§ 3.4.3 Guaranteed Maximum Price N/A

§ 3.4.3.1 The sum of the Cost of the Work and the Contractor's Fee is guaranteed by the Contractor not to exceed « » (\$ « » ), subject to additions and deductions by changes in the Work as provided in the Contract Documents. This maximum sum is referred to in the Contract Documents as the Guaranteed Maximum Price. Costs which would cause the Guaranteed Maximum Price to be exceeded shall be paid by the Contractor without reimbursement by the Owner.

(Insert specific provisions if the Contractor is to participate in any savings.)

« »

§ 3.4.3.2 The Guaranteed Maximum Price is based on the following alternates, if any, which are described in the Contract Documents and are hereby accepted by the Owner: N/A

(State the numbers or other identification of accepted alternates. If the bidding or proposal documents permit the Owner to accept other alternates subsequent to the execution of this Agreement, attach a schedule of such other alternates showing the amount for each and the date when that amount expires.)

« N/A »

**§ 3.4.3.3 Unit Prices, if any:**

(Identify the item and state the unit price and the quantity limitations, if any, to which the unit price will be applicable.)

| Item | Units and Limitations | Price per Unit (\$0.00) |
|------|-----------------------|-------------------------|
|      |                       |                         |

**§ 3.4.3.4 Allowances: See Contractor's Proposal dated attached as EXHIBIT B.**

(Identify each allowance.)

| Item | Price |
|------|-------|
|      |       |

**§ 3.4.3.5 Assumptions, if any, on which the Guaranteed Maximum Price is based:**

«N/A »

**§ 3.4.3.6** To the extent that the Contract Documents are anticipated to require further development, the Guaranteed Maximum Price includes the costs attributable to such further development consistent with the Contract Documents and reasonably inferable therefrom. Such further development does not include changes in scope, systems, kinds and quality of materials, finishes or equipment, all of which, if required, shall be incorporated by Change Order.

**§ 3.4.3.7** The Owner shall authorize preparation of revisions to the Contract Documents that incorporate the agreed-upon assumptions contained in Section 3.4.3.5. The Owner shall promptly furnish such revised Contract Documents to the Contractor. The Contractor shall notify the Owner and Architect of any inconsistencies between the agreed-upon assumptions contained in Section 3.4.3.5 and the revised Contract Documents.

**§ 3.5 Liquidated damages, if any: N/A**

(Insert terms and conditions for liquidated damages, if any.)

« »

**ARTICLE 4 PAYMENT**

**§ 4.1 Progress Payments**

**§ 4.1.1** Based upon Applications for Payment submitted to the Architect by the Contractor and Certificates for Payment issued by the Architect, the Owner shall make progress payments on account of the Contract Sum to the Contractor as provided below and elsewhere in the Contract Documents.

**§ 4.1.2** The period covered by each Application for Payment shall be one calendar month ending on the last day of the month, or as follows:

« »

**§ 4.1.3** Provided that an Application for Payment is received by the Architect not later than the «15th » day of a month, the Owner shall make payment of the certified amount to the Contractor not later than the «30th » day of the « following » month. If an Application for Payment is received by the Architect after the date fixed above, payment shall be made by the Owner not later than «Thirty » ( «30 » ) days after the Architect receives the Application for Payment.

(Federal, state or local laws may require payment within a certain period of time.)



§ 4.1.4 For each progress payment made prior to Substantial Completion of the Work, the Owner may withhold retainage from the payment otherwise due as follows:  
(Insert a percentage or amount to be withheld as retainage from each Application for Payment and any terms for reduction of retainage during the course of the Work. The amount of retainage may be limited by governing law.)

« Five Percent (5%) »

In addition to the aforesaid retainage, all payments shall be reduced by Three (3%) Percent pursuant to RIGL 44-1-6 (non-resident contractors tax withholding), if applicable.

§ 4.1.5 Payments due and unpaid under the Contract shall bear interest from the date payment is due at the rate stated below, or in the absence thereof, at the legal rate prevailing from time to time at the place where the Project is located.  
(Insert rate of interest agreed upon, if any.)

« 1 » % «(one percent)

§ 4.1.6 In addition to other required items, each Application for Payment shall be accompanied by:

- (i) With each Application for Payment, a completed Partial Release of Lien as noted in **EXHIBIT D**.

§ 4.1.7 Applications for Payment shall be pursuant to AIA Document G702 and G703, attached hereto as **EXHIBIT C**.

## § 4.2 Final Payment

§ 4.2.1 Final payment, constituting the entire unpaid balance of the Contract Sum, shall be made by the Owner to the Contractor when

- .1 the Contractor has fully performed the Contract except for the Contractor's responsibility to correct Work as provided in Section 18.2, and to satisfy other requirements, if any, which extend beyond final payment;
- .2
- .3 a final Certificate for Payment has been issued by the Architect in accordance with Section 15.7.1.
- .4 a copy of duly executed Final Releases by the Contractor and its subcontractors, see **EXHIBIT D**;
- .5 copies of all documentation to the Owner including, but not limited to, warranties, manufacturer's instructions and any other documentation in relation to all systems including, but not limited to, HVAC, plumbing, windows, and all other required documents pursuant to the Contract between the parties.

§ 4.2.2 The Owner's final payment to the Contractor shall be made no later than 30 days after the issuance of the Architect's final Certificate for Payment, or as follows:

« »

## ARTICLE 5 DISPUTE RESOLUTION

### § 5.1 Binding Dispute Resolution

For any claim subject to, but not resolved by, mediation pursuant to Section 21.5, the method of binding dispute resolution shall be as follows:

(Check the appropriate box.)

[  ] Arbitration pursuant to Section 21.6 of this Agreement

[  ] Litigation in a court of competent jurisdiction

[  ] Other (Specify)

« »

If the Owner and Contractor do not select a method of binding dispute resolution, or do not subsequently agree in writing to a binding dispute resolution method other than litigation, claims will be resolved in a court of competent jurisdiction.

**ARTICLE 6 ENUMERATION OF CONTRACT DOCUMENTS – See EXHIBIT LIST dated the    day of    in the year 2022 with Exhibits A through \_\_, which is incorporated herein.**

§ 6.1 The Contract Documents are defined in Article 7 and, except for Modifications issued after execution of this Agreement, are enumerated in the sections below.

§ 6.1.1 The Agreement is this executed AIA Document A104™–2017, Standard Abbreviated Form of Agreement Between Owner and Contractor.

§ 6.1.2 AIA Document E203™–2013, Building Information Modeling and Digital Data Exhibit, dated as indicated below:  
(Insert the date of the E203–2013 incorporated into this Agreement.)

« N/A »

§ 6.1.3 The Supplementary and other Conditions of the Contract: N/A

| Document | Title | Date | Pages |
|----------|-------|------|-------|
|          |       |      |       |

§ 6.1.4 The Specifications:  
(Either list the Specifications here or refer to an exhibit attached to this Agreement.)

« See Contractor’s Proposal and Specifications dated (Date on Specifications) (See EXHIBIT B) »

| Section | Title | Date | Pages |
|---------|-------|------|-------|
|         |       |      |       |

§ 6.1.5 The Drawings:  
(Either list the Drawings here or refer to an exhibit attached to this Agreement.)

«See Architectural Drawings dated (Date on Drawings), copies of which are attached hereto as EXHIBIT E\_»

| Number | Title | Date |
|--------|-------|------|
|        |       |      |

§ 6.1.6 The Addenda, if any: EXHIBIT F - None

| Number                | Date             | Pages    |
|-----------------------|------------------|----------|
| Addendum # X (If Any) | Date of Addendum | xx Pages |
|                       |                  |          |

Portions of Addenda relating to bidding or proposal requirements are not part of the Contract Documents unless the bidding or proposal requirements are enumerated in this Article 6.

§ 6.1.7 Additional documents, if any, forming part of the Contract Documents: N/A

.1 Other Exhibits:  
(Check all boxes that apply.)

Exhibit A, Determination of the Cost of the Work.

AIA Document E204™–2017, Sustainable Projects Exhibit, dated as indicated below:  
(Insert the date of the E204–2017 incorporated into this Agreement.)

<< >>

[ << >> ] The Sustainability Plan:

| Title | Date | Pages |
|-------|------|-------|
|       |      |       |

[ << >> ] Supplementary and other Conditions of the Contract:

| Document | Title | Date | Pages |
|----------|-------|------|-------|
|          |       |      |       |

- .2 Other documents, if any, listed below:  
(List here any additional documents that are intended to form part of the Contract Documents.)

<< >>

## ARTICLE 7 GENERAL PROVISIONS

### § 7.1 The Contract Documents

The Contract Documents are enumerated in Article 6 and consist of this Agreement (including, if applicable, Supplementary and other Conditions of the Contract), Drawings, Specifications, Addenda issued prior to the execution of this Agreement, other documents listed in this Agreement, and Modifications issued after execution of this Agreement. 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. 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 to the extent consistent with the Contract Documents and reasonably inferable from them as being necessary to produce the indicated results.

### § 7.2 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 between any persons or entities other than the Owner and the Contractor.

### § 7.3 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.

### § 7.4 Instruments of Service

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

### § 7.5 Ownership and use of Drawings, Specifications and Other Instruments of Service

§ 7.5.1 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 in their Instruments of Service, including copyrights. The Contractor, Subcontractors, Sub-subcontractors, and 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 the Project is not to be construed as publication in derogation of the Architect's or Architect's consultants' reserved rights.

§ 7.5.2 The Contractor, Subcontractors, Sub-subcontractors and suppliers are authorized to use and reproduce the Instruments of Service provided to them, subject to the protocols established pursuant to Sections 7.6 and 7.7, 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 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.

## § 7.6

## § 7.7

### § 7.8 Severability

The invalidity of any provision of the Contract Documents shall not invalidate the Contract or its remaining provisions. If it is determined that any provision of the Contract Documents violates any law, or is otherwise invalid or unenforceable, then that provision shall be revised to the extent necessary to make that provision legal and enforceable. In such case the Contract Documents shall be construed, to the fullest extent permitted by law, to give effect to the parties' intentions and purposes in executing the Contract.

### § 7.9 Notice

§ 7.9.1 Except as otherwise provided in Section 7.9.2, where the Contract Documents require one party to notify or give notice to the other party, such notice shall be provided in writing to the designated representative of the party to whom the notice is addressed and shall be deemed to have been duly served if delivered in person, by mail, by courier.

*(If other than in accordance with AIA Document E203–2013, insert requirements for delivering Notice in electronic format such as name, title and email address of the recipient and whether and how the system will be required to generate a read receipt for the transmission.)*

« »

§ 7.9.2 Notice of Claims shall be provided in writing and shall be deemed to have been duly served only if delivered to the designated representative of the party to whom the notice is addressed by certified or registered mail, or by courier providing proof of delivery.

### § 7.10 Relationship of the Parties

Where the Contract is based on the Cost of the Work plus the Contractor's Fee, with or without a Guaranteed Maximum Price, the Contractor accepts the relationship of trust and confidence established by this Agreement and covenants with the Owner to cooperate with the Architect and exercise the Contractor's skill and judgment in furthering the interests of the Owner; to furnish efficient business administration and supervision; to furnish at all times an adequate supply of workers and materials; and to perform the Work in an expeditious and economical manner consistent with the Owner's interests. The Owner agrees to furnish and approve, in a timely manner, information required by the Contractor and to make payments to the Contractor in accordance with the requirements of the Contract Documents.

## ARTICLE 8 OWNER

### § 8.1 Information and Services Required of the Owner

#### § 8.1.1

§ 8.1.2 The Owner shall furnish all necessary surveys and a legal description of the site.

§ 8.1.3 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.

§ 8.1.4 Except for permits and fees that are the responsibility of the Contractor under the Contract Documents, including those required under Section 9.6.1, the Owner shall secure and pay for other necessary approvals, easements, assessments, and charges required for the construction, use, or occupancy of permanent structures or for permanent changes in existing facilities.

### § 8.2 Owner's Right to Stop the Work

If the Contractor fails to correct Work which is not in accordance with the requirements of the Contract Documents, or repeatedly fails to carry out the 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 is 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.

### **§ 8.3 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 notice from the Owner to commence and continue correction of such default or neglect with diligence and promptness, the Owner may, without prejudice to any other remedies the Owner may have, correct such default or neglect. Such action by the Owner and amounts charged to the Contractor are both subject to prior approval of the Architect and the Architect may, pursuant to Section 15.4.3, withhold or nullify a Certificate for Payment in whole or in part, to the extent reasonably necessary to reimburse the Owner for the reasonable cost of correcting such deficiencies, including the Owner's expenses and compensation for the Architect's additional services made necessary by such default, neglect, or failure. If the Contractor disagrees with the actions of the Owner or the Architect, or the amounts claimed as costs to the Owner, the Contractor may file a Claim pursuant to Article 21.

**§ 8.4** In no event shall the Owner have control over, charge of, or any responsibility for construction means, methods, techniques, sequences, or procedures or for safety precautions and programs in connection with the work.

## **ARTICLE 9 CONTRACTOR**

### **§ 9.1 Review of Contract Documents and Field Conditions by Contractor**

**§ 9.1.1** 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.

**§ 9.1.2** 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 8.1.2, 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.

**§ 9.1.3** The Contractor is not required to ascertain that the Architectural Drawings pursuant to **EXHIBIT E** 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.

**§ 9.1.4** The Contractor shall comply with all applicable federal, state and local laws, statutes, rules, codes, ordinances and regulations.

### **§ 9.2 Supervision and Construction Procedures**

**§ 9.2.1** 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.

**§ 9.2.2** 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.

### **§ 9.3 Labor and Materials**

**§ 9.3.1** 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.

**§ 9.3.2** 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 skilled in tasks assigned to them.

**§ 9.3.3** The Contractor may make a substitution only with the consent of the Owner, after evaluation by the Architect and in accordance with a Modification.

#### **§ 9.4 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 under normal usage. All other warranties required by the Contract Documents shall be issued in the name of the Owner, or shall be transferable to the Owner, and shall commence in accordance with Section 15.6.3.

#### **§ 9.5 Taxes**

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

#### **§ 9.6 Permits, Fees, Notices, and Compliance with Laws**

**§ 9.6.1** Unless otherwise provided in the Contract Documents, the Contractor shall secure and pay for the building permit as well as 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.

**§ 9.6.2** 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. 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.

#### **§ 9.7 Allowances**

The Contractor shall include in the Contract Sum all allowances stated in the Contract Documents. The Owner shall select materials and equipment under allowances with reasonable promptness. Allowance amounts shall include the costs to the Contractor of materials and equipment delivered at the site and all required taxes, less applicable trade discounts. Contractor's costs for unloading and handling at the site, labor, installation, overhead, profit, and other expenses contemplated for stated allowance amounts shall be included in the Contract Sum but not in the allowance.

#### **§ 9.8 Contractor's Construction Schedules See EXHIBIT A**

**§ 9.8.1** The Contractor, upon execution of this Agreement, shall 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.

**§ 9.8.2** The Contractor shall perform the Work in general accordance with the most recent schedule submitted to the Owner and Architect.

#### **§ 9.9 Submittals**

**§ 9.9.1** The Contractor shall review for compliance with the Contract Documents and submit to the Architect Shop Drawings, Product Data, Samples, and similar submittals required by the Contract Documents in coordination with the Contractor's construction schedule and in such sequence as to allow the Architect reasonable time for review. 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. The Work shall be in accordance with approved submittals.

**§ 9.9.2** Shop Drawings, Product Data, Samples and similar submittals are not Contract Documents.

**§ 9.9.3** 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 or unless the Contractor needs to provide such services in order to carry out the Contractor's own responsibilities. If professional design services or certifications by a design professional are specifically required, the Owner and the Architect will specify the performance and design criteria that such services must satisfy. The Contractor shall cause such services or certifications to be provided by an appropriately licensed design professional. If no criteria are specified, the design shall comply with applicable codes and ordinances. Each Party shall be entitled to rely upon the information provided by the other Party. The Architect will review and approve or take other appropriate action on submittals for the limited purpose of checking for conformance with information provided and the design concept expressed in the Contract Documents. The Architect's review of Shop Drawings, Product Data, Samples, and similar submittals shall be for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. In performing such review, the Architect will approve, or take other appropriate action upon, the Contractor's Shop Drawings, Product Data, Samples, and similar submittals.

#### **§ 9.10 Use of Site**

The Contractor shall confine operations at the site to areas permitted by applicable laws, statutes, ordinances, codes, rules and regulations, lawful orders of public authorities, and the Contract Documents and shall not unreasonably encumber the site with materials or equipment. CONTRACTOR IS AWARE THAT ADJACENT TO THE PREMISES UNDER THE SCOPE OF WORK PURSUANT TO THIS CONTRACT, CONTRACTOR SHALL PROVIDE ANY AND ALL SAFETY TECHNIQUES AND PRECAUTIONS TO PROTECT THE ADJACENT AREA AND THE PUBLIC AND EMPLOYEES OF THE OWNER.

#### **§ 9.11 Cutting and Patching**

The Contractor shall be responsible for cutting, fitting, or patching required to complete the Work or to make its parts fit together properly.

#### **§ 9.12 Cleaning Up**

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

#### **§ 9.13 Access to Work**

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

#### **§ 9.14 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 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 an infringement of a copyright or patent is discovered by, or made known to, the Contractor, the Contractor shall be responsible for the loss unless the information is promptly furnished to the Architect.

#### **§ 9.15 Indemnification**

**§ 9.15.1** 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 which would otherwise exist as to a party or person described in this Section 9.15.1.

**§ 9.15.2** In claims against any person or entity indemnified under this Section 9.15 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 9.15.1 shall not be limited by a limitation on amount or type of damages, compensation or benefits payable by or for the Contractor or Subcontractor under workers' compensation acts, disability benefit acts or other employee benefit acts.

## **ARTICLE 10 ARCHITECT**

**§ 10.1** The Architect will provide administration of the Contract as described in the Contract Documents and will be an Owner's representative during construction, until the date the Architect issues the final Certificate for Payment. The Architect will have authority to act on behalf of the Owner only to the extent provided in the Contract Documents, unless otherwise modified in writing in accordance with other provisions of the Contract.

**§ 10.2** 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.

**§ 10.3** The Architect will visit the site at intervals appropriate to the stage of the construction 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 safety precautions and programs in connection with the Work, since these are solely the Contractor's rights and responsibilities under the Contract Documents.

**§ 10.4** 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 promptly report to the Owner (1) known deviations from the Contract Documents, (2) known deviations from the most recent construction schedule submitted by the Contractor, and (3) 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.

**§ 10.5** Based on the Architect's evaluations of the Work and 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.

**§ 10.6** The Architect has authority to reject Work that does not conform to the Contract Documents and to require inspection or testing of the Work.

**§ 10.7** 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.

**§ 10.8** 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 will make initial decisions on all claims, disputes, and other matters in question between the Owner and Contractor but will not be liable for results of any interpretations or decisions rendered in good faith.

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



## **ARTICLE 11 SUBCONTRACTORS**

§ 11.1 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.

§ 11.2 Unless otherwise stated in the Contract Documents, the Contractor, as soon as practicable after award of the Contract, shall notify the Owner and Architect of the Subcontractors or suppliers proposed for each of the principal portions of the Work. The Contractor shall not contract with any Subcontractor or supplier to whom the Owner or Architect has made reasonable written objection within ten days after receipt of the Contractor's list of Subcontractors and suppliers. If the proposed but rejected Subcontractor was reasonably capable of performing the Work, the Contract Sum and Contract Time shall be increased or decreased by the difference, if any, occasioned by such change, and an appropriate Change Order shall be issued before commencement of the substitute Subcontractor's Work. The Contractor shall not be required to contract with anyone to whom the Contractor has made reasonable objection.

§ 11.3 Contracts between the Contractor and Subcontractors shall (1) require each Subcontractor, to the extent of the Work to be performed by the Subcontractor, to be bound to the Contractor by the 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 the Contract Documents, assumes toward the Owner and Architect, and (2) allow the Subcontractor the benefit of all rights, remedies and redress against the Contractor that the Contractor, by these Contract Documents, has against the Owner.

## **ARTICLE 12 CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS**

§ 12.1 The term "Separate Contractor(s)" shall mean other contractors retained by the Owner under separate agreements. The Owner reserves the right to perform construction or operations related to the Project with the Owner's own forces, and with Separate Contractors retained under Conditions of the Contract substantially similar to those of this Contract, including those provisions of the Conditions of the Contract related to insurance and waiver of subrogation. This section should only apply for out-of-scope work whereby separate contractors are retained by the Owner.

§ 12.2 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 activities with theirs as required by the Contract Documents.

## **ARTICLE 13 CHANGES IN THE WORK**

§ 13.1 By appropriate Modification, changes in the Work may be accomplished after execution of the Contract. The Owner, without invalidating the Contract, may order changes in the Work within the general scope of the Contract consisting of additions, deletions, or other revisions, with the Contract Sum and Contract Time being adjusted accordingly. Such changes in the Work shall be authorized by written Change Order signed by the Owner, Contractor, and Architect, or by written Construction Change Directive signed by the Owner and Architect. Upon issuance of the Change Order or Construction Change Directive, the Contractor shall proceed promptly with such changes in the Work, unless otherwise provided in the Change Order or Construction Change Directive. Agreement on any Change Order shall constitute a final settlement and release of all claims by the Contractor relating to the changed work that is subject to the Change Order including, but not limited to, all direct and indirect costs associated with such change and any and all adjustments to the Contract Sum and the Contract Schedule including any and all claims of the Contractor to the date of the Change Order. In the event that the Owner has any claims against the Contractor, the Owner shall notify the Contractor in writing by the 30<sup>th</sup> day of each month during construction.

§ 13.2 Adjustments in the Contract Sum and Contract Time resulting from a change in the Work shall be determined by mutual agreement of the parties or, in the case of a Construction Change Directive signed only by the Owner and Architect, by the Contractor's cost of labor, material, equipment, and reasonable overhead and profit, unless the parties agree on another method for determining the cost or credit. Pending final determination of the total cost of a Construction Change Directive, the Contractor may request payment for Work completed pursuant to the Construction Change Directive. The Architect will make an interim determination of the amount of payment due for purposes of certifying the Contractor's monthly Application for Payment. When the Owner and Contractor agree on adjustments to the Contract Sum and Contract Time arising from a Construction Change Directive, the Architect will prepare a Change Order. Contractor's overhead and profit on any change shall be limited to Fifteen (15%) Percent.

§ 13.3 The Architect will have 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 shall be effected by written order and shall be binding on the Owner and Contractor. The Contractor shall carry out such written orders promptly. If the Contractor believes that the proposed minor change in the Work will affect the Contract Sum or Contract Time, the Contractor shall notify the Architect and shall not proceed to implement the change in the Work.

§ 13.4 If concealed or unknown physical conditions are encountered at the site that differ materially from those indicated in the Contract Documents or from those conditions ordinarily found to exist, the Contract Sum and Contract Time shall be equitably adjusted as mutually agreed between the Owner and Contractor; provided that the Contractor provides notice to the Owner and Architect promptly and before conditions are disturbed.

#### ARTICLE 14 TIME

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

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

§ 14.3 The term “day” as used in the Contract Documents shall mean calendar day unless otherwise specifically defined.

§ 14.4 The date of Substantial Completion is the date certified by the Architect in accordance with Section 15.6.3.

§ 14.5 If the Contractor is delayed at any time in the commencement or progress of the Work by (1) changes ordered in the Work; (2) by labor disputes, fire, unusual delay in deliveries, abnormal adverse weather conditions not reasonably anticipatable, unavoidable casualties, or any causes beyond the Contractor’s control; or (3) by other causes that the Contractor asserts, and the Architect determines, justify delay, then the Contract Time shall be extended for such reasonable time as the Architect may determine, subject to the provisions of Article 21.

#### ARTICLE 15 PAYMENTS AND COMPLETION

##### § 15.1 Schedule of Values

§ 15.1.1 Where the Contract is based on a Stipulated Sum or the Cost of the Work with a Guaranteed Maximum Price pursuant to Section 3.2 or 3.4, the Contractor shall submit a schedule of values to the Architect before the first Application for Payment, allocating the entire Stipulated Sum or Guaranteed Maximum Price to the various portions of the Work. The schedule of values shall be prepared in the form, and supported by the data to substantiate its accuracy required by the Architect. This schedule of values shall be used as a basis for reviewing the Contractor’s Applications for Payment. Contractor’s Schedule of Values is noted in **EXHIBIT G** attached hereto.

§ 15.1.2 The allocation of the Stipulated Sum or Guaranteed Maximum Price under this Section 15.1 shall not constitute a separate stipulated sum or guaranteed maximum price for each individual line item in the schedule of values.

##### § 15.2

§ 15.3.3 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 stored, and protected from damage, off the site at a location agreed upon in writing.

§ 15.3.4 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 other encumbrances adverse to the Owner’s interests.

## § 15.4 Certificates for Payment

§ 15.4.1 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 of the Architect's reasons for withholding certification in whole or in part as provided in Section 15.4.3.

§ 15.4.2 The issuance of a Certificate for Payment will constitute a representation by the Architect to the Owner, based on the Architect's evaluations of the Work and the data in the Application for Payment, that, to the best of the Architect's knowledge, information, and belief, the Work has progressed to the point indicated, the quality of the Work is in accordance with the Contract Documents, and the Contractor is entitled to payment in the amount certified. 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. 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 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.

§ 15.4.3 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 15.4.2 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 15.4.1. If the Contractor and the 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 9.2.2, 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 suppliers 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;
- .8 failure to provide Owner with Partial or Final Releases.

§ 15.4.4 When either party disputes the Architect's decision regarding a Certificate for Payment under Section 15.4.3, in whole or in part, that party may submit a Claim in accordance with Article 21.

## § 15.5 Progress Payments

§ 15.5.1 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.

§ 15.5.2 Neither the Owner nor Architect shall have an obligation to pay or see to the payment of money to a Subcontractor or supplier except as may otherwise be required by law.

§ 15.5.3 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.

§ 15.5.4 Provided the Owner has fulfilled its payment obligations under the Contract Documents, the Contractor shall defend and indemnify the Owner from all loss, liability, damage or expense, including reasonable attorney's fees and litigation expenses, arising out of any lien claim or other claim for payment by any Subcontractor or supplier of any tier. Upon receipt of notice of a lien claim or other claim for payment, the Owner shall notify the Contractor. If approved by the applicable court, when required, the Contractor may substitute a surety bond for the property against which the lien or other claim for payment has been asserted.

### § 15.6 Substantial Completion

§ 15.6.1 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.

§ 15.6.2 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.

§ 15.6.3 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. When the Architect determines that the Work or designated portion thereof is substantially complete, the Architect will issue a Certificate of Substantial Completion which shall establish the date of Substantial Completion; establish responsibilities of the Owner and Contractor for security, maintenance, heat, utilities, damage to the Work and insurance; and 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.

§ 15.6.4 The Certificate of Substantial Completion shall be submitted to the Owner and Contractor for their written acceptance of responsibilities assigned to them in the Certificate. Upon such acceptance and consent of surety, if any, the Owner shall make payment of retainage applying to the 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.

### § 15.7 Final Completion and Final Payment

§ 15.7.1 Upon receipt of the Contractor's 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 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 stated in Section 15.7.2 as precedent to the Contractor's being entitled to final payment have been fulfilled.

§ 15.7.2 Final payment shall not become due until the Contractor has delivered to the Owner a complete release of all liens arising out of this Contract or receipts in full covering all labor, materials and equipment for which a lien could be filed, or 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 costs and reasonable attorneys' fees.

§ 15.7.3 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;
- .3 terms of special warranties required by the Contract Documents; or
- .4 audits performed by the Owner, if permitted by the Contract Documents, after final payment.

§ 15.7.4 Acceptance of final payment by the Contractor, a Subcontractor or 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 the final Application for Payment.

**ARTICLE 16 PROTECTION OF PERSONS AND PROPERTY – Contractor's Safety Program is attached hereto as EXHIBIT J**

**§ 16.1 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. 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, a Subcontractor, or a Sub-subcontractor; 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.

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 and property and their protection from damage, injury, or loss. The Contractor shall promptly remedy damage and loss to property 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 16.1.2 and 16.1.3. The Contractor may make a claim for the cost to remedy the damage or loss to the extent such damage or loss is attributable to acts or omissions of the Owner or Architect 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 9.15.

**§ 16.2 Hazardous Materials and Substances**

**§ 16.2.1** The Contractor is responsible for compliance with the requirements of the Contract Documents regarding hazardous materials or substances. 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 notify the Owner and Architect of the condition. 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 shutdown, delay, and start-up.

**§ 16.2.2** 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 16.2.1 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.

**§ 16.2.3** 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.

**ARTICLE 17 INSURANCE AND BONDS – SEE EXHIBIT H**

**§ 17.1 Contractor's Insurance**

**§ 17.1.1** The Contractor shall purchase and maintain insurance of the types and limits of liability, containing the endorsements, and subject to the terms and conditions, as described in this Section 17.1 or elsewhere in the Contract Documents. The Contractor shall purchase and maintain the insurance required by this Agreement from an insurance company or insurance companies lawfully authorized to issue insurance in the jurisdiction where the Project is located. The Contractor shall maintain the required insurance until the expiration of the period for correction of Work as set forth in Section 18.4, unless a different duration is stated below:

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§ 17.1.2 Commercial General Liability insurance for the Project written on an occurrence form with policy limits of not less than «One Million Dollars » (\$ «1,000,000 » ) each occurrence, «Two Million Dollars » (\$ «2,000,000 » ) general aggregate, and «Two Million Dollars » (\$ «2,000,000 » ) aggregate for products-completed operations hazard, providing coverage for claims including

- .1 damages because of bodily injury, sickness or disease, including occupational sickness or disease, and death of any person;
- .2 personal and advertising injury;
- .3 damages because of physical damage to or destruction of tangible property, including the loss of use of such property;
- .4 bodily injury or property damage arising out of completed operations; and
- .5 the Contractor's indemnity obligations under Section 9.15.

§ 17.1.3 Automobile Liability covering vehicles owned by the Contractor and non-owned vehicles used by the Contractor, with policy limits of not less than «One Million Dollars » (\$ «1,000,000 » ) per accident, for bodily injury, death of any person, and property damage arising out of the ownership, maintenance, and use of those motor vehicles along with any other statutorily required automobile coverage.

§ 17.1.4 The Contractor may achieve the required limits and coverage for Commercial General Liability and Automobile Liability through a combination of primary and excess or umbrella liability insurance, provided such primary and excess or umbrella insurance policies result in the same or greater coverage as those required under Section 17.1.2 and 17.1.3, and in no event shall any excess or umbrella liability insurance provide narrower coverage than the primary policy. The excess policy shall not require the exhaustion of the underlying limits only through the actual payment by the underlying insurers.

§ 17.1.5 Workers' Compensation at Rhode Island statutory limits.

§ 17.1.6 Employers' Liability with policy limits not less than «One Million Dollars » (\$ «1,000,000 » ) each accident, « » (\$ « » ) each employee, and « » (\$ « » ) policy limit.

§ 17.1.7 If the Contractor is required to furnish professional services as part of the Work, the Contractor shall procure Professional Liability insurance covering performance of the professional services, with policy limits of not less than « » (\$ « » ) per claim and « » (\$ « » ) in the aggregate.

§ 17.1.8 If the Work involves the transport, dissemination, use, or release of pollutants, the Contractor shall procure Pollution Liability insurance, with policy limits of not less than « Two Million Dollars » (\$ «2,000,000 » ) per claim and « » (\$ « » ) in the aggregate.

§ 17.1.9 Coverage under Sections 17.1.7 and 17.1.8 may be procured through a Combined Professional Liability and Pollution Liability insurance policy, with combined policy limits of not less than « Two Million Dollars » (\$ «2,000,000 » ) per claim and «Two Million Dollars » (\$ «2,000,000 » ) in the aggregate.

§ 17.1.10 The Contractor shall provide certificates of insurance acceptable to the Owner evidencing compliance with the requirements in this Section 17.1 at the following times: (1) prior to commencement of the Work; (2) upon renewal or replacement of each required policy of insurance; and (3) upon the Owner's written request. An additional certificate evidencing continuation of liability coverage, including coverage for completed operations, shall be submitted with the final Application for Payment and thereafter upon renewal or replacement of such coverage until the expiration of the period required by Section 17.1.1. The certificates will show the Owner as an additional insured on the Contractor's Commercial General Liability and excess or umbrella liability policy. **THE CONTRACTOR SHALL PROVIDE THE OWNER WITH AN ENDORSEMENT FOR ADDITIONAL INSURED COVERAGE.**

§ 17.1.11 The Contractor shall disclose to the Owner any deductible or self-insured retentions applicable to any insurance required to be provided by the Contractor.

§ 17.1.12 To the fullest extent permitted by law, the Contractor shall cause the commercial liability coverage required by this Section 17.1 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 for which loss occurs during completed operations. The additional insured coverage shall be primary and non-contributory to any of the Owner's general liability insurance policies and shall apply to both ongoing and completed operations. To the extent commercially available, the additional insured coverage shall be no less than that provided by Insurance Services Office, Inc. (ISO) forms CG 20 10 07 04, CG 20 37 07 04, and, with respect to the Architect and the Architect's Consultants, CG 20 32 07 04.

§ 17.1.13 Within three (3) business days of the date the Contractor becomes aware of an impending or actual cancellation or expiration of any insurance required by this Section 17.1, the Contractor shall provide notice to the Owner of such impending or actual cancellation or expiration. Upon receipt of notice from the Contractor, the Owner shall, unless the lapse in coverage arises from an act or omission of the Owner, have the right to stop the Work until the lapse in coverage has been cured by the procurement of replacement coverage by the Contractor. The furnishing of notice by the Contractor shall not relieve the Contractor of any contractual obligation to provide any required coverage.

**§ 17.1.14 Other Insurance Provided by the Contractor**

*(List below any other insurance coverage to be provided by the Contractor and any applicable limits.)*

| Coverage           | Limits      |
|--------------------|-------------|
| Umbrella Liability | \$5,000,000 |

**§ 17.2 Owner's Insurance**

**§ 17.2.1 Owner's Liability Insurance**

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

**§ 17.2.2 Property Insurance**

§ 17.2.2.1 The Owner shall purchase and maintain, from an insurance company or insurance companies lawfully authorized to issue insurance in the jurisdiction where the Project is located, property insurance written on a builder's risk "all-risks" completed value or equivalent policy form and sufficient to cover the total value of the entire Project on a replacement cost basis. The Owner's property insurance coverage shall be no less than the amount of the initial Contract Sum, plus the value of subsequent Modifications and labor performed or materials or equipment supplied by others. The property insurance shall be maintained until Substantial Completion and thereafter as provided in Section 17.2.2.2, unless otherwise provided in the Contract Documents or otherwise agreed in writing by the parties to this Agreement. This insurance shall include the interests of the Owner, Contractor, Subcontractors, and Sub-subcontractors in the Project as insureds. This insurance shall include the interests of mortgagees as loss payees.

§ 17.2.2.2 Unless the parties agree otherwise, upon Substantial Completion, the Owner shall continue the insurance required by Section 17.2.2.1 or, if necessary, replace the insurance policy required under Section 17.2.2.1 with property insurance written for the total value of the Project that shall remain in effect until expiration of the period for correction of the Work set forth in Section 18.4.

§ 17.2.2.3 If the insurance required by this Section 17.2.2 is subject to deductibles or self-insured retentions, the Owner shall be responsible for all loss not covered because of such deductibles or retentions.

§ 17.2.2.4 If the Work involves remodeling an existing structure or constructing an addition to an existing structure, the Owner shall purchase and maintain, until the expiration of the period for correction of Work as set forth in Section 18.4, "all-risks" property insurance, on a replacement cost basis, protecting the existing structure against direct physical loss or damage, notwithstanding the undertaking of the Work. The Owner shall be responsible for all co-insurance penalties.

§ 17.2.2.5 Prior to commencement of the Work, the Owner shall secure the insurance, and provide evidence of the coverage, required under this Section 17.2.2 and, upon the Contractor's request, provide a copy of the property insurance policy or policies required by this Section 17.2.2. The copy of the policy or policies provided shall contain all applicable conditions, definitions, exclusions, and endorsements.

§ 17.2.2.6 Within three (3) business days of the date the Owner becomes aware of an impending or actual cancellation or expiration of any insurance required by this Section 17.2.2, the Owner shall provide notice to the

Contractor of such impending or actual cancellation or expiration. Unless the lapse in coverage arises from an act or omission of the Contractor: (1) the Contractor, upon receipt of notice from the Owner, shall have the right to stop the Work until the lapse in coverage has been cured by the procurement of replacement coverage by either the Owner or the Contractor; (2) the Contract Time and Contract Sum shall be equitably adjusted; and (3) the Owner waives all rights against the Contractor, Subcontractors, and Sub-subcontractors to the extent any loss to the Owner would have been covered by the insurance had it not expired or been cancelled. If the Contractor purchases replacement coverage, the cost of the insurance shall be charged to the Owner by an appropriate Change Order. The furnishing of notice by the Owner shall not relieve the Owner of any contractual obligation to provide required insurance.

**§ 17.2.2.7 Waiver of Subrogation**

**§ 17.2.2.7.1** 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; (2) the Architect and Architect's consultants; and (3) Separate Contractors, 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 those losses are covered by property insurance required by this Agreement or other property insurance applicable to the Project, except such rights as they have to proceeds of such insurance. The Owner or Contractor, as appropriate, shall require similar written waivers in favor of the individuals and entities identified above from the Architect, Architect's consultants, Separate Contractors, subcontractors, and sub-subcontractors. The policies of insurance purchased and maintained by each person or entity agreeing to waive claims pursuant to this Section 17.2.2.7 shall not prohibit this waiver of subrogation. This waiver of subrogation shall be effective as to a person or entity (1) even though that person or entity would otherwise have a duty of indemnification, contractual or otherwise, (2) even though that person or entity did not pay the insurance premium directly or indirectly, or (3) whether or not the person or entity had an insurable interest in the damaged property.

**§ 17.2.2.7.2** 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, to the extent permissible by such policies, the Owner waives all rights in accordance with the terms of Section 17.2.2.7.1 for damages caused by fire or other causes of loss covered by this separate property insurance.

**§ 17.2.2.8** 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. The Owner shall pay the Architect and Contractor their just shares of insurance proceeds received by the Owner, and by appropriate agreements, written where legally required for validity, the Architect and Contractor shall make payments to their consultants and Subcontractors in similar manner.

**§ 17.2.3 Other Insurance Provided by the Owner N/A**

*(List below any other insurance coverage to be provided by the Owner and any applicable limits.)*

**Coverage**

**Limits**

**§ 17.3 Performance Bond and Payment Bond SEE EXHIBIT I**

**§ 17.3.1** The Owner shall require the Contractor to furnish bonds covering faithful performance of the Contract and payment of obligations arising thereunder as stipulated in the Contract Documents on the date of execution of the Contract.

The Contractor shall provide the necessary Performance and Payment Bonds, i.e. statutory bonds pursuant to R.I.G.L. 37-12-1 and 37-13-14. Any bond shall be with a surety noted in the United States Federal Register of Sureties.

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



## ARTICLE 18 CORRECTION OF WORK

§ 18.1 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.

§ 18.2 In addition to the Contractor's obligations under Section 9.4, 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 15.6.3, 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 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.

§ 18.3 If the Contractor fails to correct nonconforming Work within a reasonable time, the Owner may correct it in accordance with Section 8.3.

§ 18.4 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.

§ 18.5 The one-year period for correction of Work shall not be extended by corrective Work performed by the Contractor pursuant to this Article 18.

## ARTICLE 19 MISCELLANEOUS PROVISIONS

### § 19.1 Assignment of Contract

Neither party to the Contract shall assign the Contract without written consent of the other, except that 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.

### § 19.2 Governing Law

The Contract shall be governed by the law of the place where the Project is located, excluding that jurisdiction's choice of law rules. If the parties have selected arbitration as the method of binding dispute resolution, the Federal Arbitration Act shall govern Section 21.6.

### § 19.3 Tests and Inspections

Tests, inspections, and approvals of portions of the Work required by the Contract Documents or by applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities shall be made at an appropriate time. 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 tests, inspections, or approvals that do not become requirements until after bids are received or negotiations concluded. The Owner shall directly arrange and pay for tests, inspections, or approvals where building codes or applicable laws or regulations so require.

### § 19.4 The Owner's representative:

*(Name, address, email address and other information)*

« Brian F. Byrnes – Deputy Superintendent of Parks »

« Roger Williams Park – Dalrymple Boathouse »

« 1000 Elmwood Avenue »

« Providence, RI 02905 »

§ 19.5 The Contractor's representative:  
(Name, address, email address and other information)

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§ 19.6 Neither the Owner's nor the Contractor's representative shall be changed without ten days' prior notice to the other party.

## ARTICLE 20 TERMINATION OF THE CONTRACT

### § 20.1 Termination by the Contractor

If the Architect fails to certify payment as provided in Section 15.4.1 for a period of 30 days through no fault of the Contractor, or if the Owner fails to make payment as provided in Section 4.1.3 for a period of 30 days, the Contractor may, upon seven additional days' notice to the Owner and the 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.

### § 20.2 Termination by the Owner for Cause

§ 20.2.1 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.

§ 20.2.2 When any of the reasons described in Section 20.2.1 exists, the Owner, upon certification by the Architect that sufficient cause exists to justify such action, may, without prejudice to any other remedy the Owner may have and after giving the Contractor seven days' notice, terminate the Contract and take possession of the site and of all materials, equipment, tools, and construction equipment and machinery thereon owned by the Contractor and may finish the Work by whatever reasonable method the Owner may deem expedient. Upon 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.

§ 20.2.3 When the Owner terminates the Contract for one of the reasons stated in Section 20.2.1, the Contractor shall not be entitled to receive further payment until the Work is finished.

§ 20.2.4 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 Architect, upon application, and this obligation for payment shall survive termination of the Contract.

### § 20.3 Termination by the Owner for Convenience

The Owner may, at any time, terminate the Contract for the Owner's convenience and without cause. The Owner shall pay the Contractor for Work executed; and costs incurred by reason of such termination, including costs attributable to termination of Subcontracts; and a termination fee, if any, as follows:

*(Insert the amount of or method for determining the fee payable to the Contractor by the Owner following a termination for the Owner's convenience, if any.)*

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## ARTICLE 21 CLAIMS AND DISPUTES

### § 21.1 DELETED

## § 21.2 Notice of Claims

§ 21.2.1 Claims by either the Owner or Contractor, where the condition giving rise to the Claim is first discovered prior to expiration of the period for correction of the Work set forth in Section 18.2, shall be initiated by notice to the Architect within 3 days after occurrence of the event giving rise to such Claim or within 3 days after the claimant first recognizes the condition giving rise to the Claim, whichever is later.

§ 21.2.2 Claims by either the Owner or Contractor, where the condition giving rise to the Claim is first discovered after expiration of the period for correction of the Work set forth in Section 18.2, shall be initiated by notice to the other party.

## § 21.3 Time Limits on Claims

The Owner and Contractor shall commence all claims and causes of action against the other and arising out of or related to the Contract in accordance with the requirements of the final dispute resolution method selected in this Agreement whether in contract, tort, breach of warranty, or otherwise, within the 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 21.3.

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

§ 21.5 If the parties have selected arbitration as the method for binding dispute resolution in this 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 pursuant to the Rhode Island Public Works Arbitration Act, 37-16-1 et. seq.. 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 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.

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

## § 21.7 Continuing Contract Performance

Pending final resolution of a Claim, except as otherwise agreed in writing, the Contractor shall proceed diligently with performance of the Contract and the Owner shall continue to make payments in accordance with the Contract Documents.

This mutual waiver is applicable, without limitation, to all consequential damages due to either party's termination in accordance with Article 20. Nothing contained in this Section 21.11 shall be deemed to preclude an award of liquidated damages, when applicable, in accordance with the requirements of the Contract Documents.

## ARTICLE 22 EXHIBIT LIST

§ 22.1 **Exhibit List.** See Exhibit List attached hereto.

This Agreement entered into as of the day and year first written above.

**PROVIDENCE PUBLIC BUILDING  
AUTHORITY**

**Vendor Company Name**

OWNER *(Signature)*

**Ron Crosson, Chairman**  
*(Printed name and title)*

CONTRACTOR *(Signature)*

«**Owner's Name & Title**»  
*(Printed name and title)*



Table of Contents Generated by SpecBuilder: 12/27/2024

| Division                                       | Section Title                       | Pages |
|--|-------------------------------------|-------|
| <b>SPECIFICATIONS GROUP</b>                    |                                     |       |
| <b><i>General Requirements Subgroup</i></b>    |                                     |       |
| <b>DIVISION 01 - GENERAL REQUIREMENTS</b>      |                                     |       |
| 010000   | GENERAL REQUIREMENTS                | 18    |
| 015639   | TEMPORARY TREE AND PLANT PROTECTION | 6     |
| <b><i>Facility Construction Subgroup</i></b>   |                                     |       |
| <b>DIVISION 02 - EXISTING CONDITIONS</b>       |                                     |       |
| 024119   | SELECTIVE DEMOLITION                | 6     |
| <b>DIVISION 03 - CONCRETE</b>                  |                                     |       |
| 033000   | CAST-IN-PLACE CONCRETE              | 7     |
| <b>DIVISION 11 - EQUIPMENT</b>                 |                                     |       |
| 116833   | ATHLETIC FIELD EQUIPMENT            | 4     |
| <b>DIVISION 13 - SPECIAL CONSTRUCTION</b>      |                                     |       |
| 133416   | GRANDSTANDS AND BLEACHERS           | 4     |
| <b><i>Facility Services Subgroup</i></b>       |                                     |       |
| <b>DIVISION 26 - ELECTRICAL</b>                |                                     |       |
| 260000   | ELECTRICAL                          | 15    |
| 260533.13                                      | CONDUITS FOR ELECTRICAL SYSTEMS     | 25    |
| 265668   | EXTERIOR ATHLETIC LIGHTING - MUSCO  | 8     |
| <b><i>Site and Infrastructure Subgroup</i></b> |                                     |       |
| <b>DIVISION 31 - EARTHWORK</b>                 |                                     |       |
| 312000   | EARTH MOVING                        | 8     |
| 312213   | ROUGH GRADING                       | 4     |
| 312316.13                                      | TRENCHING                           | 4     |
| 312500   | EROSION AND SEDIMENTATION CONTROLS  | 4     |

**DIVISION 32 - EXTERIOR IMPROVEMENTS**

|           |                             |    |
|-----------|-----------------------------|----|
| 321216    | ASPHALT PAVING              | 7  |
| 321220.10 | BASKETBALL COURT FINISHING  | 6  |
| 321313    | CONCRETE PAVING             | 9  |
| 321823.10 | INFIELD SKIN SURFACE        | 4  |
| 323113    | CHAIN LINK FENCES AND GATES | 7  |
| 323119.53 | SINGLE SWING GATE           | 2  |
| 323300    | SITE FURNISHINGS            | 4  |
| 328400    | PLANTING IRRIGATION         | 21 |
| 329113    | SOIL PREPARATION            | 8  |
| 329119    | LANDSCAPE GRADING           | 3  |
| 329200    | TURF AND GRASSES            | 7  |
| 329223    | SODDING                     | 10 |
| 329300    | PLANTS                      | 15 |

**DIVISION 33 - UTILITIES**

|        |  |   |
|--------|--|---|
| 331413 | PUBLIC WATER UTILITY DISTRIBUTION PIPING | 7 |
|--------|--|---|

END OF TABLE OF CONTENTS



## SECTION 010000 - GENERAL REQUIREMENTS

### PART 1 - GENERAL

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

#### A. SCOPE OF WORK

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

#### B. WORK COVERED BY CONTRACT DOCUMENTS

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

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

#### E. PROJECT INFORMATION

##### 1. OWNER

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

##### 2. OWNER'S REPRESENTATIVE

- a. Ilya Iskhakov, Landscape Designer, iiskhakov@providenceri.gov, 401-451-9238

### 1.2 PROJECT LOCATION

A. 87 Fremont St, Providence, RI 02906

### PART 2 - PRODUCTS

#### 2.1 CONTRACTOR USE OF PREMISES

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



1. The Contractor shall maintain vehicular access and utility service to the abutting properties at all times throughout the course of the construction.
2. The Contractor shall assume full responsibility for security of all materials and equipment on the site, including those of the subcontractors.
3. If directed by the Owner's Representative, the Contractor shall relocate or move any stored items that interfere with operations of the Owner.
4. The Contractor may elect to obtain (at no cost to the Owner) additional storage or work areas off-site if needed to perform the work.

## 2.2 OWNER OCCUPANCY REQUIREMENTS

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

## 2.3 MOBILIZATION, SITE PREPARATION, & DEMOLITION

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

## 2.4 CONSTRUCTION STAGING/STOCKPILE AREAS

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

## 2.5 MATERIALS AND EQUIPMENT:

- A. Materials to be Removed and Stockpiled.





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

B. Signs: Conform to requirements of Temporary Facilities and Controls.

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

## 2.6 TEMPORARY CONSTRUCTION FACILITIES AND UTILITIES

A. Make arrangements with the Owner's Representative for storage of materials and equipment in designated locations at the construction site. If staged on site, materials shall be secured from vandalism and or theft.

B. Plastic construction fence or snow fencing if installed shall be maintained in good condition. Provide barricades, barrels, fencing and/or other barriers around excavations and trenches as required for safety. Upon completion, temporary fencing shall be removed and the affected area restored existing condition.

## 2.7 SITE MAINTENANCE

A. Control dust from Contractor operations in accordance with specified dust control measures.

B. Maintain the Site during construction in a manner that will not obstruct use on neighborhood streets. Proceed with the work in an orderly manner, maintaining the construction site free of debris and unnecessary equipment or materials.

C. Legally dispose of all debris, rubbish, hazardous materials, oil, and grease in accordance with local ordinances.

D. Maintain safety and security of the construction site and any stockpiled or staged materials or equipment if left on site.

## 2.8 TRAFFIC CONTROL

A. For all of his operations, the Contractor shall provide appropriate traffic control in accordance with, TEMPORARY FACILITIES AND CONTROLS. The purposes of the traffic control are 1) to ensure that operations in the project area are performed in a safe and orderly manner, and 2) to



minimize the impact of truck and equipment traffic and noise on adjacent homes near the project area. The Contractor shall be responsible for obtaining any and all required permits and approvals.

- B. Police Details, if required by the City, shall be paid directly to and coordinated with Providence Public Safety by the Owner.

## 2.9 DEMOBILIZATION

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

## PART 3 - EXECUTION

### 3.1 GENERAL REQUIREMENTS

- A. The construction site entrance is not indicated on the plans. The scope of work and proposed locations suggests multiple entry points be utilized. The Owner will provide access to any locked gate. Any tracked debris from the site present on adjacent roadways shall be removed and the roads swept daily to remove any excess mud, dirt, or rock originating from the site. Trucks hauling material shall be covered and equipped with gates that prevent material from falling out. If present, catch basins within 100 feet of site entry and exit locations shall be protected with inlet sediment control devices and maintained for the duration of the work.
- B. Identify, clearly mark and protect all survey monuments, temporary benchmarks as well as any adjacent contractors' work and facilities (if applicable). Repair or replacement shall be at Contractor's sole expense if damaged by Contractor.
- C. Protect existing culverts, sewers, and all other utilities including gas, telecommunications, electricity, and water. Repair or replace at Contractor's sole expense if damaged by Contractor.
- D. Utilize or install drum or sawhorse barricades or backfill all open excavations, holes, trenches, and depressions occurring at construction sites or occurring as part of this work.



### 3.2 CHANGE ORDER PROCEDURE

#### A. DESCRIPTION

1. The Contractor shall comply with this procedure in the process of giving notification of change and preparing and submitting a proposal for adjustment due to a desired, perceived, or actual change in the work. Changes in the work, or period of performance of the work, may be directed in writing by the Owner's Representative or may be requested by the Contractor. In either case, payment for work accomplished under a modification may not be made until a formal contract modification, incorporating the change into the contract, has been issued and executed. Therefore, it is incumbent upon the Contractor to comply fully with this procedure and to expedite the resolution of changes.

### 3.3 CHANGE SUBMITTALS

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

### 3.4 COMPLIANCE

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

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

- A. The Owner's Representative will initiate changes only in writing. The Owner will sign any Request for Proposal (RFP). This will establish an Extra Work Order (EWO) number, by which the change will be identified until such time as it may be incorporated into the contract by formal Change Order (CO).
- B. The Contractor may or may not be authorized to proceed with the changed work pending resolution of changes in the contract price or time of performance. If the work described in the RFP becomes critical to the timely performance of the Contractor's work, a written request for a Notice to Proceed must be forwarded to the Owner immediately. The Owner will issue any Notice



to Proceed. This unilateral modification to the contract may be subject to further negotiation regarding price and time for completion.

- C. Payment for changed work, covered by an authorized modification, will not be made until a notice to proceed covering the changed work has been executed.
- D. The Contractor shall prepare and submit its proposal for change to include at a minimum:
  - 1. A cover letter referencing the EWO number and citing the attachments, if any, which constitute the Contractor's total proposal.
  - 2. A detailed price proposal showing labor, construction equipment, and material quantities and prices at the lowest practical level of each element of the work.
  - 3. Any drawings, sketches, catalog cuts, samples, certifications, or other data required to be submitted by the Owner's Representative that is required to fully document
  - 4. A statement of the proposed change in the time of completion of the contract, together with all required justification for such a change.
  - 5. A statement to the effect that there is "no change in price and/or time of completion of the work under this contract as a result of this proposed change", if that is the case.
- E. The Owner may accept the Contractor's proposal without negotiation. Alternatively, upon receipt of a proposal which is satisfactory in form, the Owner's Representative may require negotiation with the Contractor to arrive at a fair and equitable change in the contract price and time of completion. Upon agreement, a contract modification will be issued by the Owner for Contractor's execution.

### 3.6 PROCESSING CHANGES INITIATED BY THE CONTRACTOR

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

### 3.7 EXECUTING CHANGED WORK

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



### 3.8 TERMINATIONS AND DELAYS

- A. Termination of Contract: If the Contractor or any of his/her subcontractors refuses or fails to prosecute the work with such diligence as will insure its completion within the time specified in these Contract Documents, or as modified, as provided for in these Contract Drawings, or violates any other Provisions of this Contract, the Local Public Agency, Local Public Agency, City, by written notice to the Contractor, may terminate the Contractor's right to proceed with the Work. Upon such termination, the City of Providence may take over the work and prosecute the same to completion, by contract or otherwise, and the Contractor and his/her sureties shall be liable to the City of Providence for any additional cost incurred by the City of Providence in its completion of the work and they shall also be liable to the City of Providence for liquidated damages as provided below. If the Contractor's right to proceed is so terminated, the Local Public Agency Local Public Agency City may take possession of and utilize in completing the work such materials, tools, equipment, and plants as may be on the site of the work and necessary thereof. Project work must commence 30 days after award of Contract or as mutually agreed upon by the Contractor and the Owner. The Contractor is required to submit a Work Schedule including all items included in the scope of work. The Work Schedule shall mirror the Schedule of Values which should be in chronological order. Both items are identified in the standard Pre-Bid and Pre-Construction Meeting Minutes as required. The work shall be continuous and the Contractor shall staff the project appropriately to meet the agreed upon work schedule. De- Mobilization from the project, prior to completion, must be agreed upon in writing by the Owner.

### 3.9 INSPECTION OF WORK

#### A. DESCRIPTION

1. Work included in this Section consists of periodic observation of construction of the project. The Contractor's work shall be monitored periodically by the Owner's Representative
2. The Owner's Representative presence on site or construction observation work is inspectional in nature and will not include supervision or direction of the actual work of the contractor.
3. In no event will the Owner's Representative be responsible or liable for the contractor's use or administration of personnel, machinery, staging, or other temporary or precautionary construction, safety precautions or procedures, or for compliance by the contractor with the provisions, terms, or specifications of the contract. Observation services provided by the Owner's Representative are solely for the benefit of the Owner.
4. The Contractor shall keep the Owner's Representative informed concerning the work status and projected work schedule through regular communications.
5. The Contractor shall not cover any work related to the required field visits until one of the following occurs:
  - a. The Contractor is authorized by the Owner's Representative to proceed after the field visit.
  - b. The field visit is re-scheduled by the Owner's Representative to a later construction event



- c. The field visit is waived in writing by the Owner's Representative
6. The Contractor shall request a Final Inspection seven calendar days in advance of the planned completion date. After review of the Notice of Completion, the Owner's Representative may reject the Notice for cause or schedule the Final Inspection. The Owner's Representative will perform its Final Inspection on all phases of the work and develop a comprehensive punch list, which will be provided to the Contractor.
  7. The Final Inspection will be scheduled when the punch list items discovered during the Final Inspection have been corrected. If discovered, the Owner's Representative may add new items to the punch list at this inspection.
  8. The Contractor is advised that the Owner's Representative will not accept the work until the Owner's Representative determines Substantial Completion has been achieved. Therefore, to minimize its risk, the Contractor should schedule its work to be substantially complete in time to allow the Final Inspection and punch list work to occur in advance of the Project Close Out Date. Due to the construction time period and the anticipated weather conditions, substantially complete will be defined as the completion of construction for all item and the temporary stabilization of all disturbed areas, excluding planting and final seeding. Planting and final seeding is to occur during the time periods specified..
  9. Nothing in this Section shall be construed to limit the Owner's Representative right to inspect the work at any time.

### 3.10 CONSTRUCTION SCHEDULES

#### A. DESCRIPTION

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

### 3.11 CONSTRUCTION SCHEDULE

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

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

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



Scope of the Work. The construction schedule shall demonstrate completion of all work within the period of performance of the contract in a reasonable and achievable manner.

### 3.12 PERIODIC SCHEDULE UPDATES

- A. The Contractor shall support monthly payment requests with an approved construction schedule marked to indicate progress. Submit updated schedule as necessary.
- B. When in the opinion of the Owner's Representative changes in the work occur that significantly affect the schedule, the Contractor shall submit a revised construction schedule for approval. The revised construction schedule shall be submitted within 10 calendar days after it is requested by the Owner's Representative. The current approved construction schedule shall be used as a baseline for progress reporting.
- C. Acts of God: Claims for additional compensation for 'Acts of God' will be reviewed by the Owner. It is the Contractor's responsibility to secure the work site daily and failure to provide adequate provisions to do so may result in repairs to the site at the Contractor's expense. Documented 'Acts of God' such as the state issuing a 'State of Emergency' may result in the Owner's authorization to proceed repair funded by the Owner. No work shall proceed without written authorization by the Owner.

### 3.13 SUBMITTAL PROCEDURES

#### A. DESCRIPTION

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

### 3.14 DRAWINGS

- A. The term "drawings" as used herein includes 'Shop Drawings' as required for fabrication, erection and installation, layout, and setting of proposed improvements; lists or schedules of materials and catalogues and brochures; performance and test data; and all other drawings and descriptive data pertaining to materials and methods of construction as may be required to show that the materials, equipment, or systems and the positions thereof conform to the requirements of the Contract Documents.
- B. Where specified and if so directed by the Owner's Representative provide shop drawings that are accompanied by design computations.



- C. Sheet sizes of drawings shall not exceed 24 in. by 36 in. The title block on all drawings shall bear the name of the Owner, the name of the project, and the project location.
- D. The Contractor's drawings shall be submitted electronically in PDF format to the Owner's Representative for review and approval.
- E. The Contractor shall maintain a complete set of construction drawings at the jobsite, clearly marked to reflect as-built conditions. Upon completion of the work, the Contractor shall submit these Record Drawings to the Owner's Representative.
- F. The Owner's Representative will review drawings and schedules only for conformance with the design of the Project and for compliance with the Contract Documents and Contract Drawings. The Contractor shall make any and all updates and corrections required by the Owner's Representative
- G. Drawings shall be reviewed and returned within ten (10) working days of receipt of drawings at jobsite. Drawings and all supporting data, catalogs, or similar information shall be prepared by the Contractor or his suppliers and subcontractors but shall be submitted as instruments of the Contractor.
- H. The Owner's Representative review of drawings will be of a general nature and shall not relieve the Contractor from responsibility for errors and omissions of any sort, for deviations from Drawings or Specifications, or for conflict with the work of others that may result from such deviations. The Owner's Representative review of drawings will not relieve the Contractor of responsibility to complete the work in accordance with the requirements of the Contract Documents.
- I. After Notice of Award, the Contractor shall submit a Submittal Schedule to the Owner's Representative. The Contractor's schedule shall be brought up to date from time to time to show the latest changes, omissions, and additions. The Schedule will be based on the Contractor's Construction Schedule and will show when the Contractor will submit the drawings and when he/she expects them to be returned so that construction activities shown on the Construction Schedule are not interrupted. There will be a minimum of three weeks between these two activities. Specific methods and routines for handling drawing reviews shall be established in advance within the general framework of the Contract Documents.
- J. Work for which the Contractor's submittals are required shall not be started until the submittals have been reviewed and accepted in writing by the Owner or Landscape Architect or Owner's Representative. Any revision by the Contractor of a previously accepted submittal must be accepted in writing by the Owner's Representative before implementation.





### 3.15 SAMPLES

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

### 3.16 PRODUCT DATA

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

#### B. SUBMITTAL LOG

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

### 3.17 QUALITY CONTROL DESCRIPTION

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

### 3.18 WORKMANSHIP

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



- D. The Contractor shall provide materials to match approved samples.

### 3.19 MANUFACTURER'S INSTRUCTIONS

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

### 3.20 MANUFACTURER'S CERTIFICATES

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

### 3.21 TESTING LABORATORY SERVICES (NIC)

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

### 3.22 MANUFACTURER'S FIELD SERVICES

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

### 3.23 AUTHORITY OF OWNER'S REPRESENTATIVE

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



### 3.24 COORDINATION OF DRAWINGS AND SPECIFICATIONS

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

### 3.25 COOPERATION WITH UTILITIES

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

### 3.26 INDEPENDENT TESTING AND INSPECTION (NIC)

- A. Not Applicable under this Contract

### 3.27 REQUIREMENTS

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



### 3.28 MATERIAL AND EQUIPMENT

#### A. DESCRIPTION

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

### 3.29 MANUFACTURER REQUIREMENTS

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

### 3.30 TRANSPORTATION AND HANDLING

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

### 3.31 STORAGE AND PROTECTION

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



### 3.32 SUBSTITUTIONS

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

### 3.33 REJECTED MATERIALS AND DEFECTIVE WORK

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

### 3.34 PROJECT CLOSEOUT

- A. DESCRIPTION



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

### 3.35 WARRANTIES

#### A. DESCRIPTION

1. This Section specifies general administration and procedural requirements for warranties and bonds required by the Contract Documents, including manufacturers' standard warranties on products and special warranties.
  - a. Refer to the General Conditions for terms of the Contractor's special warranty of workmanship and materials;
  - b. General closeout requirements are included in Section "Project Closeout"; and
  - c. Specific requirements for warranties for the Work and products and installations that are specified to be warranted are included in the specifications and Drawings.
2. Disclaimers and Limitations
  - a. Manufacturer's disclaimers and limitations on product warranties do not relieve the Contractor of the warranty on the Work that incorporates the products, nor does it



relieve suppliers, manufacturers, and subcontractors required to countersign special warranties with the Contractor.

## B. DEFINITIONS

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

## C. WARRANTY REQUIREMENTS

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



D. WARRANTY PERIOD

1. All warranties required by the Contract documents shall commence on the date of Final Acceptance

END OF SECTION 010000





## SECTION 015639 - TEMPORARY TREE AND PLANT PROTECTION

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

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

#### 1.2 SUMMARY

- A. Section includes general protection and pruning of existing trees and plants that are affected by execution of the Work, whether temporary or permanent construction.
- B. Related Requirements:
  - 1. Section 31 20 00 - Earth Moving

#### 1.3 DEFINITIONS

- A. (DBH): Diameter breast height; diameter of a trunk as measured by the average of the smallest and largest diameters at a height **54 inches** above the ground line for trees with caliper of **8 inches** or greater as measured at a height of **12 inches** above the ground.
- B. Plant-Protection Zone: Area surrounding individual trees, groups of trees, shrubs, or other vegetation to be protected during construction and indicated on Drawings.
- C. Tree-Protection Zone: Area surrounding individual trees or groups of trees to be protected during construction and indicated on Drawings defined by a circle concentric with each tree with a radius 1.5 times the diameter of the drip line unless otherwise indicated .
- D. Vegetation: Trees, shrubs, groundcovers, grass, and other plants.

#### 1.4 PRE- CONSTRUCTION MEETINGS

- A. Pre-construction Conference: Conduct conference at Project site .
  - 1. Review methods and procedures related to temporary tree and plant protection including, but not limited to, the following:
    - a. Tree-service firm's personnel, and equipment needed to make progress and avoid delays.



- b. Arborist's responsibilities.
- c. Coordination of Work and equipment movement with the locations of protection zones.
- d. Trenching by hand or with air spade within protection zones.
- e. Field quality control and maintenance.
- f. Coordination by Parks Department City Forester and Forestry crews.

#### 1.5 ACTION SUBMITTALS

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

#### 1.6 QUALITY ASSURANCE

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

#### 1.7 FIELD CONDITIONS

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

### PART 2 - PRODUCTS

#### 2.1 MATERIALS

- A. Backfill Soil: Stockpiled soil mixed with planting soil of suitable moisture content and granular texture for placing around tree; free of stones, roots, plants, sod, clods, clay lumps, pockets of coarse sand, concrete slurry, concrete layers or chunks, cement, plaster, building debris, and other extraneous materials harmful to plant growth.
  1. Mixture: Well-blended mix of two parts stockpiled soil to one part planting soil .



- B. Organic Mulch: Free from deleterious materials and suitable as a top dressing for trees and shrubs, consisting of one of the following:
1. Type: .Ground or shredded bark .
  2. Size Range: **3 inches** maximum, **1/2 inch** minimum .
  3. Color: Natural. - no orange or dyed mulch.
- C. Protection-Zone Fencing: Fencing fixed in position and meeting the following requirements:
1. Plastic Protection-Zone Fencing: Plastic construction fencing constructed of high-density extruded and stretched polyethylene fabric with **2-inch** maximum opening in pattern and weighing a minimum of **0.4 lb/ft.**; remaining flexible from **minus 60 to plus 200 deg F**; inert to most chemicals and acids; minimum tensile yield strength of **2000 psi** and ultimate tensile strength of **2680 psi**; secured with plastic bands or galvanized-steel or stainless-steel wire ties; and supported by tubular or T-shape galvanized-steel posts spaced not more than **96 inches** apart.
    - a. Height: 72 inches .
    - b. Color: High-visibility orange, nonfading.
  2. Tree Trunk Protection: 2"x3" or 2"x4" softwood lumber wrapped around tree with wire ties or strapping

### PART 3 - EXECUTION

#### 3.1 PREPARATION

- A. Protect tree root systems from damage caused by runoff or spillage of noxious materials while mixing, placing, or storing construction materials. Protect root systems from ponding, eroding, or excessive wetting caused by dewatering operations.
- B. Tree-Protection Zones: Mulch areas inside tree-protection zones and other areas indicated. Do not exceed indicated thickness of mulch.
1. Apply **2-inch** uniform thickness of organic mulch unless otherwise indicated. Do not place mulch within **6 inches** of tree trunks.

#### 3.2 PROTECTION ZONES

- A. Protection-Zone Fencing: Install protection-zone fencing along edges of protection zones before materials or equipment are brought on the site and construction operations begin in a manner that will prevent people from easily entering protected areas except by entrance gates. Construct fencing so as not to obstruct safe passage or visibility at vehicle intersections where fencing is located adjacent to pedestrian walkways or in close proximity to street intersections, drives, or other vehicular circulation.



- B. Maintain protection zones free of trash.
- C. Maintain protection-zone fencing in good condition as acceptable by Owner's Representative and remove when construction operations are complete and equipment has been removed from the site.
  - 1. Do not remove protection-zone fencing, even temporarily, to allow deliveries or equipment access through the protection zone.
  - 2. Temporary access is permitted subject to preapproval in writing by Owner's Representative if a root buffer effective against soil compaction is constructed as directed by Owner's Representative. Maintain root buffer so long as access is permitted.

### 3.3 EXCAVATION

- A. General: Excavate at edge of protection zones and for trenches indicated within protection zones according to requirements in Section 312000 "Earth Moving" unless otherwise indicated.
- B. Redirect roots in backfill areas where possible. If encountering large, main lateral roots, expose roots beyond excavation limits as required to bend and redirect them without breaking. If encountered immediately adjacent to location of new construction and redirection is not practical, cut roots approximately **3 inches** back from new construction and as required for root pruning.
- C. Do not allow exposed roots to dry out before placing permanent backfill. Provide temporary earth cover and wrap with dampened burlap. Water and maintain in a moist condition. Temporarily support and protect roots from damage until they are permanently relocated and covered with soil or as directed by Owner's Representative.

### 3.4 ROOT PRUNING

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



narrow-tine spading forks to comb soil to expose roots. Cleanly cut roots as close to excavation as possible.

### 3.5 REGRADING

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

### 3.6 REPAIR AND REPLACEMENT

- A. General: Repair or replace trees, shrubs, and other vegetation indicated to remain or to be relocated that are damaged by construction operations, in a manner approved by Owner's Representative.
  - 1. Submit details of proposed pruning and repairs.
  - 2. Perform repairs of damaged trunks, branches, and roots within 24 hours according to arborist's written instructions.
  - 3. Replace trees and other plants that cannot be repaired and restored to full-growth status, as determined by Owner's Representative. Replacement trees to be equal to the total diameter of mature tree by multiple equal diameter specimens.
- B. Trees: Remove and replace trees damaged during construction operations that Owner's Representative determines are incapable of restoring to normal growth pattern.
  - 1. Small Trees: Provide new trees of same size and species as those being replaced for each tree that measures 4" or smaller in caliper size.
  - 2. Large Trees: Provide multiple trees of 2-1/2" - 3" caliper size to equal total diameter of tree being replaced. .
    - a. Species: As determined by Owner's Representative.
  - 3. Plant and maintain new trees as specified in Section 329300 "Plants."



- C. Excess Mulch: Rake mulched area within protection zones, being careful not to injure roots. Rake to loosen and remove mulch that exceeds a 2-inch uniform thickness to remain.
- D. Soil Aeration: Where directed by Owner's Representative, aerate surface soil compacted during construction. Aerate to loosen soil 10 feet beyond drip line and no closer than 36" to tree trunk with air spade.

### 3.7 DISPOSAL OF SURPLUS AND WASTE MATERIALS

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

END OF SECTION 015639



## SECTION 024119 - SELECTIVE DEMOLITION

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

#### 1.2 SUMMARY

##### A. Section Includes:

- 1. Demolition and removal of selected site elements.

##### B. Related Requirements:

- 1. Section 015639 "Temporary Tree and Plant Protection" for temporary protection of existing trees and plants that are affected by selective demolition.
- 2. Section 017300 "Execution" for cutting and patching procedures.

#### 1.3 DEFINITIONS

- A. Remove and Reinstall: Detach items from existing construction, in a manner to prevent damage, prepare for reuse, and reinstall where indicated.
- B. Existing to Remain: Leave existing items that are not to be removed and that are not otherwise indicated to be salvaged or reinstalled.
- C. Dismantle: To remove by disassembling or detaching an item from a surface, using gentle methods and equipment to prevent damage to the item and surfaces; disposing of items unless indicated to be salvaged or reinstalled.

#### 1.4 MATERIALS OWNERSHIP

- A. Unless otherwise indicated, demolition waste becomes property of Contractor.
- B. Historic items, relics, antiques, and similar objects including, but not limited to, cornerstones and their contents, commemorative plaques and tablets, and other items of interest or value to Owner that may be uncovered during demolition remain the property of Owner.



1. Carefully salvage in a manner to prevent damage and promptly return to Owner.

#### 1.5 PRE-CONSTRUCTION MEETINGS

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

#### 1.6 INFORMATIONAL SUBMITTALS

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

#### 1.7 FIELD CONDITIONS

- A. Owner will occupy portions of the site immediately adjacent to selective demolition area. Conduct selective demolition so Owner's use will not be disrupted.
- B. Conditions existing at time of inspection for bidding purpose will be maintained by Owner as far as practical.





1. Before selective demolition, Owner will remove the items specifically indicated on the drawings
  - C. Notify Owner's Representative of discrepancies between existing conditions and Drawings before proceeding with selective demolition.
  - D. Hazardous Materials: It is not expected that hazardous materials will be encountered in the Work.
    1. If suspected hazardous materials are encountered, do not disturb; immediately notify Architect and Owner. Hazardous materials will be removed by Owner under a separate contract.
  - E. Storage or sale of removed items or materials on-site is not permitted.
  - F. Utility Service: Maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations.
- 1.8 WARRANTY
- A. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during selective demolition, by methods and with materials and using approved contractors so as not to void existing warranties. Notify warrantor before proceeding.
  - B. Notify Owner on completion of selective demolition, and obtain documentation verifying that existing system has been inspected and warranty remains in effect. Submit documentation at Project closeout.
- 1.9 COORDINATION
- A. Arrange selective demolition schedule so as not to interfere with Owner's use.

## PART 2 - PRODUCTS

### 2.1 PERFORMANCE REQUIREMENTS

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



### PART 3 - EXECUTION

#### 3.1 EXAMINATION

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

#### 3.2 PROTECTION

- A. Temporary Protection: Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.
  - 1. Provide protection to ensure safe passage of people around selective demolition area and to and from occupied portions of the site.
  - 2. Provide temporary weather protection, during interval between selective demolition of existing construction on exterior surfaces and new construction, to prevent water leakage and damage to structure and interior areas.
  - 3. Protect walls, ceilings, floors, and other existing finish work that are to remain or that are exposed during selective demolition operations.
  - 4. Cover and protect furniture, furnishings, and equipment that have not been removed.
  - 5. Comply with requirements for temporary enclosures, dust control, heating, and cooling specified in Section 015000 "Temporary Facilities and Controls."
- B. Remove temporary barricades and protections where hazards no longer exist.



### 3.3 SELECTIVE DEMOLITION, GENERAL

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

### 3.4 SELECTIVE DEMOLITION PROCEDURES FOR SPECIFIC MATERIALS

- A. Concrete: Demolish in small sections. Using power-driven saw, cut concrete to a depth of at least **3/4 inch** at junctures with construction to remain. Dislodge concrete from reinforcement at perimeter of areas being demolished, cut reinforcement, and then remove remainder of concrete.
- B. Concrete: Demolish in sections. Cut concrete full depth at junctures with construction to remain and at regular intervals using power-driven saw, and then remove concrete between saw cuts.
- C. Masonry: Demolish in small sections. Cut masonry at junctures with construction to remain, using power-driven saw, and then remove masonry between saw cuts.



### 3.5 DISPOSAL OF DEMOLISHED MATERIALS

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

### 3.6 CLEANING

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

END OF SECTION 024119



## SECTION 033000 - CAST-IN-PLACE CONCRETE

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

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

#### 1.2 SUMMARY

- A. Section includes cast-in-place concrete, including formwork, concrete materials, mixture design, placement procedures, and finishes.

#### 1.3 DEFINITIONS

- A. Cementitious Materials: Portland cement alone or in combination with one or more of the following: blended hydraulic cement, fly ash, slag cement, other pozzolans, and silica fume; materials subject to compliance with requirements.
- B. W/C Ratio: The ratio by weight of water to cementitious materials.

#### 1.4 PRE CONSTRUCTION MEETINGS

- A. Pre-construction Conference: Conduct conference at Project site .
  - 1. Before submitting design mixtures, review concrete design mixture and examine procedures for ensuring quality of concrete materials. Require representatives of each entity directly concerned with cast-in-place concrete to attend, including the following:
    - a. Concrete Subcontractor.
  - 2. Review concrete repair procedures, and concrete protection.

#### 1.5 ACTION SUBMITTALS

- A. Design Mixtures: For each concrete mixture. Submit alternate design mixtures when characteristics of materials, Project conditions, weather, test results, or other circumstances warrant adjustments.
  - 1. Indicate amounts of mixing water to be withheld for later addition at Project site.



- B. Construction Joint Layout: Indicate proposed construction joints required to construct the structure.
  - 1. Location of construction joints is subject to approval of the Landscape Architect.

#### 1.6 INFORMATIONAL SUBMITTALS

- A. Material Certificates: For each of the following, signed by manufacturers:
  - 1. Admixtures.
  - 2. Form materials and form-release agents.
  - 3. Fiber reinforcement.
  - 4. Joint-filler strips.

#### 1.7 QUALITY ASSURANCE

- A. Mockups: Cast concrete formed-surface panels to demonstrate typical joints, surface finish, texture, tolerances, floor treatments, and standard of workmanship.
  - 1. Build panel approximately **100 sq. ft.** for formed surface in the location indicated or, if not indicated, as directed by Architect.
  - 2. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

#### 1.8 FIELD CONDITIONS

- A. Cold-Weather Placement: Comply with ACI 306.1 and as follows. Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing actions, or low temperatures.
  - 1. When average high and low temperature is expected to fall below **40 deg F** for three successive days, maintain delivered concrete mixture temperature within the temperature range required by **ACI 301**.
  - 2. Do not use frozen materials or materials containing ice or snow. Do not place concrete on frozen subgrade or on subgrade containing frozen materials.
  - 3. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators unless otherwise specified and approved in mixture designs.
- B. Hot-Weather Placement: Comply with **ACI 301** and **ACI 305.1**, and as follows:
  - 1. Maintain concrete temperature below **90 deg F** at time of placement. Chilled mixing water or chopped ice may be used to control temperature, provided water equivalent of ice is calculated to total amount of mixing water. Using liquid nitrogen to cool concrete is Contractor's option.



2. Fog-spray forms, steel reinforcement, and subgrade just before placing concrete. Keep subgrade uniformly moist without standing water, soft spots, or dry areas.

## PART 2 - PRODUCTS

### 2.1 CONCRETE, GENERAL

- A. ACI Publications: Comply with the following unless modified by requirements in the Contract Documents:
  1. ACI 301.
  2. ACI 117.

### 2.2 FORM-FACING MATERIALS

- A. Smooth-Formed Finished Concrete: Form-facing panels that provide continuous, true, and smooth concrete surfaces. Furnish in largest practicable sizes to minimize number of joints.
  1. Plywood, metal, or other approved panel materials.
  2. Exterior-grade plywood panels, suitable for concrete forms, complying with DOC PS 1, and as follows:
    - a. Structural 1, B-B or better; mill oiled and edge sealed.
    - b. B-B (Concrete Form), Class 1 or better; mill oiled and edge sealed.
  3. Overlaid Finnish birch plywood.
- B. Rough-Formed Finished Concrete: Plywood, lumber, metal, or another approved material. Provide lumber dressed on at least two edges and one side for tight fit.
- C. Chamfer Strips: Wood, metal, PVC, or rubber strips, 3/4 by 3/4 inch, minimum.
- D. Rustication Strips: Wood, metal, PVC, or rubber strips, kerfed for ease of form removal.

### 2.3 CONCRETE MATERIALS

- A. Source Limitations: Obtain each type or class of cementitious material of the same brand from the same manufacturer's plant, obtain aggregate from single source, and obtain admixtures from single source from single manufacturer.
- B. Cementitious Materials:
  1. Portland Cement: ASTM C 150/C 150M, Type I, .
  2. Blended Hydraulic Cement: ASTM C 595/C 595M, Type IS, portland blast-furnace slag Type IL, portland-limestone cement.



- C. Normal-Weight Aggregates: ASTM C 33/C 33M, Class 1N coarse aggregate or better, graded. Provide aggregates from a single source.
  - 1. Fine Aggregate: Free of materials with deleterious reactivity to alkali in cement.
- D. Lightweight Aggregate: ASTM C 330/C 330M, **3/4-inch** nominal maximum aggregate size.
- E. Water: ASTM C 94/C 94M and potable.

#### 2.4 FIBER REINFORCEMENT

- A. Synthetic Micro-Fiber: Fibrillated polypropylene micro-fibers engineered and designed for use in concrete, complying with ASTM C 1116/C 1116M, Type III, **1/2 to 1-1/2 inches** long.

#### 2.5 CURING MATERIALS

- A. Absorptive Cover: AASHTO M 182, Class 2, burlap cloth made from jute or kenaf, weighing approximately **9 oz./sq. yd.** when dry.
- B. Water: Potable.
- C. Clear, Waterborne, Membrane-Forming Curing Compound: ASTM C 309, Type 1, Class B, dissipating.
- D. Clear, Waterborne, Membrane-Forming Curing Compound: ASTM C 309, Type 1, Class B, nondissipating.

#### 2.6 CONCRETE MIXTURES, GENERAL

- A. Prepare design mixtures for each type and strength of concrete, proportioned on the basis of laboratory trial mixture or field test data, or both, according to **ACI 301**.
- B. Limit water-soluble, chloride-ion content in hardened concrete to 0.06 percent by weight of cement.
- C. Admixtures: Use admixtures according to manufacturer's written instructions.
  - 1. Use water-reducing admixture in concrete, as required, for placement and workability.
  - 2. Use water-reducing and -retarding admixture when required by high temperatures, low humidity, or other adverse placement conditions.
  - 3. Use water-reducing admixture in pumped concrete, concrete for heavy-use industrial slabs and parking structure slabs, concrete required to be watertight, and concrete with a w/c ratio below 0.50.
  - 4. Use corrosion-inhibiting admixture in concrete mixtures where indicated.





## 2.7 CONCRETE MIXTURES FOR BUILDING ELEMENTS

- A. Footings: Normal-weight concrete.
1. Minimum Compressive Strength: **4000 psi** at 28 days.
  2. Maximum W/C Ratio: 0.45 .
  3. Slump Limit: **4 inches** , plus or minus **1 inch**.
  4. Air Content: 6 percent, plus or minus 1.5 percent at point of delivery for **3/4-inch** nominal maximum aggregate size.

## 2.8 CONCRETE MIXING

- A. Ready-Mixed Concrete: Measure, batch, mix, and deliver concrete according to ASTM C 94/C 94M and ASTM C 1116/C 1116M, and furnish batch ticket information.
1. When air temperature is between **85 and 90 deg F**, reduce mixing and delivery time from 1-1/2 hours to 75 minutes; when air temperature is above **90 deg F**, reduce mixing and delivery time to 60 minutes.

## PART 3 - EXECUTION

### 3.1 CONCRETE PLACEMENT

- A. Before placing concrete, verify that installation of formwork, reinforcement, and embedded items is complete and that required inspections are completed.
- B. Do not add water to concrete during delivery, at Project site, or during placement unless approved by Architect.
- C. Before test sampling and placing concrete, water may be added at Project site, subject to limitations of **ACI 301**.
1. Do not add water to concrete after adding high-range water-reducing admixtures to mixture.
- D. Deposit concrete continuously in one layer or in horizontal layers of such thickness that no new concrete is placed on concrete that has hardened enough to cause seams or planes of weakness. If a section cannot be placed continuously, provide construction joints as indicated. Deposit concrete to avoid segregation.
1. Deposit concrete in horizontal layers of depth not to exceed formwork design pressures and in a manner to avoid inclined construction joints.
  2. Consolidate placed concrete with mechanical vibrating equipment according to **ACI 301**.



3. Do not use vibrators to transport concrete inside forms. Insert and withdraw vibrators vertically at uniformly spaced locations to rapidly penetrate placed layer and at least **6 inches** into preceding layer. Do not insert vibrators into lower layers of concrete that have begun to lose plasticity. At each insertion, limit duration of vibration to time necessary to consolidate concrete and complete embedment of reinforcement and other embedded items without causing mixture constituents to segregate.

### 3.2 FINISHING FORMED SURFACES

- A. Smooth-Formed Finish: As-cast concrete texture imparted by form-facing material, arranged in an orderly and symmetrical manner with a minimum of seams. Repair and patch tie holes and defects. Remove fins and other projections that exceed specified limits on formed-surface irregularities.
  1. Apply to concrete surfaces exposed to public view, .

### 3.3 FINISHING FLOORS AND SLABS

- A. Trowel Finish: After applying float finish, apply first troweling and consolidate concrete by hand or power-driven trowel. Continue troweling passes and restraighten until surface is free of trowel marks and uniform in texture and appearance. Grind smooth any surface defects that would telegraph through applied coatings or floor coverings.
  1. Apply a trowel finish to surfaces indicated .
  2. Finish and measure surface, so gap at any point between concrete surface and an unlevelled, freestanding, **10-ft.-** long straightedge resting on two high spots and placed anywhere on the surface does not exceed **1/4 inch** .
- B. Broom Finish: Apply a broom finish to exterior concrete platforms, steps, ramps, and elsewhere as indicated.
  1. Immediately after float finishing, slightly roughen trafficked surface by brooming with fiber-bristle broom perpendicular to main traffic route. Coordinate required final finish with Architect before application.

### 3.4 CONCRETE PROTECTING AND CURING

- A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Comply with ACI 306.1 for cold-weather protection and **ACI 305.1** for hot-weather protection during curing.
- B. Unformed Surfaces: Begin curing immediately after finishing concrete. Cure unformed surfaces, including floors and slabs, concrete floor toppings, and other surfaces.



- C. Cure concrete according to ACI 308.1, by one or a combination of the following methods:
  - 1. Curing Compound: Apply uniformly in continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Maintain continuity of coating and repair damage during curing period.
    - a. Removal: After curing period has elapsed, remove curing compound without damaging concrete surfaces by method recommended by curing compound manufacturer.

END OF SECTION 033000



## SECTION 116833 - ATHLETIC FIELD EQUIPMENT

### PART 1 - PART 1 GENERAL

#### 1.1 SUMMARY

1.2 Provide all equipment, materials, and do all work necessary to furnish and install the athletic equipment, as indicated on the drawings and as specified herein. Athletic equipment shall include, but not be limited to:

- A. Scoreboards and Poles
- B. 20' Foul Poles with Wings
- C. Baseball base sets
- D. Basketball Backboards, Breakaway Rims, and Poles

#### 1.3 RELATED WORK

1.4 Examine Contract Documents for requirements that affect work of this section. Other specification sections that directly relate to work of this Section include, but are not limited to:

- A. Section 03300 - Cast-in-Place Concrete; Concrete foundations

#### 1.5 REFERENCES

1.6 Comply with applicable requirements of the following standards. Where these standards conflict with other specified requirements, the most restrictive requirements shall govern.

#### 1.7 SUBMITTALS

#### 1.8 Shop Drawings

- A. Provide drawings of manufacturers recommended installation and foundation requirements prior to actual field installation work for Architect or Owner's Representative review and approval.



## 1.9 QUALITY ASSURANCE

- A. Manufacturers warranties shall pass to the Owner and certification made that the product materials meet all applicable grade trademarks or conform to industry standards and inspection requirements.

## 1.10 DELIVERY, STORAGE AND HANDLING

- A. Materials delivered to the site shall be examined for concealed damage or defects in shipping. Any defects shall be noted and reported to the Owner's Representative.
- B. Replacements, if necessary, shall be immediately re-ordered, so as to minimize any conflict with the construction schedule.
- C. Sound materials shall be stored above the ground under protective cover or indoors so as to provide proper protection.

## PART 2 - PRODUCTS

### 2.1 Electro-Mesh Scoreboard Co. Model LX1250 Outdoor Baseball/Softball Scoreboard or approved equal.

- A. Dimensions: 14 ft x 5 ft. Weight: 218 lb. Cabinet Material: Aluminum. Caption Height: 9 in., 8 in. Accent Material: 2.4 mil cast vinyl. Digit Height: 18 in. Indicator Size: 4 in. Digit Colors: Amber or Red. Electrical: 1.6 Amps, 120 VAC
  - 1. ID panel on top of the scoreboard: 14 ft x 1.5 ft. Graphics provided by owner to be incorporated into ID panel by manufacturer.
- B. Standard Equipment and Features:
  - 1. Single cabinet design with heavy duty extruded aluminum framing
  - 2. Light weight, rust free, all aluminum construction
  - 3. Mounting hardware for permanent installation on two posts without the need for on site fabrication
  - 4. Automotive grade baked on enamel based paint applied to the scoreboard face
  - 5. Choice of 18 standard paint colors
  - 6. Choice of amber or red LED displays
  - 7. LED display circuit scoreboards conformal coated for outdoor use
  - 8. Simplified 15-key control console
  - 9. Junction box and patch cable for hardwired installations
  - 10. Five-year limited warranty
  - 11. Toll free technical support via phone and online for the life of the product



- C. Optional Equipment and Upgrades:
1. ID panels with custom graphics, in a variety of sizes, shapes and styles, to mount above or below the scoreboard
  2. ScoreLink Wireless RF modem system for wireless communication
  3. Additional warranty and support plans
- 2.2 FPW420 - 20' Foul Pole with Wing manufactured by Sportsfield Specialties, Inc. PO Box 231, 41155 State Highway 10, Delhi, NH, 13753; phone: 888.975.3343; www.sportsfieldspecialties.com, or approved equal.
- A. COMPONENTS:
1. Stamped 1/8" (0.125") Aluminum Sheet with Double Reinforced Bends Welded at Corners
  2. Ground Sleeve:
    - a. Aluminum Construction
    - b. Alignment Bolt
    - c. Welded Leveling Plate
  3. 2'-6" Depth
  4. Stainless Steel Assembly Hardware
- 2.3 Baseball base sets manufactured by Beacon Athletics, 901 Eming Way Ste 101, Madison, WI, 53717, 800.747.5985, www.beaconathletics.com, ,or approved equal.
- A. Jack Corbett Hollywood Bases item #301-675-259.
  - B. 1-1/2" All Steel Anchor item #301-505-460.
  - C. Bulldog Double-sided Home Plate item #301-210-300.
  - D. Bulldog 3" Pitching Rubber item #335-210-100.
- 2.4 Basketball Accessories manufactured by TrueBounce Inc., 56 Conduit St, New Bedford, MA 02745, (508) 999-3020 or approved equal
- A. TrueBounce Polycarbonate Backboard, Model #XL7042
  - B. TrueBounce Breakaway Rim, Model # RB100
  - C. 6x6"x14' square Powder Coated Steel Pole



### PART 3 - PART 3 EXECUTION

#### 3.1 3.1 INSPECTION

- A. Examine the areas and conditions where equipment and systems are to be installed and notify the contractor of conditions detrimental to the proper and timely installation and completion of the work.
- B. Do not proceed with the work until unsatisfactory conditions have been corrected by the contractor in a manner acceptable and to the satisfaction of the Architect/Engineer or Owner's Representative.

#### 3.2 INSTALLATION

- A. All Foul Pole Equipment and Accessories shall be installed as recommended per manufacturer's written instructions and as indicated on the drawings. Concrete anchoring foundations to be determined by others based on local soil conditions and building codes. Installer should have a minimum of five (5) baseball/softball equipment installations or similar experience in the previous three (3) years.
- B. Provide operating and maintenance instructions to Owner's Representative for the proper operation and care of equipment.

#### 3.3 CLEANING

- A. Upon completion of work in any given area, remove all trash and debris from the work area and leave in clean condition. All pipe, concrete, fabric and miscellaneous parts shall be removed from site.
- B. Dispose of excessive material to certified landfill.
- C. Grade to within 1" of finish grade after work is completed.

END OF SECTION 116833



## SECTION 133416 - GRANDSTANDS AND BLEACHERS

### PART 1 - NON-ELEVATED ALUMINUM ANGLE FRAME BLEACHERS

#### 1.1 SECTION INCLUDES

- A. Design and fabrication of Non-Elevated (Low-Rise) angle frame bleachers

#### 1.2 QUALITY ASSURANCE

- A. Manufacturer: National Recreation Systems, Inc. 1300-D Airport North Office Park, Ft. Wayne, IN, 46825, or approved equal
- B. Manufacturer Qualifications: Manufacturer must have a minimum of ten years experience in the design and manufacture of bleachers.
- C. Welders must conform to AWS standards.
- D. Source Quality Control: Mill Test Certification.
- E. Codes and Standards: 2012/2015 International Building Code / ICC 300 2012.

#### 1.3 RELATED WORK

- A. Examine Contract Documents for requirements that affect work of this section. Other specification sections that directly relate to work of this Section include, but are not limited to:
  - 1. Section 03300 – Cast-in-Place Concrete; Concrete foundations

#### 1.4 WARRANTY

- A. Warranty shall guarantee bleachers to be free from defect in materials and workmanship for a period of 1 year under normal use. Warranty period shall begin on date of completion for projects installed by manufacturer, or its subcontractors, OR warranty period shall begin on date of final delivery on projects installed by others.
- B. Anodized finish of plank extrusions shall be covered by a 5 year warranty against loss of structural strength or finish deterioration due to exposure to weather conditions or UV rays. Discoloration of mill finish aluminum due to galvanic reaction not covered.





1.5 PRODUCT LIABILITY INSURANCE

- A. Product liability insurance is carried for the life of the product in the amount of \$ 2,000,000.

1.6 ENGINEERING

- A. Engineering certifications and calculations by a Registered Professional Engineer will be provided upon request at an additional fee.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURER

- A. National Recreation Systems, Inc.  
B. Approved Equal

2.2 DESIGN

- A. Applicable Codes:
1. INTERNATIONAL BUILDING CODE (IBC), 2012/2015 EDITION / ICC 300 2012
  2. Except aisle and handicapped requirements
- B. Design Loads:
1. Live Loads:
    - a. Uniform loading - Structure = 100 psf
    - b. Uniform loading - Seat and Foot plank = 120 plf
  2. Sway Loads:
    - a. Perpendicular to seats = 10 plf
    - b. Parallel to seats = 24 plf
  3. Guardrail Loads:
    - a. Uniform vertical load = 100 plf
    - b. Uniform horizontal load = 50 plf
    - c. Concentrated horizontal load = 200 pounds
  4. \*Wind Loads: Basic design wind speed = 150 mph (exposure "B")
    - a. \*Note: Bleacher must be anchored to meet wind loads above



### 2.3 NON-ELEVATED ANGLE FRAME BLEACHERS

- A. Model # NB-0415ALRSTD 4 rows high x 15' long. Net seating capacity per unit 40 (excluding aisles, based on 18" per seat).
- B. Framework: Prefabricated aluminum angle spaced at 6' - 0" intervals joined by means of aluminum angle cross bracing.
- C. Shop connections: Welded to meet AWS standards and local code requirements
- D. Joint Sleeve Assembly: Internal splices, where required shall be two per joint, and shall penetrate the joint a minimum of 8" in each direction and be riveted at one end only to allow for contraction and expansion.
- E. Rise and Depth Dimensions: 6" vertical rise and 24" tread depth, Seat height is 17" above its respective tread. (first seat height is 16")
- F. Seats: Nominal 2" x 10" anodized aluminum with anodized end caps.
- G. Treads: Nominal one (1) 2" x 10" mill finish aluminum with anodized end caps on rows 2 & 3. Nominal two (2) 2" x 10" mill finish aluminum with anodized end caps on all other rows.
- H. Risers: Nominal two (2) 1" x 6" mill finish aluminum with mill finish end caps on top row. Nominal 1" x 6" mill finish aluminum with mill finish end caps on rows 4 & up.
- I. Guardrail: Rails shall be anodized aluminum tube with end plugs and elbows where required.
  - 1. All Rails shall be secured to angle supports with galvanized fasteners. Top rails at sides, rear and front shall be 42" above the leading edge of seat or walking surfaces. Rear rail support members shall be aluminum channel, side and front rail support s shall be aluminum angle.
  - 2. Chainlink System: Fencing shall consist of 9 gauge, 2" mesh galvanized chainlink fabric, heavy duty tension bands, tension bars, brace bands, combo rail endcaps, and wire ties.

### 2.4 MATERIALS / FINISHES

- A. Framework:
  - 1. Aluminum: Structural fabrication with aluminum alloy 6061-T6 mill finish. Each frame shall be unit-welded, using metal inert gas method, under guidelines by the American Welding Society. After fabrication all steel is hot dipped galvanized to ASTM A-123 specifications.
  - 2. All crossbracing and horizontal bracing shall be aluminum alloy 6061-T6 mill finish.
- B. Extruded Aluminum:



1. Seat planks: Aluminum alloy 6063-T6, clear anodized 204R1, AA-M10C22A31, Class II With a wall thickness nominally .078" for impact and deformation resistance.
2. Tread and Riser Planks: Aluminum alloy 6063-T6, mill finish. With a wall thickness nominally .078" for impact and deformation resistance.
3. Guardrail Pipe: 1-5/8 OD schedule 40 aluminum alloy 6105-T5, clear anodized 204R1, AA-M10C22A31, Class II.

C. Accessories:

1. Channel EndCaps: Aluminum alloy 6063-T6, clear anodized 204R1, AA-M10C22A31, Class II.
2. Hardware: Bolts and Nuts shall be hot dipped galvanized.
3. Hold Down Clip Assembly: Aluminum alloy 6063-T6 mill finish.
4. Joint Sleeve Assembly: Aluminum alloy 6061-T6, mill finish.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install bleacher unit in accordance with manufacturer written instructions and shop drawings.
- B. Note: Building codes may vary from site to site. The customer is responsible for verification of local code requirements.

END OF SECTION 133416



## SECTION 260000 - ELECTRICAL

### PART 1 - GENERAL

#### 1.1 SUMMARY

- A. The work under this Section shall consist of installing all conduit, wire and associated equipment required to furnish and install various components for street lighting.
- B. The work consists of furnishing and installing a complete lighting system as specified on the drawings which will include the underground system and all electrical components necessary to make the system totally operational. The complete system shall include poles, luminaires, lamps, fixtures, and associated accessories, all wire and connections, and pole mounted receptacles along with any other equipment required to complete the installation.
- C. All work performed under this Section shall be as specified herein, as shown on the plans. The Owner Representative shall have the final decision regarding all disputes on materials and workmanship.
- D. All underground installations, including any required wiring, must be complete before the finished surface is placed on walkways. All excavations required for the installation of conduit, light pole bases, lighting control cabinet, and panelboard shall be completed prior to placing and compacting gravel subbases.

#### 1.2 RELATED DOCUMENTS

- A. Drawings and general provisions of SECTION 010000 GENERAL REQUIREMENTS apply to work of this section.

#### 1.3 DESCRIPTION OF WORK

- A. Work to be Performed: The scope of work consists of the installation of all materials to be furnished under this Section, and without limiting the generality thereof, includes:
  - 1. Light Fixtures
  - 2. Light Poles
  - 3. Conduit and Wire
  - 4. Lighting Control Cabinet
  - 5. Panelboards
- B. Reference to Drawings: Work to be done under this Section is shown on Drawings and specified herein.



- C. Related Work: The following is not included in this Section and is specified under the designated section:
1. All sections under DIVISION 31 EARTHWORK, including excavation and backfill, trenching.
  2. SECTION REINFORCED CONCRETE: Light pole bases

#### 1.4 SUBMITTALS

- A. Samples of all materials, along with the certified engineering data and written notification that the proposed materials meet these Specifications must be furnished. Upon approval of the samples and test data, delivery of the proposed materials will be made and no changes or modifications, with the exception of minor changes not affecting operation or appearance will be allowed.
- B. In the event that a modification or change to the approved materials, or the development of new material to replace approved materials is announced by the supplier, written notification must be given to the Engineer. An option to accept delivery of the modified or new material or continued delivery of the approved material must be given. In no case shall the delivery of the new or modified material result in any additional expense to the Contract.
- C. Shop Drawings shall be submitted for approval to the City Representative for the following materials:
1. Light poles
  2. Luminaires and accessories
  3. Panelboards
  4. Conduit and wire
- D. A written full one year complete replacement guarantee against defects in materials and workmanship for a period of one year from date of final acceptance of this Contract shall be furnished with all material. Defects in any material shall be replaced at the expense of the Contractor.

#### 1.5 QUALITY ASSURANCE

- A. The Contractor shall comply with the regulations of all authorities having jurisdiction over electrical work, shall arrange for all inspections that may be required by the City of Providence, shall obtain all permits and certificates at his own expense, and shall deliver to the Owner Representative certificates of acceptance of work.
- B. The Contractor shall comply with all standards and regulations of all utilities involved governing all materials and methods of construction. All work, materials and construction methods shall be in accordance with all utilities involved, except as otherwise specified herein.



- C. Trade names and catalog numbers mentioned on the Drawing, or in these Specifications, are used for the purpose of furnishing a brief description of the material. Similar materials will be accepted if, in the opinion of the Owner Representative, they are equal in quality and operation to those specifically mentioned. Only materials approved by the National Board of Fire Underwriters, and so labeled, will be considered for approval for the services indicated.
- D. All material must have the name or trademark of the manufacturer stamped thereon, where such identification is customary. All electrical equipment shall be designed, manufactured, tested and rated in accordance with the latest applicable standards of the National Electric Manufacturers Association (NEMA), the American Institute of Engineers (AIEE), American National Standards Institute (ANSI), and the American Society for Testing and Materials (ASTM).

#### 1.6 ACCEPTANCE

- A. All systems shall be complete-in-place to the satisfaction of the Owner Representative (complete systems must be totally operational) prior to the final acceptance of this work. Payment for any unit does not constitute final acceptance of that unit. The Contractor shall familiarize himself with the requirements for testing and final acceptance of completed underground utilities, electric vehicle charging stations, and lighting systems as called for in the Contract Specifications, under the appropriate items.
- B. The Contractor is responsible for all equipment until final acceptance of the Contract and for all damage from any cause whatsoever.
- C. The Contractor shall anticipate the problems inherent in coordination of his work with required issuance of work orders to all utilities involved, and the subsequent scheduling by the utilities.
- D. It should be noted that the Electrical drawings are schematic and the Contractor shall coordinate actual locations of equipment.
- E. No payments will be made for relocation's required because of improper installation by the Contractor.

#### 1.7 NAMEPLATES

- A. The Contractor shall furnish and install on the panelboards a typed directory in factory installed frame protected with plastic.

#### 1.8 CODES, STANDARDS AND REFERENCES

- A. All materials and workmanship shall comply with all applicable Codes, specifications, Local and State Ordinances, Industry Standards and Utility Company regulations, latest editions.



- B. In case of difference between building codes, State Laws, Local Ordinances, Industry Standards and Utility Company regulations and the Contract Documents, the Contractor, where such conflict exists shall promptly notify the Engineer in writing of any such difference.
- C. In case of conflict between the Contract Documents and the requirements of any Code or Authorities having jurisdiction, the most stringent requirements of the aforementioned shall govern.
- D. Should the Contractor perform any work that does not comply with the requirements of the applicable Building Codes, State Laws, Local Ordinances, Industry Standards and Utility Company regulations, he shall bear all costs arising in correcting the deficiencies, as approved by the Engineer.
- E. Applicable Codes and Standards shall include all State Laws, Local Ordinances, Industries and Utility Company regulations, and the applicable requirements of the following accepted Codes and Standards, without limiting the number, as follows:
  - F. Building Codes:
    - 1. National Electrical Code
    - 2. Occupational Safety and Health Standards
    - 3. National Fire Protection Association
    - 4. Americans with Disabilities Act
- G. In these Specifications, references made to the following Industry Standards and Code bodies are intended to indicate the latest volume or publication of the Standard. All equipment, materials and details of installation shall comply with the requirements and latest revisions of the following bodies, as applicable:
  - 1. ANSI American National Standards Institute
  - 2. ASTM American Society of Testing Materials
  - 3. UL Underwriters' Laboratories
  - 4. NEMA National Electrical Manufacturers Association
  - 5. FM Factory Mutual
  - 6. NEC National Electrical Code
  - 7. ADA Americans with Disabilities Act
- H. H.The Contractor for work under his Contract shall give all necessary notices, obtain all permits, pay all taxes, fees and other costs in connection with his work; file for necessary approvals with the jurisdiction under which the work is to be performed. The Contractor shall obtain all required Certificates of Inspection for his respective work and deliver same to the Engineer before request for acceptance of his portion of work is made and before final payment.



#### 1.9 GUARANTEE

- A. Attention is directed to provisions regarding guarantees and warranties for work under each Trade.
- B. Manufacturers shall provide their standard guarantees for work under the Electrical Trade. However, such guarantees shall be in addition to and not in lieu of all other liabilities which the manufacturer and/or Contractor may have by law or by other provisions of the Contract Documents.
- C. All materials, equipment and workmanship furnished by Electrical Trade shall carry the standard warranty against all defects in material and workmanship. Any fault due to defective or improper material, equipment, workmanship or design which may develop, shall be made good, forthwith, by and at the expense of the responsible Trade under which the work was provided, including all other damage done to areas, materials and other systems resulting from this failure.
- D. The Contractor shall guarantee that all elements of the systems which are to be provided under his Contract, are of sufficient capacity to meet the specified performance requirements as set forth herein or as indicated on the drawings.
- E. Upon receipt of notice from the Owner Representative of failure of any part of the systems or equipment during the guarantee period, the affected part or parts shall be replaced by the Contractor.
- F. The Contractor shall furnish, before the final payment is made, a written guarantee covering the above requirements.

#### 1.10 THE CONTRACTOR

- A. The Contractor shall visit the site and make his bids from his own site examinations and estimates and shall not hold the Engineer, the Owner or his agents or employees responsible for, or bound by, any schedule, estimate or of any plan thereof.
- B. The Contractor shall faithfully execute his work according to the terms and conditions of the Contract and Specifications, and shall take all responsibility for and bear all losses resulting to him in the execution of his work.
- C. The Contractor shall be responsible for the location and performance of work provided under his Contract as indicated on the Contract Documents. All parties employed directly or indirectly by this Contractor shall perform their work according to all the conditions as set forth in these specifications.
- D. The Contractor shall furnish all materials and perform all work in accordance with these specifications, and any supplementary documents provided by the Owner Representative. The work shall include everything shown on the drawings and/or required by the specifications as





interpreted by the Owner Representative. All work and materials furnished and installed shall be new and of the best quality and workmanship. The Contractor shall cooperate with the Owner Representative so that no error or discrepancy in the Contract Documents shall cause defective materials to be used or poor workmanship to be performed.

#### 1.11 COORDINATION OF WORK

- A. The Contractor shall compare his respective drawings and specifications with those for other trades and report any discrepancies between them to the Owner Representative and obtain written instructions for any changes necessary in the electrical work. All work shall be installed in cooperation with other trades installing interrelated work. Before installation, all trades shall make proper provisions to avoid interference in a manner approved by the Owner Representative. All changes required in the work of the trades caused by their neglect shall be performed by them as herein before specified.
- B. Locations of conduit and equipment shall be adjusted to accommodate the work with interference anticipated and encountered. The Contractor shall determine the exact routing and location of the systems prior to fabrication or installation.
- C. The Contract Drawings are diagrammatic only intending to show general runs and locations of conduit, equipment, terminals and specialties and not necessarily showing all required offsets, details and accessories and equipment to be connected. All work shall be accurately laid out to avoid conflicts and to obtain a neat and workmanlike installation which will afford maximum accessibility for operation, maintenance and headroom. In case of conflict between conduit sizes shown on plans, details or diagrams, the larger conduit size shall be included under the Contract where such discrepancy occurs.

#### 1.12 GIVING INFORMATION

- A. The Contractor shall keep himself fully informed as to the shape, size and position of all openings required for his apparatus and shall give information to the other Contractors sufficiently in advance of the work so that all openings may be built in advance.

#### 1.13 FAILURE

- A. The Contractor shall obtain detailed information from the manufacturer of apparatus which he is to furnish and/or install indicating the proper method of installing and connecting same.
- B. The Contractor shall obtain detailed information from the manufacturer of apparatus which he is to furnish and/or install indicating the proper method of installing and connecting same. The Contractor shall also obtain all pertinent information from the General Contractor and other Contractors which may be necessary to facilitate his work and the completion of the whole project.



1.14 DRAWINGS, INFORMATION AND INTERPRETATION OF SAME

- A. The Engineer shall interpret the specifications and the detailed developments and the drawings thereof. The Engineer's interpretation shall be final and binding.

1.15 CONCRETE WORK

- A. All concrete and masonry equipment bases and pads, curbs, chases, pockets and openings (except core-drilling) required for the proper installation of the work under this Contract, will be provided by the General Contractor using dimensions, templates, bolts, anchors, as shown on the drawings, or as required or recommended by the equipment manufacturers.
- B. Anchor bolts, sleeves, inserts and supports that may be required shall be furnished and installed by the Contractor for the items to be supported. Any expense resulting from the improper location or installation of anchor bolts, sleeves, inserts and supports provided under this Section shall be paid for by the Contractor.

1.16 USE OF PREMISES

- A. The Contractor shall confine his apparatus, storage of materials and construction to the limits directed by the Engineer and he shall not encumber the premises with his materials.
- B. In storing materials within areas (structure or ground) or when used as a shop the Contractor shall consult with the Engineer and will restrict his storage to space designated for such purposes. The Contractor will be held responsible for repairs, patching or cleaning arising from any unauthorized use of premises.
- C. Notwithstanding any approvals or instructions which must be obtained by the Contractor from the Engineer in connection with use of premises, the responsibility for the safe working conditions at the site shall remain that of the Contractor and the Engineer or Owner shall not be deemed to have any responsibility or liability in connection therewith.
- D. For additional requirements see also the requirements set forth in the General Requirements.

1.17 PROTECTION

- A. Materials, conduit shall be properly protected and all conduit openings shall be temporarily closed so as to prevent obstruction and damage as described herein before. Post notice prohibiting the use of all systems provided under the Contract prior to completion of work and acceptance of all systems by the Owner except otherwise instructed by the Engineer or herein before specified. Contractor shall take precautions to protect his materials from damage and theft.



- B. The Contractor shall furnish, place and maintain proper safety guards for the prevention of accidents that might be caused by the workmanship, materials, equipment or electrical systems provided by the Electrical Trade.

#### 1.18 EQUIPMENT AND MATERIALS

- A. Equipment and materials shall be delivered to the site and stored in original sealed containers, suitably sheltered from the elements, but readily accessible for inspection by the Engineer until installed. All items subject to moisture damage shall be stored in dry, heated spaces.
- B. Equipment shall be tightly covered and protected against the completion of the work, equipment and materials shall be cleaned, polished thoroughly and turned over to the Owner in a condition satisfactory to the Owner Representative. Damage or defects developing before acceptance of the work shall be made good at the respective Contractor's expense as herein before specified.
- C. The Contractor shall make necessary field measurements to ascertain space requirements, for equipment and connections to be provided under his Trade and shall furnish and install such sizes and shapes of equipment to allow for the final installation to conform to the drawings and the intent of the specifications.
- D. Manufacturer's directions shall be followed completely in the delivery, storage, protection and installation of all equipment. Notify the Engineer in writing of any conflict between any requirements of the Contract Documents and the manufacturer's directions and shall obtain the Owner Representative's written instructions before proceeding with the work. Should the Contractor perform any work that does not comply with the manufacturer's directions or the written instructions issued by the Owner Representative, he shall bear all costs arising in correcting any deficiencies that should arise.
- E. The Contractor shall furnish and install all equipment, accessories, connections and incidental items necessary to fully complete the work under his contract for use, occupancy and operation by the Owner.
- F. Where equipment of the acceptable manufacturers require different arrangement or connections from those shown, it shall be the responsibility of the Contractor to install the equipment to operate properly and in harmony with the original intent of the drawings and specifications. When directed by the Owner Representative, the Contractor proposing substitutions shall submit drawings showing the proposed installation. If the proposed installation is approved, the Contractor shall make all necessary changes in all affected related work provided by other Trades, including location of roughing in connections by other trades and supports. All changes shall be made at no increase in the Contract amount nor additional cost to the Owner.
- G. All equipment and materials required for installation under these specifications shall be new and without blemish or defect. Equipment and materials shall be products which will meet with the acceptance of the Authorities having jurisdiction over the work and as specified herein before. Where such acceptance is contingent upon having the products listed or labeled by FM or UL or



other testing laboratory, the products shall be so listed or labeled. Where no specific indication as to the type or quality of material or equipment is indicated, a first class standard article shall be provided.

- H. All equipment of one type (such as wiring devices, panelboards) shall be the products of one manufacturer.

#### 1.19 DAMAGE TO OTHER WORK

- A. The Contractor shall be held responsible and shall pay for all damages caused by his work to the new and existing building structures, and new and existing equipment, conduit, systems and all work and finishes installed under this Contract in the existing building. Repair of such damage shall be done by the Contractor at his own expense, to Engineer's satisfaction.

#### 1.20 CORRECTION OF WORK

- A. The Contractor shall promptly correct all work provided under his Contract and rejected by the Engineer as defective or as failing to conform to the Contract Documents whether observed before or after completion of work and whether or not fabricated, installed or completed. The Contractor responsible for defective work shall bear all costs of correcting such rejected work to Engineer's satisfaction.

#### 1.21 TOUCHUP PAINTING

- A. All equipment and conduit systems shall be thoroughly cleaned of rust, splatters and other foreign matter of discoloration leaving every part of all systems in an acceptable prime condition. The Contractor for the work under his Contract shall refinish and restore to the original condition all equipment which have sustained damage to the manufacturer's prime and finish coats of Paint and/or enamel.

#### 1.22 IDENTIFICATION OF MATERIALS

- A. All equipment used in the Electrical Systems shall have a permanently attached nameplate identifying the manufacturer, service, size, serial number or model number, etc. The nameplates shall be kept clean and readable at all times.



## PART 2 - PRODUCTS

### 2.1 SCHEDULE 40 PVC CONDUIT

- A. Conduits of the sizes shown on the plans shall be schedule 40 PVC construction with standard wall thickness. The conduit must be free from defects and foreign matter. All bends, fittings, and clamps shall be new and free from defects. Bends of all conduit must be made using a standard type commercial bending device.
- B. The schedule 40 PVC conduit must conform to and meet all the current requirements and testing procedures of the American Society for Testing and Materials whenever such standards and tests shall apply. The following ASTM standards shall apply as applicable:
  - 1. ASTM Specification A120-73 - Schedule 40 - PVC Conduit
  - 2. All conduit shall bear distinctive marking of the type, size, manufacture, etc., to verify that the conduit meets the special conditions of the specifications. The Contractor must supply to the Landscape Architect a letter of compliance from the manufacturer stating that the conduit meets all specifications and conditions.

### 2.2 COUPLINGS AND FITTINGS

- A. Conduit couplings and fittings shall be constructed of polyvinyl chloride rigid plastic formed to fit the outside diameter of the conduit, to be used in conjunction with a heavy bodied solvent cement.
- B. ASTM D2564 - Specifications for Solvent Cements for Polyvinyl Chloride Plastic Pipe and Fittings.

### 2.3 POLES AND LUMINAIRES

- A. Contractor shall furnish and install all lamp poles and luminaires as indicated and as specified on the drawings.

### 2.4 ELECTRIC SERVICE CABINET

- A. Electric Service utility cabinet shall be Milbank cabinet, catalog # CP3B51110AABKSL2 or approved equal, sized to house equipment as shown on the drawings. Cabinets shall be made vandal-proof.



## 2.5 ELECTRIC UTILITY METERS

- A. Contractor shall furnish and install electric utility meters in accordance with the local electrical provider standards and specifications and National Electrical Code Requirements.

## 2.6 PANELBOARDS

- A. Furnish and install the panelboard for lighting.
- B. The Panelboards shall be of hinged front ('door on door') type, dead front construction with thermal magnetic circuit breakers and shall conform to the requirements of NEMA and NEC. All panelboards shall be UL approved and labeled.
- C. The Panelboards shall consist of circuit breakers, code gauge steel cabinet or backbox, bus assembly, trim with code gauge galvanized steel doors. Gutter space shall be a minimum of 4" on all sides.
- D. Circuit breakers shall be of the quickmake, quick break trip free thermal magnetic type with characteristics as scheduled. Automatic tripping shall be clearly indicated by the operating handle assuming a midposition between ON and OFF. Two and three pole breakers shall have common trip. All circuit breakers shall be bolt-on type.
- E. The panelboards shall be provided with solid neutrals. In addition, grounding bus with lugs shall be provided on all panelboards meeting UL and NEMA standards. Other special features shall be provided as required and as indicated. All bus work shall be copper.
- F. Two milled type keys shall be provided with each panel and all panel locks shall be keyed alike.
- G. Bus arrangements shall be sequence phased such that adjacent single pole breakers shall be connected to opposite phases in such a manner, such that any two or three pole breakers could be installed anywhere in the panelboard.

## 2.7 FEEDER AND BRANCH CIRCUIT CONDUCTORS

- A. All feeder, branch circuit, remote control, signal circuit and interlock wiring shall be manufactured of copper, rated 600 volts unless noted otherwise.
- B. Minimum size wire for branch circuit and power wiring shall be #12 AWG.
- C. Insulation type shall be XHHN for feeders and power wiring, THHN./THWN for lighting.
- D. All exterior wiring shall be Type XHHW.
- E. Color coding for phase identification shall be as per industry standards.



1. Color coding shall be continuous on insulation for #6 AWG or smaller and continuous or marked with color tape at all connections for conductors larger than #6 AWG.
- F. All wiring shall conform to the National Electrical Code for construction and use.
1. G. All wiring shall be installed in conduit.

## 2.8 SOLDERLESS LUGS AND CONNECTORS

- A. All lugs for feeder conductors and connectors for branch circuit joints shall be of the solderless type suitable for copper wire.

## 2.9 DEVICE PLATES

- A. Device plates shall be manufactured of stainless steel.
1. Device plate screws shall match plates.

## 2.10 GROUNDING

- A. Provide grounding for all electrical equipment and devices in accordance with the applicable requirements of the Rhode Island Electrical Code and as indicated on the drawings.
- B. Bonding jumpers shall be installed at all locations required by RIEC.
- C. A green grounding conductor of proper size shall be installed and connected with the feeder circuit conductors to all panelboards, electrical equipment, etc. Connections to the equipment may be bolted or screwed using corrosion resisting bolts, screws. A green grounding conductor shall be installed in all branch and feeder circuits.
- D. All exposed connections shall be made by grounded grounding clamps.
- E. Grounding electrodes shall be driven, without bending or causing any damage to the rods.

## PART 3 - EXECUTION

### 3.1 INSTALLATION – GENERAL

- A. All work shall be installed in a neat and workmanlike manner and shall be done in accordance with all local and state codes.



### 3.2 INSTALLATION OF BOXES

- A. All boxes shall be rigidly mounted and shall be equipped with suitable screw fastened covers. Open knockouts or holes in boxes shall be plugged with suitable blanking devices.
- B. Mounting hangers, clamps, etc., for electrical equipment shall be as indicated on the drawing and as required.

### 3.3 INSTALLATION OF CONDUCTORS

- A. All wiring shall be installed and supported in accordance with the requirements of the Rhode Island Electrical Code
- B. Splices, taps and lugs shall be electrically and mechanically secure and solderless lugs and connectors shall be used. Lugs shall be used for conductors sizes No. 8 AWG and larger. All lugs shall be of the proper size and in no case shall strands be cut from a conductor in order to fit the conductor into a lug.

### 3.4 INSTALLATION OF LIGHTING FIXTURES

- A. Furnish and install a complete lighting system, including conduit, wire, outlet boxes, poles, lighting fixtures with lamps and receptacles as shown on the drawings.
- B. Where job conditions require locations different from those shown to avoid equipment, etc., such changes shall be made without additional cost to the Owner.

### 3.5 BRANCH AND FEEDER CIRCUITS

- A. The branch and feeder circuit wiring shall be installed as indicated on the drawings.
- B. The number and size of conductors in each run of conduit is indicated on the drawings and where there is a conflict between the number wires indicated and the actual number required, the actual number and size shall be installed.
- C. All circuits shall be connected to breakers at the Contractor's discretion. The balancing of all loads shall be the Contractor's responsibility.

### 3.6 EQUIPMENT CONNECTIONS

- A. All equipment shown on the drawings shall be connected under this section.
- B. Before connecting any piece of equipment, check the nameplate rating against the information shown on the drawings and call to the attention of the Engineer any discrepancies.





- C. The Contractor shall carefully study all equipment manufacturer's wiring diagrams and make corrections accordingly.

### 3.7 IDENTIFICATION OF EQUIPMENT

- A. Identification shall be provided for all electrical equipment. The electrical system Identification shall clearly describe the equipment connected. Method of Identification shall be by laminated nameplate made of bakelite or similar material engraved letters at least 1 1/4" high and secured to the equipment by screws. A list of nameplates shall be submitted, to the Owner Representative for approval prior to fabrication.
- B. Panelboard directory cards shall be typewritten to indicate areas and/or devices served by each circuit.

### 3.8 TESTS

- A. This Section of the Specifications shall include the making of the necessary tests referred to herein in the presence of the Owner Representative to show that the particular system or equipment has been properly installed and is in good operating condition, as hereinafter specified. The Owner Representative shall be notified two (2) weeks in advance of the date for all tests so that he may be present to witness the tests.
- B. Complete test and inspection records shall be made and incorporated into a report for each piece of equipment tested. All readings, taken shall be recorded. Test reports shall be submitted to the Owner Representative for approval.
- C. Furnish necessary meters, instruments, temporary wiring and labor to perform all required tests and adjustments of equipment and wiring installed and/or connected under this Contract, including electrical equipment furnished by others, to determine proper polarity, phasing, freedom from ground and shorts and operation of equipment. All measuring instruments shall be properly calibrated.
- D. All materials and manner of installation shall be in strict accordance with the applicable requirements of state and local authorities, the utility company and the codes of National Board of Fire Underwriters.
- E. Wherever any of the aforementioned codes, laws, etc., require that any work be tested or approved, the Contractor shall provide proper facilities for access and for inspection, all at his own expense.
- F. Wiring
  - 1. System and equipment grounds shall be checked for proper value of resistance using the Megger ground tester in accordance with manufacturer's standard instructions.



2. The Contractor shall correct or replace any nominal currentcarrying circuit which is defective or grounded and he shall also correct all other troubles encountered by these tests. All defects whether through faulty workmanship or material furnished shall be corrected under this Section at the Contractor's expense.

G. Lighting

1. Check all lighting fixtures and receptacles for proper operation.

H. Branch Circuits:

1. The branch circuit wiring shall be installed as indicated on the drawings. No major changes in wiring shall be made without the approval of the Owner Representative in writing.
2. Number associated with each branch circuit outlet identifies the branch circuit to which the device served by the outlet is to be connected. The circuit number indicated is only for reference and guidance to this Contractor and is not intended to limit the panelboard circuitry. All branch circuits shall be connected to breakers at the Contractor's discretion, in accordance with circuit requirements. The balancing of all loads shall be this Contractor's responsibility.

3.9 FINAL INSPECTION

- A. A. When the work on this project has been completed and is ready for final inspection, such inspection will be made. At this time, the Contractor for the work of this SECTION shall demonstrate that the requirements of these specifications have been met. Written results for all tests shall be submitted to the Owner Representative.

3.10 END OF SECTION

END OF SECTION 260000



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SECTION 260533.13 - CONDUITS FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Type EMT-A and Type EMT-SS duct raceways and elbows.
2. Type EMT-S duct raceways and elbows.
3. Type ENT duct raceways and fittings.
4. Type HDPE and Type EPEC duct raceways and fittings.
5. Type ERMC-A and Type ERMC-SS duct raceways, elbows, couplings, and nipples.
6. Type ERMC-S duct raceways, elbows, couplings, and nipples.
7. Type FMC-S and Type FMC-A duct raceways.
8. Type FMT duct raceways.
9. Type IMC duct raceways.
10. Type LFMC duct raceways.
11. Type LFNC duct raceways.
12. Type PVC duct raceways and fittings.
13. Type RTRC-AG duct raceways and fittings.
14. Type RTRC-BG duct raceways and fittings.
15. Fittings for conduit, tubing, and cable.
16. Electrically conductive corrosion-resistant compounds for threaded conduit.
17. Solvent cements.

B. Products Installed, but Not Furnished, under This Section:

1. See Section 260553 "Identification for Electrical Systems" for electrical equipment labels.

C. Related Requirements:

1. Section 260010 "Supplemental Requirements for Electrical" for additional abbreviations, definitions, submittals, qualifications, testing agencies, and other Project requirements applicable to Work specified in this Section.
2. Section 260011 "Facility Performance Requirements for Electrical" for seismic-load, wind-load, acoustical, and other field conditions applicable to Work specified in this Section.
3. Section 260519 "Low-Voltage for Electrical Power Conductors and Cables" for nonmetallic underground conduit with conductors (Type NUCC).
4. Section 260543 "Underground Ducts and Raceways for Electrical Systems" for exterior duct banks, manholes, and underground utility construction.



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## 1.2 DEFINITIONS

- A. Conduit: A structure containing one or more duct raceways.
- B. Duct Raceway: A single enclosed raceway for conductors or cable.
- C. Duct Bank: An arrangement of conduit providing one or more continuous duct raceways between two points.

## 1.3 ACTION SUBMITTALS

### A. Product Data:

- 1. Type EMT-A and Type EMT-SS duct raceways and elbows.
- 2. Type EMT-S duct raceways and elbows.
- 3. Type ENT duct raceways and fittings.
- 4. Type HDPE and Type EPEC duct raceways and fittings.
- 5. Type ERMC-A and Type ERMC-SS duct raceways, elbows, couplings, and nipples.
- 6. Type ERMC-S duct raceways, elbows, couplings, and nipples.
- 7. Type FMC-S and Type FMC-A duct raceways.
- 8. Type FMT duct raceways.
- 9. Type IMC duct raceways.
- 10. Type LFMC duct raceways.
- 11. Type LFNC duct raceways.
- 12. Type PVC duct raceways and fittings.
- 13. Type RTRC-AG duct raceways and fittings.
- 14. Type RTRC-BG duct raceways and fittings.
- 15. Fittings for conduit, tubing, and cable.
- 16. Electrically conductive corrosion-resistant compounds for threaded conduit.
- 17. Solvent cements.

### B. Sustainable design submittals.

- 1. Solvent cements.

## 1.4 INFORMATIONAL SUBMITTALS

### A. Manufacturers' Published Instructions:

- 1. Type EMT-A and Type EMT-SS duct raceways and elbows.
- 2. Type EMT-S duct raceways and elbows.
- 3. Type ENT duct raceways and fittings.
- 4. Type HDPE and Type EPEC duct raceways and fittings.
- 5. Type ERMC-A and Type ERMC-SS duct raceways, elbows, couplings, and nipples.



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6. Type ERM-C duct raceways, elbows, couplings, and nipples.
7. Type FMC-S and Type FMC-A duct raceways.
8. Type FMT duct raceways.
9. Type IMC duct raceways.
10. Type LFMC duct raceways.
11. Type LFNC duct raceways.
12. Type PVC duct raceways and fittings.
13. Type RTRC-AG duct raceways and fittings.
14. Type RTRC-BG duct raceways and fittings.
15. Fittings for conduit, tubing, and cable.
16. Electrically conductive corrosion-resistant compounds for threaded conduit.
17. Solvent cements.

PART 2 - PRODUCTS

2.1 TYPE EMT-A AND TYPE EMT-SS DUCT RACEWAYS AND ELBOWS

A. Performance Criteria:

1. Regulatory Requirements: Listed and labeled in accordance with NFPA 70, by qualified electrical testing laboratory recognized by authorities having jurisdiction, and marked for intended location and application.
2. Listing Criteria: UL CCN FJMX; including UL 797A.

B. Source Quality Control:

1. Product Data: Prepare and submit catalog cuts, brochures, and performance data illustrating size, physical appearance, and other characteristics of product.
2. Manufacturer's Published Instructions: Prepare and submit installation, testing, and operating instructions for product.

C. UL FJMX - Aluminum Electrical Metal Tubing (EMT-A) and Elbows:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - a. American Conduit; Norsk Hydro ASA, Hydro Extrusion USA LLC.
  - b. Patriot Aluminum Products, LLC.
2. Material: Aluminum.
3. Options:
  - a. Minimum Trade Size: Metric designator 21 (trade size 3/4).
  - b. Colors: As indicated on Drawings.

D. UL FJMX - Stainless Steel Electrical Metal Tubing (EMT-SS) and Elbows:



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1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - a. Calconduit; Atkore International.
2. Material: Stainless steel.
3. Options:
  - a. Minimum Trade Size: Metric designator 21 (trade size 3/4).
  - b. Colors: As indicated on Drawings.

2.2 TYPE EMT-S DUCT RACEWAYS AND ELBOWS

A. Performance Criteria:

1. Regulatory Requirements: Listed and labeled in accordance with NFPA 70, by qualified electrical testing laboratory recognized by authorities having jurisdiction, and marked for intended location and application.
2. Listing Criteria: UL CCN FJMX; including UL 797.

B. Source Quality Control:

1. Product Data: Prepare and submit catalog cuts, brochures, and performance data illustrating size, physical appearance, and other characteristics of product.
2. Manufacturer's Published Instructions: Prepare and submit installation, testing, and operating instructions for product.

C. UL FJMX - Steel Electrical Metal Tubing (EMT-S) and Elbows:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - a. Allied Tube & Conduit; Atkore International.
  - b. Calconduit; Atkore International.
  - c. Emerson Electric Co.
  - d. Picoma; Zekelman Industries.
  - e. Republic Conduit; Nucor Corporation, Nucor Tubular Products.
  - f. Topaz Lighting & Electric.
  - g. Western Tube; Zekelman Industries.
  - h. Wheatland Tube; Zekelman Industries.
2. Material: Steel.
3. Options:
  - a. Exterior Coating: Zinc Alternate corrosion-resistant coating.
  - b. Interior Coating: Zinc with organic top coating .
  - c. Minimum Trade Size: Metric designator 21 (trade size 3/4).
  - d. Colors: As indicated on Drawings.



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2.3 TYPE ENT DUCT RACEWAYS AND FITTINGS

A. Performance Criteria:

1. Regulatory Requirements: Listed and labeled in accordance with NFPA 70, by qualified electrical testing laboratory recognized by authorities having jurisdiction, and marked for intended location and application.
2. Listing Criteria: UL CCN FKHU; including UL 1653.

B. Source Quality Control:

1. Product Data: Prepare and submit catalog cuts, brochures, and performance data illustrating size, physical appearance, and other characteristics of product.
2. Manufacturer's Published Instructions: Prepare and submit installation, testing, and operating instructions for product.

C. UL FKHU - Electrical Nonmetallic Tubing (ENT) and Fittings:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - a. ABB, Electrification Business.
  - b. Cantex Inc.
  - c. JM Eagle; J-M Manufacturing Co., Inc.
2. Options:
  - a. Minimum Trade Size: Metric designator 16 (trade size 1/2) Metric designator 21 (trade size 3/4).
  - b. Fittings:
    - 1) Mechanically Attached Fittings: UL 1653.
    - 2) Solvent-Attached Fittings: UL 651.

2.4 TYPE HDPE AND TYPE EPEC DUCT RACEWAYS AND FITTINGS

A. Performance Criteria:

1. Regulatory Requirements: Listed and labeled in accordance with NFPA 70, by qualified electrical testing laboratory recognized by authorities having jurisdiction, and marked for intended location and application.
2. Listing Criteria: UL CCN EAZX; including UL 651A.

B. Source Quality Control:

1. Product Data: Prepare and submit catalog cuts, brochures, and performance data illustrating size, physical appearance, and other characteristics of product.
2. Manufacturer's Published Instructions: Prepare and submit installation, testing, and operating instructions for product.



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C. UL EAZX - Schedule 40 Electrical HDPE Underground Conduit (HDPE-40):

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - a. Blue Diamond Industries.
  - b. JM Eagle; J-M Manufacturing Co., Inc.
  - c. Petroflex North America.
  - d. Prysmian Cables and Systems; Prysmian Group North America.
  - e. Southwire Company, LLC.
2. Dimensional Specifications: Schedule 40.
3. Options:
  - a. Minimum Trade Size: Metric designator 16 (trade size 1/2) Metric designator 21 (trade size 3/4).

D. UL EAZX - Schedule 80 Electrical HDPE Underground Conduit (HDPE-80):

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - a. Blue Diamond Industries.
  - b. JM Eagle; J-M Manufacturing Co., Inc.
  - c. Petroflex North America.
  - d. Prysmian Cables and Systems; Prysmian Group North America.
  - e. Southwire Company, LLC.
2. Dimensional Specifications: Schedule 80.
3. Options:
  - a. Minimum Trade Size: Metric designator 16 (trade size 1/2) Metric designator 21 (trade size 3/4).

E. UL EAZX - Type A Electrical HDPE Underground Conduit (EPEC-A):

1. Dimensional Specifications: Type A.
2. Options:
  - a. Minimum Trade Size: Metric designator 16 (trade size 1/2) Metric designator 21 (trade size 3/4).

F. UL EAZX - Type B Electrical HDPE Underground Conduit (EPEC-B):

1. Dimensional Specifications: Type B.
2. Options:
  - a. Minimum Trade Size: Metric designator 16 (trade size 1/2) Metric designator 21 (trade size 3/4).





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2.5 TYPE ERMC-A AND TYPE ERMC-SS DUCT RACEWAYS, ELBOWS, COUPLINGS, AND  
NIPPLES

A. Performance Criteria:

1. Regulatory Requirements: Listed and labeled in accordance with NFPA 70, by qualified electrical testing laboratory recognized by authorities having jurisdiction, and marked for intended location and application.
2. Listing Criteria: UL CCN DYWV; including UL 6A.

B. Source Quality Control:

1. Product Data: Prepare and submit catalog cuts, brochures, and performance data illustrating size, physical appearance, and other characteristics of product.
2. Manufacturer's Published Instructions: Prepare and submit installation, testing, and operating instructions for product.

C. UL DYWV - Aluminum Electrical Rigid Metal Conduit (ERMC-A), Elbows, Couplings, and Nipples:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - a. ABB, Electrification Business.
  - b. Allied Tube & Conduit; Atkore International.
  - c. American Conduit; Norsk Hydro ASA, Hydro Extrusion USA LLC.
  - d. Calconduit; Atkore International.
  - e. Crouse-Hinds; brand of Eaton, Electrical Sector.
  - f. EGS; Emerson Electric Co., Automation Solutions, Appleton Group.
  - g. Killark; brand of Hubbell Electrical Solutions; Hubbell Incorporated.
  - h. Patriot Aluminum Products, LLC.
  - i. Penn Aluminum Conduit & EMT.
  - j. Republic Conduit; Nucor Corporation, Nucor Tubular Products.
  - k. Topaz Lighting & Electric.
  - l. Western Tube; Zekelman Industries.
  - m. Wheatland Tube; Zekelman Industries.
2. Material: Aluminum.
3. Options:
  - a. Protective Coating: Provide protective coating for use in concrete direct burial use in severely corrosive environment.
  - b. Minimum Trade Size: Metric designator 16 (trade size 1/2) Metric designator 21 (trade size 3/4).
  - c. Colors: As indicated on Drawings.

D. UL DYWV - Stainless Steel Electrical Rigid Metal Conduit (ERMC-SS), Elbows, Couplings, and Nipples:



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1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - a. ABB, Electrification Business.
  - b. Allied Tube & Conduit; Atkore International.
  - c. Calconduit; Atkore International.
  - d. Crouse-Hinds; brand of Eaton, Electrical Sector.
  - e. Patriot Aluminum Products, LLC.
2. Material: Stainless steel.
3. Options:
  - a. Minimum Trade Size: Metric designator 16 (trade size 1/2) Metric designator 21 (trade size 3/4).
  - b. Colors: As indicated on Drawings.

2.6 TYPE ERMC-S DUCT RACEWAYS, ELBOWS, COUPLINGS, AND NIPPLES

A. Performance Criteria:

1. Regulatory Requirements: Listed and labeled in accordance with NFPA 70, by qualified electrical testing laboratory recognized by authorities having jurisdiction, and marked for intended location and application.
2. Listing Criteria: UL CCN DYIX; including UL 6.

B. Source Quality Control:

1. Product Data: Prepare and submit catalog cuts, brochures, and performance data illustrating size, physical appearance, and other characteristics of product.
2. Manufacturer's Published Instructions: Prepare and submit installation, testing, and operating instructions for product.

C. UL DYIX - Galvanized-Steel Electrical Rigid Metal Conduit (ERMC-S-G), Elbows, Couplings, and Nipples:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - a. Allied Tube & Conduit; Atkore International.
  - b. Calconduit; Atkore International.
  - c. Crouse-Hinds; brand of Eaton, Electrical Sector.
  - d. Killark; brand of Hubbell Electrical Solutions; Hubbell Incorporated.
  - e. Patriot Aluminum Products, LLC.
  - f. Republic Conduit; Nucor Corporation, Nucor Tubular Products.
  - g. Topaz Lighting & Electric.
  - h. Western Tube; Zekelman Industries.
  - i. Wheatland Tube; Zekelman Industries.
2. Exterior Coating: Zinc.
3. Options:



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- a. Interior Coating: Zinc with organic top coating .
  - b. Minimum Trade Size: Metric designator 16 (trade size 1/2) Metric designator 21 (trade size 3/4).
  - c. Colors: As indicated on Drawings.
- D. UL DYIX - PVC-Coated-Steel Electrical Rigid Metal Conduit (ERMC-S-PVC), Elbows, Couplings, and Nipples:
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. ABB, Electrification Business.
    - b. Bluesteel Services LLC.
    - c. Calbond; Atkore International.
    - d. KorKap; Robroy Industries.
    - e. Perma-Cote; Robroy Industries.
    - f. Plasti-Bond; Robroy Industries.
  2. Options:
    - a. Exterior Coating: PVC complying with NEMA RN 1.
    - b. Interior Coating: Zinc with organic top coating .
    - c. Minimum Trade Size: Metric designator 16 (trade size 1/2) Metric designator 21 (trade size 3/4).
    - d. Colors: As indicated on Drawings.
    - e. Conduit Fittings for Hazardous (Classified) Locations: UL 1203.
    - f. Expansion and Deflection Fittings: UL 651 with flexible bonding jumper.

2.7 TYPE FMC-S AND TYPE FMC-A DUCT RACEWAYS

- A. Performance Criteria:
1. Regulatory Requirements: Listed and labeled in accordance with NFPA 70, by qualified electrical testing laboratory recognized by authorities having jurisdiction, and marked for intended location and application.
  2. Listing Criteria: UL CCN DXUZ; including UL 1.
- B. Source Quality Control:
1. Product Data: Prepare and submit catalog cuts, brochures, and performance data illustrating size, physical appearance, and other characteristics of product.
  2. Manufacturer's Published Instructions: Prepare and submit installation, testing, and operating instructions for product.
- C. UL DXUZ - Steel Flexible Metal Conduit (FMC-S):
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:



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- a. ABB, Electrification Business.
  - b. Anaconda Sealtite; Anamet Electrical, Inc.
  - c. Electri-Flex Company.
  - d. International Metal Hose Co.
  - e. Penn Aluminum Conduit & EMT.
  - f. Topaz Lighting & Electric.
2. Material: Steel.
  3. Options:
    - a. Minimum Trade Size: Metric designator 16 (trade size 1/2) Metric designator 21 (trade size 3/4).
    - b. Colors: As indicated on Drawings.

D. UL DXUZ - Aluminum Flexible Metal Conduit (FMC-A):

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - a. ABB, Electrification Business.
  - b. Anaconda Sealtite; Anamet Electrical, Inc.
  - c. Electri-Flex Company.
  - d. Topaz Lighting & Electric.
2. Options:
  - a. Minimum Trade Size: Metric designator 16 (trade size 1/2) Metric designator 21 (trade size 3/4).
  - b. Colors: As indicated on Drawings.

2.8 TYPE FMT DUCT RACEWAYS

A. Performance Criteria:

1. Regulatory Requirements: Listed and labeled in accordance with NFPA 70, by qualified electrical testing laboratory recognized by authorities having jurisdiction, and marked for intended location and application.
2. Listing Criteria: UL CCN ILJW; including UL Subject 1652.

B. Source Quality Control:

1. Product Data: Prepare and submit catalog cuts, brochures, and performance data illustrating size, physical appearance, and other characteristics of product.
2. Manufacturer's Published Instructions: Prepare and submit installation, testing, and operating instructions for product.

C. UL ILJW - Steel Flexible Metallic Tubing (FMT):

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:



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- a. Electri-Flex Company.
- b. International Metal Hose Co.
- c. Liquid Tight Connector Co.
- d. Southwire Company, LLC.
2. Options:
  - a. Minimum Trade Size: Metric designator 16 (trade size 1/2) Metric designator 21 (trade size 3/4).
  - b. Colors: As indicated on Drawings.

## 2.9 TYPE IMC DUCT RACEWAYS

### A. Performance Criteria:

1. Regulatory Requirements: Listed and labeled in accordance with NFPA 70, by qualified electrical testing laboratory recognized by authorities having jurisdiction, and marked for intended location and application.
2. Listing Criteria: UL CCN DYBY; including UL 1242.

### B. Source Quality Control:

1. Product Data: Prepare and submit catalog cuts, brochures, and performance data illustrating size, physical appearance, and other characteristics of product.
2. Manufacturer's Published Instructions: Prepare and submit installation, testing, and operating instructions for product.

### C. UL DYBY - Steel Intermediate Metal Conduit (IMC):

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - a. ABB, Electrification Business.
  - b. Allied Tube & Conduit; Atkore International.
  - c. Calconduit; Atkore International.
  - d. Republic Conduit; Nucor Corporation, Nucor Tubular Products.
  - e. Topaz Lighting & Electric.
  - f. Western Tube; Zekelman Industries.
  - g. Wheatland Tube; Zekelman Industries.
2. Options:
  - a. Exterior Coating: Zinc Alternative corrosion-resistant coating.
  - b. Interior Coating: Zinc with organic top coating .
  - c. Minimum Trade Size: Metric designator 16 (trade size 1/2) Metric designator 21 (trade size 3/4).
  - d. Colors: As indicated on Drawings.



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2.10 TYPE LFMC DUCT RACEWAYS

A. Performance Criteria:

1. Regulatory Requirements: Listed and labeled in accordance with NFPA 70, by qualified electrical testing laboratory recognized by authorities having jurisdiction, and marked for intended location and application.
2. Listing Criteria: UL CCN DXHR; including UL 360.

B. Source Quality Control:

1. Product Data: Prepare and submit catalog cuts, brochures, and performance data illustrating size, physical appearance, and other characteristics of product.
2. Manufacturer's Published Instructions: Prepare and submit installation, testing, and operating instructions for product.

C. UL DXHR - Steel Liquidtight Flexible Metal Conduit (LFMC-S):

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - a. ABB, Electrification Business.
  - b. Anaconda Sealtite; Anamet Electrical, Inc.
  - c. Electri-Flex Company.
  - d. International Metal Hose Co.
2. Material: Steel.
3. Options:
  - a. Minimum Trade Size: Metric designator 16 (trade size 1/2) Metric designator 21 (trade size 3/4).
  - b. Colors: As indicated on Drawings.

D. UL DXHR - Stainless Steel Liquidtight Flexible Metal Conduit (LFMC-SS):

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - a. Electri-Flex Company.
2. Material: Stainless steel.
3. Options:
  - a. Minimum Trade Size: Metric designator 16 (trade size 1/2) Metric designator 21 (trade size 3/4).
  - b. Colors: As indicated on Drawings.

2.11 TYPE LFNC DUCT RACEWAYS

A. Performance Criteria:



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1. Regulatory Requirements: Listed and labeled in accordance with NFPA 70, by qualified electrical testing laboratory recognized by authorities having jurisdiction, and marked for intended location and application.
2. Listing Criteria: UL CCN DXOQ; including UL 1660.

B. Source Quality Control:

1. Product Data: Prepare and submit catalog cuts, brochures, and performance data illustrating size, physical appearance, and other characteristics of product.
2. Manufacturer's Published Instructions: Prepare and submit installation, testing, and operating instructions for product.

C. UL DXOQ - Layered (Type A) Liquidtight Flexible Nonmetallic Conduit (LFNC-A):

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - a. AFC Cable Systems; Atkore International.
  - b. Electri-Flex Company.
2. Additional Criteria: Type A conduit with smooth seamless inner core and cover bonded together with one or more reinforcement layers between core and cover.
3. Options:
  - a. Minimum Trade Size: Metric designator 16 (trade size 1/2) Metric designator 21 (trade size 3/4).
  - b. Colors: As indicated on Drawings.
  - c. Markings: 80 deg C dry 105 deg C dry 70 deg C oil resistant Sunlight resistant Outdoor Direct burial Complies with flame test in cable trays.

D. UL DXOQ - Integral (Type B) Liquidtight Flexible Nonmetallic Conduit (LFNC-B):

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - a. Cambridge Resources.
  - b. Electri-Flex Company.
  - c. Superflex Ltd.
2. Additional Criteria: Type B conduit with smooth inner surface with integral reinforcement within conduit wall.
3. Options:
  - a. Minimum Trade Size: Metric designator 16 (trade size 1/2) Metric designator 21 (trade size 3/4).
  - b. Colors: As indicated on Drawings.
  - c. Markings: 80 deg C dry 90 deg C dry 105 deg C dry 70 deg C oil resistant Sunlight resistant Outdoor Direct burial Complies with flame test in cable trays.

E. UL DXOQ - Corrugated (Type C) Liquidtight Flexible Nonmetallic Conduit (LFNC-C):



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1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - a. ABB, Electrification Business.
  - b. HellermannTyton.
2. Additional Criteria: Type C conduit with corrugated internal and external surfaces without integral reinforcement within conduit wall.
3. Options:
  - a. Minimum Trade Size: Metric designator 16 (trade size 1/2) Metric designator 21 (trade size 3/4).
  - b. Colors: As indicated on Drawings.
  - c. Markings: 80 deg C dry 90 deg C dry 105 deg C dry 70 deg C oil resistant Sunlight resistant Outdoor Direct burial Complies with flame test in cable trays.

2.12 TYPE PVC DUCT RACEWAYS AND FITTINGS

A. Performance Criteria:

1. Regulatory Requirements: Listed and labeled in accordance with NFPA 70, by qualified electrical testing laboratory recognized by authorities having jurisdiction, and marked for intended location and application.
2. Listing Criteria: UL CCN DZYR; including UL 651.

B. Source Quality Control:

1. Product Data: Prepare and submit catalog cuts, brochures, and performance data illustrating size, physical appearance, and other characteristics of product.
2. Manufacturer's Published Instructions: Prepare and submit installation, testing, and operating instructions for product.

C. UL DZYR - Schedule 40 Rigid PVC Conduit (PVC-40) and Fittings:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - a. ABB, Electrification Business.
  - b. Calconduit; Atkore International.
  - c. JM Eagle; J-M Manufacturing Co., Inc.
  - d. NAPCO; Westlake Chemical Corp.
  - e. Opti-Com Manufacturing Network, Inc (OMNI).
2. Dimensional Specifications: Schedule 40.
3. Options:
  - a. Minimum Trade Size: Metric designator 16 (trade size 1/2) Metric designator 21 (trade size 3/4).
  - b. Markings: For use with maximum 90 deg C wire For directional boring applications.

D. UL DZYR - Schedule 80 Rigid PVC Conduit (PVC-80) and Fittings:





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1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - a. ABB, Electrification Business.
  - b. Calconduit; Atkore International.
  - c. JM Eagle; J-M Manufacturing Co., Inc.
  - d. Opti-Com Manufacturing Network, Inc (OMNI).
2. Dimensional Specifications: Schedule 80.
3. Options:
  - a. Minimum Trade Size: Metric designator 16 (trade size 1/2) Metric designator 21 (trade size 3/4).
  - b. Markings: For use with maximum 90 deg C wire For directional boring applications.

E. UL DZYS - Type A Rigid PVC Concrete-Encased Conduit (PVC-A) and Fittings:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - a. Southern Pipe, Inc.
2. Dimensional Specifications: Type A.
3. Options:
  - a. Minimum Trade Size: Metric designator 16 (trade size 1/2) Metric designator 21 (trade size 3/4).

F. UL DZYS - Type EB Rigid PVC Concrete-Encased Underground Conduit (PVC-EB) and Fittings:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - a. JM Eagle; J-M Manufacturing Co., Inc.
  - b. Southern Pipe, Inc.
2. Dimensional Specifications: Type EB.
3. Options:
  - a. Minimum Trade Size: Metric designator 53 (trade size 2) Metric designator 78 (trade size 3) Metric designator 103 (trade size 4).

2.13 TYPE RTRC-AG DUCT RACEWAYS AND FITTINGS

A. Performance Criteria:

1. Regulatory Requirements: Listed and labeled in accordance with NFPA 70, by qualified electrical testing laboratory recognized by authorities having jurisdiction, and marked for intended location and application.
2. Listing Criteria:
  - a. Aboveground RTRC: UL CCN DZKT; including UL 2515.
  - b. Extra Heavy Wall RTRC: UL 2515A.



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B. Source Quality Control:

1. Product Data: Prepare and submit catalog cuts, brochures, and performance data illustrating size, physical appearance, and other characteristics of product.
2. Manufacturer's Published Instructions: Prepare and submit installation, testing, and operating instructions for product.

C. UL DZKT - Heavy Wall, Low-Halogen, Aboveground Reinforced Thermosetting Resin Conduit (RTRC-AG-HW) and Fittings:

1. Additional Characteristics: Type AG-HW.
2. Options:
  - a. Minimum Trade Size: Metric designator 16 (trade size 1/2) Metric designator 21 (trade size 3/4).

D. UL DZKT - Standard Wall, Low-Halogen, Aboveground Reinforced Thermosetting Resin Conduit (RTRC-AG-SW) and Fittings:

1. Additional Characteristics: Type SW.
2. Options:
  - a. Minimum Trade Size: Metric designator 16 (trade size 1/2) Metric designator 21 (trade size 3/4).

E. UL DZKT - Extra Heavy Wall, Low-Halogen, Aboveground Reinforced Thermosetting Resin Conduit (RTRC-AG-XW) and Fittings:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - a. Champion Fiberglass, Inc.
  - b. FRE Composites.
  - c. United Fiberglass of America (UFA).
2. Additional Characteristics: Type AG-XW.
3. Options:
  - a. Minimum Trade Size: Metric designator 16 (trade size 1/2) Metric designator 21 (trade size 3/4).

2.14 TYPE RTRC-BG DUCT RACEWAYS AND FITTINGS

A. Performance Criteria:

1. Regulatory Requirements: Listed and labeled in accordance with NFPA 70, by qualified electrical testing laboratory recognized by authorities having jurisdiction, and marked for intended location and application.
2. Listing Criteria: UL CCN DZKT; including UL 2420.



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B. Source Quality Control:

1. Product Data: Prepare and submit catalog cuts, brochures, and performance data illustrating size, physical appearance, and other characteristics of product.
2. Manufacturer's Published Instructions: Prepare and submit installation, testing, and operating instructions for product.

C. UL DZXT - Low-Halogen, Belowground Reinforced Thermosetting Resin Conduit (RTRC-BG) and Fittings:

1. Additional Characteristics: Type BG.
2. Options:
  - a. Minimum Trade Size: Metric designator 16 (trade size 1/2) Metric designator 21 (trade size 3/4).

2.15 FITTINGS FOR CONDUIT, TUBING, AND CABLE

A. Performance Criteria:

1. Regulatory Requirements: Listed and labeled in accordance with NFPA 70, by qualified electrical testing laboratory recognized by authorities having jurisdiction, and marked for intended location and application.

B. Source Quality Control:

1. Product Data: Prepare and submit catalog cuts, brochures, and performance data illustrating size, physical appearance, and other characteristics of product.
2. Manufacturer's Published Instructions: Prepare and submit installation, testing, and operating instructions for product.

C. UL EBMB - Duct Fittings for Hazardous (Classified) Locations:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - a. Crouse-Hinds; brand of Eaton, Electrical Sector.
  - b. Power Feed-Thru Systems and Connectors LLC.
2. Listing Criteria: UL CCN EBMB; including UL 1203.

D. UL DWTT - Fittings for Type ERM, Type IMC, Type PVC, Type HDPE, Type EPEC, and Type RTRC Duct Raceways:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - a. ABB, Electrification Business.
  - b. Crouse-Hinds; brand of Eaton, Electrical Sector.



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- c. Penn Aluminum Conduit & EMT.
  2. Listing Criteria: UL CCN DWTT; including UL 514B.
  3. Options:
    - a. Material: Steel Die cast.
    - b. Coupling Method: Compression coupling Raintight compression coupling with distinctive color gland nut Setscrew coupling. Setscrew couplings with only single screw per conduit are unacceptable.
    - c. Expansion and Deflection Fittings: UL 651 with flexible bonding jumper.
- E. UL FKAV - Fittings for Type EMT Duct Raceways:
  1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. Allied Tube & Conduit; Atkore International.
    - b. Crouse-Hinds; brand of Eaton, Electrical Sector.
    - c. EGS; Emerson Electric Co., Automation Solutions, Appleton Group.
    - d. Raco Taymac Bell; brand of Hubbell Electrical Solutions; Hubbell Incorporated.
  2. Listing Criteria: UL CCN FKAV; including UL 514B.
  3. Options:
    - a. Material: Steel Die cast.
    - b. Coupling Method: Compression coupling Raintight compression coupling with distinctive color gland nut Setscrew coupling. Setscrew couplings with only single screw per conduit are unacceptable.
    - c. Expansion and Deflection Fittings: UL 651 with flexible bonding jumper.
- F. UL ILNR - Fittings for Type FMC Duct Raceways:
  1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. American Fittings Corp. (AMFICO).
    - b. Liquid Tight Connector Co.
    - c. Southwire Company, LLC.
  2. Listing Criteria: UL CCN ILNR; including UL 514B.
- G. UL DXAS - Fittings for Type LFMC and Type LFNC Duct Raceways:
  1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. Arlington Industries, Inc.
    - b. Liquid Tight Connector Co.
  2. Listing Criteria: UL CCN DXAS; including UL 514B.



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2.16 ELECTRICALLY CONDUCTIVE CORROSION-RESISTANT COMPOUNDS FOR  
THREADED CONDUIT

A. Performance Criteria:

1. Regulatory Requirements: Listed and labeled in accordance with NFPA 70, by qualified electrical testing laboratory recognized by authorities having jurisdiction, and marked for intended location and application.
2. Listing Criteria: UL CCN FOIZ; including UL Subject 2419.

B. Source Quality Control:

1. Product Data: Prepare and submit catalog cuts, brochures, and performance data illustrating size, physical appearance, and other characteristics of product.
2. Manufacturer's Published Instructions: Prepare and submit installation, testing, and operating instructions for product.

C. UL FOIZ - Electrically Conductive Corrosion-Resistant Compound for Threaded Conduit:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - a. ABB, Electrification Business.

2.17 SOLVENT CEMENTS

A. Performance Criteria:

1. Regulatory Requirements: Listed and labeled in accordance with NFPA 70, by qualified electrical testing laboratory recognized by authorities having jurisdiction, and marked for intended location and application.
2. Listing Criteria: UL CCN DWTT; including UL 514B.

B. Source Quality Control:

1. Product Data: Prepare and submit catalog cuts, brochures, and performance data illustrating size, physical appearance, and other characteristics of product.
2. Sustainable Design Submittals: Prepare and submit the following documentation:
  - a. Product data indicating VOC content less than 510 490 g/L or less for PVC CPVC conduit and fittings.
  - b. Laboratory test reports for low-emitting materials, as recommended by solvent and adhesive manufacturer, that comply with testing and product requirements of the California Department of Public Health's "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers."



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3. Manufacturer's Published Instructions: Prepare and submit installation, testing, and operating instructions for product.

### PART 3 - EXECUTION

#### 3.1 SELECTION OF CONDUITS FOR ELECTRICAL SYSTEMS

- A. Unless more stringent requirements are specified in Contract Documents or manufacturers' published instructions, comply with NFPA 70 for selection of duct raceways. Consult Architect for resolution of conflicting requirements.
- B. Special Instructions Regarding HDPE Conduits: Although Article 353 of NFPA 70 permits use of HDPE conduits where encased in concrete aboveground, UL CCN EAZX listing requirements state that HDPE and EPEC underground conduits are intended only for use where direct buried with or without being encased in concrete. Specified Type HDPE and Type EPEC underground conduits are not permitted to be used aboveground on Project.
- C. Outdoors:
  1. Exposed and Subject to Severe Physical Damage: ERM C IMC.
  2. Exposed and Subject to Physical Damage: ERM C IMC Corrosion-resistant EMT.
    - a. Locations less than 2.5 m (8 ft) above finished floor.
  3. Exposed and Not Subject to Physical Damage: ERM C IMC Corrosion-resistant EMT PVC-80 RTRC-AG.
  4. Concealed Aboveground: ERM C IMC EMT PVC-80 PVC-40 RTRC-AG.
  5. Direct Buried: PVC-80 PVC-40 HDPE-80 HDPE-40 RTRC-BG.
  6. Concrete Encased Not in Trench: PVC-80 PVC-40 PVC-A RTRC-BG.
  7. Concrete Encased in Trench: PVC-80 PVC-40 PVC-A PVC-EB HDPE-80 HDPE-40 EPEC-A EPEC-B RTRC-BG.
  8. Connection to Vibrating Equipment (Including Transformers and Hydraulic, Pneumatic, Electric Solenoid, or Motor-Driven Equipment): LFMC LFNC-A LFNC-B.
- D. Indoors:
  1. Hazardous Classified Locations: ERM C IMC.
  2. Exposed and Subject to Severe Physical Damage: ERM C IMC. Locations include the following:
    - a. Loading docks.
    - b. Corridors used for traffic of mechanized carts, forklifts, and pallet-handling units.
    - c. Mechanical rooms.
    - d. Gymnasiums.
  3. Exposed and Subject to Physical Damage: ERM C IMC EMT. Locations include the following:
    - a. Locations less than 2.5 m (8 ft) above finished floor.



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- b. Stub-ups to above suspended ceilings.
  - 4. Exposed and Not Subject to Physical Damage: ERMC IMC EMT PVC-80 RTRC-AG.
  - 5. Concealed in Ceilings and Interior Walls and Partitions: ERMC IMC EMT PVC-80 PVC-40 RTRC-AG.
  - 6. Damp or Wet Locations: ERMC IMC RTRC-AG Corrosion-resistant EMT.
  - 7. Connection to Vibrating Equipment (Including Transformers and Hydraulic, Pneumatic, Electric Solenoid, or Motor-Driven Equipment): LFMC FMC LFNC-A LFNC-B.
  - 8. Circuits Operating Above 60 Hz: EMT-A ERMC-A RTRC-AG. Provide nonmetallic sleeve where aluminum duct raceways pass through concrete.
- E. Duct Fittings: Select fittings in accordance with NEMA FB 2.10 guidelines.
- 1. ERMC and IMC: Provide threaded-type fittings unless otherwise indicated.

3.2 INSTALLATION OF CONDUITS FOR ELECTRICAL SYSTEMS

- A. Comply with manufacturer's published instructions.
- B. Reference Standards for Installation: Unless more stringent installation requirements are specified in Contract Documents or manufacturers' published instructions, comply with the following:
- 1. Type EMT-A: Article 358 of NFPA 70 and NECA NEIS 102.
  - 2. Type EMT-SS: Article 358 of NFPA 70 and NECA NEIS 101.
  - 3. Type EMT-S: Article 358 of NFPA 70 and NECA NEIS 101.
  - 4. Type ENT: Article 362 of NFPA 70 and NECA NEIS 102.
  - 5. Type HDPE and Type EPEC: Article 353 of NFPA 70 and NECA NEIS 111.
  - 6. Type ERMC-A: Article 344 of NFPA 70 and NECA NEIS 102.
  - 7. Type ERMC-SS: Article 344 of NFPA 70 and NECA NEIS 101.
  - 8. Type ERMC-S: Article 344 of NFPA 70 and NECA NEIS 101.
  - 9. Type FMC-S: Article 348 of NFPA 70 and NECA NEIS 101.
  - 10. Type FMC-A: Article 348 of NFPA 70 and NECA NEIS 102.
  - 11. Type FMT: Article 360 of NFPA 70 and NECA NEIS 101.
  - 12. Type IMC: Article 342 of NFPA 70 and NECA NEIS 101.
  - 13. Type LFMC: Article 350 of NFPA 70 and NECA NEIS 101.
  - 14. Type LFNC: Article 342 of NFPA 70 and NECA NEIS 111.
  - 15. Type PVC: Article 356 of NFPA 70 and NECA NEIS 111.
  - 16. Type RTRC: Article 355 of NFPA 70 and NECA NEIS 111.
  - 17. Expansion Fittings: NEMA FB 2.40.
  - 18. Consult Architect for resolution of conflicting requirements.
- C. Special Installation Techniques:
- 1. General Requirements for Installation of Duct Raceways:
    - a. Complete duct raceway installation before starting conductor installation.



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- b. Provide stub-ups through floors with coupling threaded inside for plugs, set flush with finished floor. Plug coupling until conduit is extended above floor to final destination or a minimum of **2 ft** above finished floor.
- c. Install no more than equivalent of three 90-degree bends in conduit run except for control wiring conduits, for which no more than equivalent of two 90-degree fewer bends are permitted. Support within **12 inch** of changes in direction.
- d. Make bends in duct raceway using large-radius preformed ells except for parallel bends. Field bending must be in accordance with NFPA 70 minimum radii requirements. Provide only equipment specifically designed for material and size involved.
- e. Conceal conduit within finished walls, ceilings, and floors unless otherwise indicated. Install conduits parallel or perpendicular to building lines.
- f. Support conduit within **12 inch** of enclosures to which attached.
- g. Install duct sealing fittings at accessible locations in accordance with NFPA 70 and fill them with listed sealing compound. For concealed duct raceways, install fitting in flush steel box with blank cover plate having finish similar to that of adjacent plates or surfaces. Install duct sealing fittings in accordance with NFPA 70.
- h. Install devices to seal duct raceway interiors at accessible locations. Locate seals so no fittings or boxes are between the seal and the following changes of environments. Seal interior of duct raceways at the following points:
  - 1) Where conduits pass from warm to cold locations, such as boundaries of refrigerated spaces.
  - 2) Where an underground service duct raceway enters a building or structure.
  - 3) Conduit extending from interior to exterior of building.
  - 4) Conduit extending into pressurized duct raceway and equipment.
  - 5) Conduit extending into pressurized zones that are automatically controlled to maintain different pressure set points.
  - 6) Where otherwise required by NFPA 70.
- i. Do not install duct raceways or electrical items on "explosion-relief" walls or rotating equipment.
- j. Do not install conduits within **2 inch** of the bottom side of a metal deck roof.
- k. Keep duct raceways at least **6 inch** away from parallel runs of flues and steam or hot-water pipes. Install horizontal duct raceway runs above water and steam piping.
- l. Cut conduit perpendicular to the length. For conduits metric designator 53 (trade size 2) and larger, use roll cutter or a guide to make cut straight and perpendicular to the length. Ream inside of conduit to remove burrs.
- m. Install pull wires in empty duct raceways. Provide polypropylene or monofilament plastic line with not less than **200 lb** tensile strength. Leave at least **12 inch** of slack at both ends of pull wire. Cap underground duct raceways designated as spare above grade alongside duct raceways in use.
- n. Install duct raceways square to the enclosure and terminate at enclosures without hubs with locknuts on both sides of enclosure wall. Install locknuts hand tight, plus one-quarter turn more.
  - 1) Termination fittings with shoulders do not require two locknuts.
- o. Terminate threaded conduits into threaded hubs or with locknuts on inside and outside of boxes or cabinets. Install bushings on conduits up to metric designator 35





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- (trade size 1-1/4) and insulated throat metal bushings on metric designator 41 (trade size 1-1/2) and larger conduits terminated with locknuts. Install insulated throat metal grounding bushings on service conduits.
2. Types EMT-A, ERMC-A, and FMC-A: Do not install aluminum duct raceways or fittings in contact with concrete or earth.
  3. Types ERMC and IMC:
    - a. Threaded Conduit Joints, Exposed to Wet, Damp, Corrosive, or Outdoor Conditions: Apply listed compound that maintains electrical conductivity to threads of duct raceway and fittings before making up joints. Follow compound manufacturer's published instructions.
  4. Type ERMC-S-PVC:
    - a. Follow manufacturer's installation instructions for clamping, cutting, threading, bending, and assembly.
    - b. Provide PVC-coated sealing locknut for exposed male threads transitioning into female NPT threads that do not have sealing sleeves, including transitions from PVC couplings/female adapters to Type ERMC-S-PVC elbows in direct-burial applications. PVC-coated sealing locknuts must not be used in place of conduit hub. PVC-coated sealing locknut must cover exposed threads on Type ERMC-S-PVC duct raceway.
    - c. Coat field-cut threads on PVC-coated duct raceway with manufacturer-approved corrosion-preventing conductive compound prior to assembly.
  5. Types FMC, LFMC, and LFNC:
    - a. Provide a maximum of **36 inch 72 inch** of flexible conduit for recessed and semirecessed luminaires, equipment subject to vibration, noise transmission, or movement; and for transformers and motors.
  6. Types PVC, HDPE, and EPEC:
    - a. Do not install Type PVC, Type HDPE, or Type EPEC conduit where ambient temperature exceeds **122 deg F** . Conductor ratings must be limited to 75 deg C except where installed in a trench outside buildings with concrete encasement, where 90 deg C conductors are permitted.
    - b. Comply with manufacturer's published instructions for solvent welding and fittings.
  7. Type RTRC: Do not install Type RTRC conduit where ambient temperature exceeds **230 deg F** .
  8. Duct Raceways Embedded in Slabs:
    - a. Run duct raceways larger than metric designator 27 (trade size 1) below concrete slab Run duct raceways larger than metric designator 27 (trade size 1) parallel or at right angles to main reinforcement. Where at right angles to reinforcement, place duct raceway close to slab support. Secure duct raceways to reinforcement at maximum **10 ft** intervals.
    - b. Arrange duct raceways to cross building expansion joints with expansion fittings at right angles to the joint.
    - c. Arrange duct raceways to ensure that each is surrounded by minimum of **1 inch 2 inch** of concrete without voids.
    - d. Do not embed threadless fittings in concrete unless locations have been specifically approved by Architect.
    - e. Change from ENT to PVC-80 PVC-40 ERMC or IMC before rising above floor.



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9. Stub-ups to Above Recessed Ceilings:
  - a. Provide EMT, IMC, or ERMC for duct raceways.
  - b. Provide a conduit bushing or insulated fitting to terminate stub-ups not terminated in hubs or in an enclosure.
10. Duct Raceway Terminations at Locations Subject to Moisture or Vibration:
  - a. Provide insulating bushings to protect conductors, including conductors smaller than 4 AWG. Install insulated throat metal grounding bushings on service conduits.
11. Duct Fittings: Install fittings in accordance with NEMA FB 2.10 guidelines.
  - a. ERMC-S-PVC: Provide only fittings listed for use with this type of conduit. Patch and seal joints, nicks, and scrapes in PVC coating after installing conduits and fittings. Provide sealant recommended by fitting manufacturer and apply in thickness and number of coats recommended by manufacturer.
  - b. EMT: Provide setscrew compression , steel cast-metal fittings. Comply with NEMA FB 2.10.
  - c. Flexible Conduit: Provide only fittings listed for use with flexible conduit type. Comply with NEMA FB 2.20.
12. Expansion-Joint Fittings:
  - a. Install in runs of aboveground PVC that are located where environmental temperature change may exceed **30 deg F** and that have straight-run length that exceeds **25 ft**. Install in runs of aboveground ERMC and EMT conduit that are located where environmental temperature change may exceed **100 deg F** and that have straight-run length that exceeds **100 ft**.
  - b. Install type and quantity of fittings that accommodate temperature change listed for the following locations:
    - 1) Outdoor Locations Not Exposed to Direct Sunlight: **125 deg F** temperature change.
    - 2) Outdoor Locations Exposed to Direct Sunlight: **155 deg F** temperature change.
    - 3) Indoor Spaces Connected with Outdoors without Physical Separation: **125 deg F** temperature change.
  - c. Install fitting(s) that provide expansion and contraction for at least **0.00041 inch per foot of length of straight run per deg F** of temperature change for PVC conduits. Install fitting(s) that provide expansion and contraction for at least **0.000078 inch per foot of length of straight run per deg F** of temperature change for metal conduits.
  - d. Install expansion fittings at locations where conduits cross building or structure expansion joints.
  - e. Install expansion-joint fitting with position, mounting, and piston setting selected in accordance with manufacturer's published instructions for conditions at specific location at time of installation. Install conduit supports to allow for expansion movement.
13. Duct Raceways Penetrating Rooms or Walls with Acoustical Requirements: Seal duct raceway openings on both sides of rooms or walls with acoustically rated putty or firestopping.
14. Identification: Provide labels for conduit assemblies, duct raceways, and associated electrical equipment.
  - a. Provide warning signs.



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3.3 PROTECTION

- A. Protect coatings, finishes, and cabinets from damage and deterioration.
  - 1. Repair damage to galvanized finishes with zinc-rich paint recommended by manufacturer.
  - 2. Repair damage to PVC coatings or paint finishes with matching touchup coating recommended by manufacturer.

END OF SECTION 260533.13



## SECTION 265668 - EXTERIOR ATHLETIC LIGHTING - MUSCO

### PART 1 - PART 1 – GENERAL

#### 1.1 SUMMARY

- A. Work covered by this section of the specifications shall conform to the contract documents, engineering plans as well as state and local codes.
- B. The purpose of these specifications is to define the lighting system performance and design standards for Gano Park using an LED Lighting source. The manufacturer / contractor shall supply lighting equipment to meet or exceed the standards set forth in these specifications.
- C. The sports lighting will be for the following venues:
  - 1. Little League Baseball Field 1 (Western Field)
  - 2. Little League Baseball Field 2 (Eastern Field)
- D. The primary goals of this sports lighting project are:
  - 1. Guaranteed Light Levels: Selection of appropriate light levels impacts the safety of players and the enjoyment of spectators. Therefore, light levels are guaranteed to not drop below specified target values for a period of 25 years.
  - 2. Environmental Light Control: It is the primary goal of this project to minimize spill light to adjoining properties and glare to players, spectators, and neighbors.
  - 3. Cost of Ownership: To reduce the operating budget, the preferred lighting system shall be energy efficient and cost effective to operate. All maintenance costs shall be eliminated for the duration of the warranty.
  - 4. Control and Monitoring – To allow for optimized use of labor resources and avoid unneeded operation of the facility, customer requires a remote on/off control system for the lighting system. Fields should be proactively monitored to detect luminaire outages over a 25-year life cycle. All communication and monitoring costs for 25-year period shall be included in the bid.
  - 5. Control and monitoring system shall provide contactor control of all existing circuits. Key switches shall be provided to provide field-level control of existing circuit groups.

#### 1.2 ONFIELD LIGHTING PERFORMANCE

- A. Illumination Levels and Design Factors: Playing surfaces shall be lit to an average target illumination level and uniformity as specified in the chart below. Lighting manufacturers will provide a guarantee that light levels will be sustained over the life of the warranty period. Lighting calculations shall be developed, and field measurements taken on the grid spacing with the minimum number of grid points specified below.



1. Manufacturers will provide lumen maintenance data of the LED luminaires used per TM-21-11 and will Incorporate the lumen maintenance projections into the lighting designs to ensure target light levels are achieved throughout the guaranteed period of the system. Per IES guidelines, lumen maintenance hours should be reported based on the 6x multiplier of testing hours.
- B. Color Temperature: The lighting system shall have a minimum color temperature of 5700K and a CRI of 75.
- C. Playability: Lighting design and luminaire selection should be optimized for playability by reducing glare onfield and providing sufficient uplight.
  1. Aiming Angles: To reduce glare, luminaire aiming should ensure the top of the luminaire field angle (based on sample photometric reports) is a minimum of 10 degrees below horizontal.
  2. Glare Control Technology – Luminaires selected should have glare control technology including, but not limited to: external visors, internal shields and louvres. No symmetrical beam patterns are acceptable.
  3. Aerial lighting – Adequate illumination must be provided above the field to see the ball in flight. It is recommended that a lighting analysis be performed above the field of play to evaluate the visibility of the ball over its typical trajectory to ensure the participants will adequately see the ball. Calculation planes should be evaluated up to maximum anticipated height for level of play.
  4. Mounting Heights: To ensure proper aiming angles, minimum mountings heights shall be as described below. Higher mounting heights may be necessary for luminaire with lesser glare control to meet field angle requirements of section 1.2.C.1.

### 1.3 ENVIRONMENTAL LIGHT CONTROL

- A. Light Control Luminaires: All luminaires shall utilize spill light and glare control devices including, but not limited to, internal shields, louvers, and external shields. No symmetrical beam patterns are accepted.
- B. Spill Light and Glare Control: To minimize impact on adjacent properties, spill light and candela values must not exceed the following levels taken at 3 feet above grade.
- C. Spill Scans: Spill scans must be submitted indicating the amount of horizontal and vertical footcandles along the specified lines. Light levels shall be provided in 30-foot intervals along the boundary line at 3 ft above grade.
- D. Sample Photometry: The first page of a photometric report for all luminaire types proposed showing horizontal and vertical axial candle power shall be provided to demonstrate the capability of achieving the specified performance. Reports shall be certified by a qualified testing laboratory with a minimum of five years experience or by a manufacturer's laboratory with a current accreditation under the National Voluntary Laboratory Accreditation Program for Energy



Efficient Lighting Products. A summary of the horizontal and vertical aiming angles for each luminaire shall be included with the photometric report.

- E. Field Verification: Lighting manufacturer shall supply field verification of environmental light control using a meter calibrated within the last 12 months:
  - 1. Spill verification: Illumination levels shall be taken in accordance with IESNA RP-6-22. The light sensing surface of the light meter should be held 36 inches above the playing surface with the sensing surface horizontal (for horizontal readings) or vertically pointed at the brightest light bank (for max vertical readings)

#### 1.4 Cost of Ownership

- A. Manufacturer shall submit a 25 year Cost of Ownership summary that includes energy consumption, anticipated maintenance costs, and control costs. All costs associated with faulty luminaire replacement - equipment rentals, removal and installation labor, and shipping - are to be included in the maintenance costs.

### PART 2 - PRODUCT

#### 2.1 SPORTS LIGHTING SYSTEM CONSTRUCTION

- A. Manufacturing Requirements: All components shall be designed and manufactured as a system. All luminaires, wire harnesses, drivers and other enclosures shall be factory assembled, aimed, wired and tested.
- B. Durability: All exposed components shall be constructed of corrosion resistant material and/or coated to help prevent corrosion. All exposed carbon steel shall be hot dip galvanized per ASTM A123. All exposed aluminum shall be powder coated with high performance polyester or anodized. All exterior reflective inserts shall be anodized, coated, and protected from direct environmental exposure to prevent reflective degradation or corrosion. All exposed hardware and fasteners shall be stainless steel, passivated and coated with aluminum-based thermosetting epoxy resin for protection against corrosion and stress corrosion cracking. Structural fasteners may be carbon steel and galvanized meeting ASTM A153 and ISO/EN 1461 (for hot dipped galvanizing), or ASTM B695 (for mechanical galvanizing). All wiring shall be enclosed within the cross-arms, pole, or electrical components enclosure.
- C. System Description: Lighting system shall consist of the following:
  - 1. Galvanized steel poles and cross-arm assembly.
  - 2. Non-approved pole technology:
    - a. Square static cast concrete poles will not be accepted.



- b. Direct bury steel poles which utilize the extended portion of the steel shaft for their foundation will not be accepted due to potential for internal and external corrosive reaction to the soils and long term performance concerns.
3. Lighting systems shall use concrete foundations. See Section 2.4 for details.
  - a. For a foundation using a pre-stressed concrete base embedded in concrete backfill the concrete shall be air-entrained and have a minimum compressive design strength at 28 days of 3,000 PSI. 3,000 PSI concrete specified for early pole erection, actual required minimum allowable concrete strength is 1,000 PSI. All piers and concrete backfill must bear on and against firm undisturbed soil.
  - b. For anchor bolt foundations or foundations using a pre-stressed concrete base in a suspended pier or re-enforced pier design pole erection may occur after 7 days. Or after a concrete sample from the same batch achieves a certain strength.
4. Manufacturer will supply all drivers and supporting electrical equipment.
  - a. Remote drivers and supporting electrical equipment shall be mounted approximately 10 feet above grade in aluminum enclosures. The enclosures shall be touch-safe and include drivers and fusing with indicator lights on fuses to notify when a fuse is to be replaced for each luminaire. Disconnect per circuit for each pole structure will be located in the enclosure. Integral drivers are not allowed.
  - b. Manufacturer shall provide surge protection at the pole equal to or greater than 40 kA for each line to ground (Common Mode) as recommended by IEEE C62.41.2\_2002.
5. Wire harness complete with an abrasion protection sleeve, strain relief and plug-in connections for fast, trouble-free installation.
6. All luminaires, visors, and cross-arm assemblies shall withstand 150 mi/h winds and maintain luminaire aiming alignment.
7. Control cabinet to provide remote on-off control and monitoring
8. Manufacturer shall provide lightning grounding as defined by NFPA 780 and be UL Listed per UL 96 and UL 96A.
  - a. Integrated grounding via concrete encased electrode grounding system.
  - b. If grounding is not integrated into the structure, the manufacturer shall supply grounding electrodes, copper down conductors, and exothermic weld kits. Electrodes and conductors shall be sized as required by NFPA 780. The grounding electrode shall be minimum size of 5/8 inch diameter and 8 feet long, with a minimum of 10 feet embedment. Grounding electrode shall be connected to the structure by a grounding electrode conductor with a minimum size of 2 AWG for poles with 75 feet mounting height or less, and 2/0 AWG for poles with more than 75 feet mounting height.

D. Safety: All system components shall be UL listed for the appropriate application.

## 2.2 ELECTRICAL

A. Electric Power Requirements for the Sports Lighting Equipment:

1. Electric power: See plans



2. Maximum total voltage drop: Voltage drop to the disconnect switch located on the poles shall not exceed three (3) percent of the rated voltage.

B. Energy Consumption: The kW consumption for the field lighting system shall be 38 kW or less.

### 2.3 CONTROL

A. Instant On/Off Capabilities: System shall provide for instant on/off of luminaires.

B. Lighting contactor cabinet(s) constructed of NEMA Type 4 aluminum, designed for easy installation with contactors, labeled to match field diagrams and electrical design. Manual off-on-auto selector switches shall be provided.

C. Contactor control of lights: To minimize wear on drivers and other electrical components and prevent lights from turning on due to communication loss, circuits must be controlled via contactor switching, not dimming driver output to zero.

D. Dimming: System shall provide for 3-stage dimming (high-medium-low). Dimming will be set via scheduling options (Website, app, phone, email)

E. Remote Lighting Control System: System shall allow owner and users with a security code to schedule on/off system operation via a web site, phone, or email up to ten years in advance. Manufacturer shall provide and maintain a two-way TCP/IP communication link. Trained staff shall be available 24/7 to provide scheduling support and assist with reporting needs.

1. The owner may assign various security levels to schedulers by function and/or fields. This function must be flexible to allow a range of privileges such as full scheduling capabilities for all fields to only having permission to execute "early off" commands by phone. Scheduling tool shall be capable of setting curfew limits.

2. Controller shall accept and store 7-day schedules, be protected against memory loss during power outages, and shall reboot once power is regained and execute any commands that would have occurred during outage.

F. Remote Monitoring System: System shall monitor lighting performance and notify manufacturer if individual luminaire outage is detected so that appropriate maintenance can be scheduled. The controller shall determine switch position (manual or auto) and contactor status (open or closed).

G. Management Tools: Manufacturer shall provide a web-based database and dashboard tool of actual field usage and provide reports by facility and user group. Dashboard shall also show current status of luminaire outages, control operation and service. Mobile application will be provided suitable for IOS and Android devices.

1. Hours of Usage: Manufacturer shall provide a means of tracking actual hours of usage for the field lighting system that is readily accessible to the owner.

a. Cumulative hours: shall be tracked to show the total hours used by the facility.





- b. Report hours saved by using early off and push buttons by users.
  - H. Communication Costs: Manufacturer shall include communication costs for operating the control and monitoring system for a period of 25 years.
  - I. Communication with luminaire drivers: Control system shall interface with drivers in electrical components enclosures by means of powerline communication
- 2.4 STRUCTURAL PARAMETERS
- A. Wind Loads: Wind loads shall be based on the 2021 International Building Code. Wind loads to be calculated using ASCE 7-16, an ultimate design wind speed of 130 and exposure category C.
  - B. Pole Structural Design: The stress analysis and safety factor of the poles shall conform to 2013 AASHTO Standard Specification for Structural Supports for Highway Signs, Luminaires, and Traffic Signals (LTS-6).
  - C. Foundation Design: The foundation design shall be based on soil parameters as outlined in the geotechnical report. Lighting manufacturer shall provide geotechnical report.

### PART 3 - EXECUTION

#### 3.1 SOIL QUALITY CONTROL

- A. It shall be the Contractor's responsibility to notify the Owner if soil conditions exist other than those on which the foundation design is based, or if the soil cannot be readily excavated. Contractor may issue a change order request / estimate for the Owner's approval / payment for additional costs associated with:
  - 1. Providing engineered foundation embedment design by a registered engineer in the State of Rhode Island for soils other than specified soil conditions;
  - 2. Additional materials required to achieve alternate foundation;
  - 3. Excavation and removal of materials other than normal soils, such as rock, caliche, etc.

#### 3.2 DELIVERY TIMING

- A. Delivery Timing Equipment On-Site: The equipment must be on-site 6-12 weeks from receipt of approved submittals and receipt of complete order information.



### 3.3 FIELD QUALITY CONTROL

- A. Illumination Measurements: Upon substantial completion of the project and in the presence of the Contractor, Project Engineer, Owner's Representative, and Manufacturer's Representative, illumination measurements shall be taken and verified. The illumination measurements shall be conducted in accordance with IESNA RP-6-22.
- B. Field Light Level Accountability
  - 1. Light levels are guaranteed not to fall below the target maintained light levels for the entire warranty period of 25 years. These levels will be specifically stated as "guaranteed" on the illumination summary provided by the manufacturer.
  - 2. The contractor/manufacturer shall be responsible for conducting initial light level testing and an additional inspection of the system, in the presence of the owner, one year from the date of commissioning of the lighting.
  - 3. The contractor/manufacturer will be held responsible for any and all changes needed to bring these fields back to compliance for light levels and uniformities. Contractor/Manufacturer will be held responsible for any damage to the fields during these repairs.
- C. Correcting Non-Conformance: If, in the opinion of the Owner or his appointed Representative, the actual performance levels including footcandles, uniformity ratios, upright for aerial visibility, and offsite candela readings are not in conformance with the requirements of the performance specifications and submitted information, the Manufacturer shall be required to make adjustments to meet specifications and satisfy Owner.

### 3.4 WARRANTY AND GUARANTEE

- A. 25-Year Warranty: Each manufacturer shall supply a signed warranty covering the entire system for 25 years from the date of shipment. Warranty shall guarantee specified light levels. Manufacturer shall maintain specifically funded financial reserves to assure fulfillment of the warranty for the full term. Warranty does not cover weather conditions events such as lightning or hail damage, improper installation, vandalism or abuse, unauthorized repairs or alterations, or product made by other manufacturers.
- B. Maintenance: Manufacturer shall monitor the performance of the lighting system, including on/off status, hours of usage and luminaire outage for 25 years from the date of equipment shipment. Parts and labor shall be covered such that individual luminaire outages will be repaired when the usage of any field is materially impacted. Manufacturer is responsible for removal and replacement of failed luminaires, including all parts, labor, shipping, and equipment rental associated with maintenance. Owner agrees to check fuses in the event of a luminaire outage.



3.5 4.1 PRE-BID SUBMITTAL REQUIREMENTS (Non-Musco)

- A. Design Approval: The owner / engineer will review pre-bid submittals per section 4.1.B from all the manufacturers to ensure compliance to the specification 10 days prior to bid. If the design meets the design requirements of the specifications, a letter and/or addendum will be issued to the manufacturer indicating approval for the specific design submitted.
- B. Approved Product: Musco's Light-Structure System™ with TLC for LED® is the approved product. All substitutions must provide a complete submittal package for approval as outlined in Submittal Information at the end of this section at least 10 days prior to bid. Special manufacturing to meet the standards of this specification may be required. An addendum will be issued prior to bid listing any other approved lighting manufacturers and designs.
- C. All listed manufacturers not pre-approved shall submit the information at the end of this section at least 10 days prior to bid. An addendum will be issued prior to bid; listing approved lighting manufacturers and the design method to be used.
- D. Bidders are required to bid only products that have been approved by this specification or addendum by the owner or owner's representative. Bids received that do not utilize an approved system/design, will be rejected.

END OF SECTION 265668



## SECTION 312000 - EARTH MOVING

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

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

#### 1.2 SUMMARY

- A. Section Includes:

1. Excavating and filling for rough grading the Site.
2. Preparing subgrades for slabs-on-grade, walks, pavements, turf and grasses .
3. Drainage course for concrete slabs-on-grade.
4. Subbase course for concrete pavements.

- B. Related Requirements:

1. Section 329229 - Landscape Grading for finish grading adjacent to walks and in landscape
2. Section 329200 - Turf and Grasses for finish grading in turf and grass areas, including preparing and placing planting soil for turf areas

#### 1.3 DEFINITIONS

- A. Backfill: Soil material or controlled low-strength material used to fill an excavation.

1. Initial Backfill: Backfill placed beside and over pipe in a trench, including haunches to support sides of pipe.
2. Final Backfill: Backfill placed over initial backfill to fill a trench.

- B. Base Course: Aggregate layer placed between the subbase course and hot-mix asphalt paving.

- C. Bedding Course: Aggregate layer placed over the excavated subgrade in a trench before laying pipe.

- D. Borrow Soil: Satisfactory soil imported from off-site for use as fill or backfill.

- E. Drainage Course: Aggregate layer supporting the slab-on-grade that also minimizes upward capillary flow of pore water.



- F. Excavation: Removal of material encountered above subgrade elevations and to lines and dimensions indicated.
    - 1. Authorized Additional Excavation: Excavation below subgrade elevations or beyond indicated lines and dimensions as directed by Architect. Authorized additional excavation and replacement material will be paid for according to Contract provisions for unit prices .
    - 2. Bulk Excavation: Excavation more than 10 feet in width and more than 30 feet in length.
    - 3. Unauthorized Excavation: Excavation below subgrade elevations or beyond indicated lines and dimensions without direction by Architect. Unauthorized excavation, as well as remedial work directed by Architect, shall be without additional compensation.
  - G. Fill: Soil materials used to raise existing grades.
  - H. Rock: Rock material in beds, ledges, unstratified masses, conglomerate deposits, and boulders of rock material 3/4 cu. yd. or more in volume that exceed a standard penetration resistance of 100 blows/2 inches when tested by a geotechnical testing agency, according to ASTM D1586.
  - I. Structures: Buildings, footings, foundations, retaining walls, slabs, tanks, curbs, mechanical and electrical appurtenances, or other man-made stationary features constructed above or below the ground surface.
  - J. Subbase Course: Aggregate layer placed between the subgrade and base course for hot-mix asphalt pavement, or aggregate layer placed between the subgrade and a cement concrete pavement or a cement concrete or hot-mix asphalt walk.
  - K. Subgrade: Uppermost surface of an excavation or the top surface of a fill or backfill immediately below subbase, drainage fill, drainage course, or topsoil materials.
  - L. Utilities: On-site underground pipes, conduits, ducts, and cables as well as underground services within buildings.
- 1.4 PREINSTALLATION MEETINGS
- A. Preinstallation Conference: Conduct preexcavation conference at Project site .
    - 1. Review methods and procedures related to earthmoving, including, but not limited to, the following:
      - a. Personnel and equipment needed to make progress and avoid delays.
      - b. Coordination of Work with utility locator service.
      - c. Coordination of Work and equipment movement with the locations of tree- and plant-protection zones.
      - d. Extent of excavation by hand or with air spade.
      - e. Field quality control.



## 1.5 FIELD CONDITIONS

- A. Traffic: Minimize interference with adjoining roads, streets, walks, and other adjacent occupied or used facilities during earth-moving operations.
  - 1. Do not close or obstruct streets, walks, or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction.
  - 2. Provide alternate routes around closed or obstructed traffic ways if required by Owner or authorities having jurisdiction.
- B. Utility Locator Service: Notify utility locator service "Dig Safe System" for area where Project is located before beginning earth-moving operations.
- C. Do not commence earth-moving operations until temporary site fencing and erosion- and sedimentation-control measures specified in 312500 - Erosion & Sedimentation Control are in place.
- D. Do not commence earth-moving operations until plant-protection measures specified in Section 015639 "Temporary Tree and Plant Protection" are in place.
- E. The following practices are prohibited within protection zones:
  - 1. Storage of construction materials, debris, or excavated material.
  - 2. Parking vehicles or equipment.
  - 3. Foot traffic.
  - 4. Erection of sheds or structures.
  - 5. Impoundment of water.
  - 6. Excavation or other digging unless otherwise indicated.
  - 7. Attachment of signs to or wrapping materials around trees or plants unless otherwise indicated.
- F. Do not direct vehicle or equipment exhaust towards protection zones.
- G. Prohibit heat sources, flames, ignition sources, and smoking within or near protection zones.

## PART 2 - PRODUCTS

### 2.1 SOIL MATERIALS

- A. General: Provide borrow soil materials when sufficient satisfactory soil materials are not available from excavations.
  - 1. Unsatisfactory soils also include satisfactory soils not maintained within 2 percent of optimum moisture content at time of compaction.



- B. Base Course: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D2940/D2940M; with at least 95 percent passing a 1-1/2-inch sieve and not more than 8 percent passing a No. 200 sieve.

## 2.2 GEOTEXTILES

- A. Subsurface Drainage Geotextile: Nonwoven needle-punched geotextile, manufactured for subsurface drainage applications, made from polyolefins or polyesters; with elongation greater than 50 percent; complying with AASHTO M 288 and the following, measured per test methods referenced:

1. Survivability: Class 2; AASHTO M 288.
2. Survivability: As follows:
  - a. Grab Tensile Strength: 157 lbf; ASTM D4632.
  - b. Sewn Seam Strength: 142 lbf; ASTM D4632.
  - c. Tear Strength: 56 lbf; ASTM D4533.
  - d. Puncture Strength: 56 lbf; ASTM D4833.
3. Apparent Opening Size: No. 40 sieve, maximum; ASTM D4751.
4. Permittivity: 0.5 per second, minimum; ASTM D4491.
5. UV Stability: 50 percent after 500 hours' exposure; ASTM D4355.

## 2.3 ACCESSORIES

- A. Detectable Warning Tape: Acid- and alkali-resistant, polyethylene film warning tape manufactured for marking and identifying underground utilities, a minimum of 6 inches wide and 4 mils thick, continuously inscribed with a description of the utility, with metallic core encased in a protective jacket for corrosion protection, detectable by metal detector when tape is buried up to 30 inches deep; colored as follows:

1. Red: Electric.
2. Yellow: Gas, oil, steam, and dangerous materials.
3. Orange: Telephone and other communications.
4. Blue: Water systems.
5. Green: Sewer systems.

## PART 3 - EXECUTION

### 3.1 PREPARATION

- A. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earth-moving operations.



- B. Protect and maintain erosion and sedimentation controls during earth-moving operations.
- C. Protect subgrades and foundation soils from freezing temperatures and frost. Remove temporary protection before placing subsequent materials.

### 3.2 EXPLOSIVES

- A. Explosives: Do not use explosives.

### 3.3 EXCAVATION, GENERAL

- A. Unclassified Excavation: Excavate to subgrade elevations regardless of the character of surface and subsurface conditions encountered. Unclassified excavated materials may include rock, soil materials, and obstructions. No changes in the Contract Sum or the Contract Time will be authorized for rock excavation or removal of obstructions.
  - 1. If excavated materials intended for fill and backfill include unsatisfactory soil materials and rock, replace with satisfactory soil materials.
- B. Classified Excavation: Excavate to subgrade elevations. Material to be excavated will be classified as earth and rock. Do not excavate rock until it has been classified and cross sectioned by Architect. The Contract Sum will be adjusted for rock excavation according to unit prices included in the Contract Documents. Changes in the Contract Time may be authorized for rock excavation.
  - 1. Earth excavation includes excavating pavements and obstructions visible on surface; underground structures, utilities, and other items indicated to be removed; and soil, boulders, and other materials not classified as rock or unauthorized excavation.

### 3.4 EXCAVATION FOR WALKS AND PAVEMENTS

- A. Excavate surfaces under walks and pavements to indicated lines, cross sections, elevations, and subgrades.

### 3.5 SUBGRADE INSPECTION

- A. Notify Architect when excavations have reached required subgrade.
- B. If Architect determines that unsatisfactory soil is present, continue excavation and replace with compacted backfill or fill material as directed.
- C. Authorized additional excavation and replacement material will be paid for according to Contract provisions for changes in the Work.





- D. Reconstruct subgrades damaged by freezing temperatures, frost, rain, accumulated water, or construction activities, as directed by Architect, without additional compensation.

### 3.6 UNAUTHORIZED EXCAVATION

- A. Fill unauthorized excavation under foundations or wall footings by extending bottom elevation of concrete foundation or footing to excavation bottom, without altering top elevation. Lean concrete fill, with 28-day compressive strength of 2500 psi, may be used when approved by Architect.
  - 1. Fill unauthorized excavations under other construction, pipe, or conduit as directed by Architect.

### 3.7 STORAGE OF SOIL MATERIALS

- A. Stockpile borrow soil materials and excavated satisfactory soil materials without intermixing. Place, grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust.
  - 1. Stockpile soil materials away from edge of excavations. Do not store within drip line of remaining trees.

### 3.8 BACKFILL

- A. Place and compact backfill in excavations promptly, but not before completing the following:
  - 1. Construction below finish grade including, where applicable, subdrainage, dampproofing, waterproofing, and perimeter insulation.
  - 2. Removing trash and debris.
- B. Place backfill on subgrades free of mud, frost, snow, or ice.

### 3.9 SOIL FILL

- A. Plow, scarify, bench, or break up sloped surfaces steeper than 1 vertical to 4 horizontal so fill material will bond with existing material.
- B. Place and compact fill material in layers to required elevations as follows:
  - 1. Under grass and planted areas, use satisfactory soil material.
  - 2. Under walks and pavements, use satisfactory soil material.
- C. Place soil fill on subgrades free of mud, frost, snow, or ice.



### 3.10 GRADING

- A. General: Uniformly grade areas to a smooth surface, free of irregular surface changes. Comply with compaction requirements and grade to cross sections, lines, and elevations indicated.
  - 1. Provide a smooth transition between adjacent existing grades and new grades.
  - 2. Cut out soft spots, fill low spots, and trim high spots to comply with required surface tolerances.

### 3.11 SUBBASE AND BASE COURSES UNDER PAVEMENTS AND WALKS

- A. Place base course on subgrades free of mud, frost, snow, or ice.
- B. On prepared subgrade, place base course under pavements and walks as follows:
  - 1. Install separation geotextile on prepared subgrade according to manufacturer's written instructions, overlapping sides and ends.
  - 2. Place base course material under hot-mix asphalt pavement.
  - 3. Shape base course to required crown elevations and cross-slope grades.
  - 4. Place base course 6 inches or less in compacted thickness in a single layer.
  - 5. Place base course that exceeds 6 inches in compacted thickness in layers of equal thickness, with no compacted layer more than 6 inches thick or less than 3 inches thick.

### 3.12 PROTECTION

- A. Protecting Graded Areas: Protect newly graded areas from traffic, freezing, and erosion. Keep free of trash and debris.
- B. Repair and reestablish grades to specified tolerances where completed or partially completed surfaces become eroded, rutted, settled, or where they lose compaction due to subsequent construction operations or weather conditions.
  - 1. Scarify or remove and replace soil material to depth as directed by Architect; reshape and recompact.
- C. Where settling occurs before Project correction period elapses, remove finished surfacing, backfill with additional soil material, compact, and reconstruct surfacing.
  - 1. Restore appearance, quality, and condition of finished surfacing to match adjacent work, and eliminate evidence of restoration to greatest extent possible.



3.13 DISPOSAL OF SURPLUS AND WASTE MATERIALS

- A. Transport surplus satisfactory soil to designated storage areas on Owner's property. Stockpile or spread soil as directed by Architect.
  - 1. Remove waste materials, including unsatisfactory soil, trash, and debris, and legally dispose of them off Owner's property.

END OF SECTION 312000



## SECTION 312213 - ROUGH GRADING

### PART 1 - GENERAL

#### 1.1 SUMMARY

##### A. Section Includes:

1. Excavating topsoil.
2. Excavating subsoil.
3. Cutting, grading, filling, rough contouring, compacting, site for stonedust & chip-seal paths and concrete pads .

##### B. Related Sections:

1. Section 31200 - Earth Moving
2. Section 329119 - Landscape Grading: Finish grading with topsoil to contours.

#### 1.2 UNIT PRICE - MEASUREMENT AND PAYMENT

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

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

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

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

#### 1.3 REFERENCES

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

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

##### B. ASTM International:

1. ASTM C136 - Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.



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

#### 1.4 SUBMITTALS

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

#### 1.5 CLOSEOUT SUBMITTALS

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

#### 1.6 QUALITY ASSURANCE

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

### PART 2 - PRODUCTS

#### 2.1 MATERIALS

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

### PART 3 - EXECUTION

#### 3.1 EXAMINATION

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



### 3.2 PREPARATION

- A. Call Local Utility Line Information service at 1-888-DIG-SAFE not less than three (3) working days before performing Work.
  - 1. Request underground utilities to be located and marked within and surrounding construction areas.
- B. Identify required lines, levels, contours, and datum.
- C. Protect utilities indicated to remain from damage.
- D. Protect plant life, lawns, structures, and other features remaining as portion of final landscaping.
- E. Protect bench marks, survey control point, existing structures, fences, sidewalks, paving, and curbs from excavating equipment and vehicular traffic.

### 3.3 TOPSOIL EXCAVATION

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

### 3.4 SUBSOIL EXCAVATION

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



### 3.5 FILLING

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

### 3.6 TOLERANCES

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

### 3.7 SCHEDULES

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

END OF SECTION 312213



## SECTION 312316.13 - TRENCHING

### PART 1 - GENERAL

#### 1.1 SUMMARY

##### A. Section Includes:

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

#### 1.2 UNIT PRICE - MEASUREMENT AND PAYMENT

##### A. Trenching:

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

#### 1.3 REFERENCES

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

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

##### B. ASTM International:

1. ASTM D698 - Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft<sup>3</sup> (600 kN-m/m<sup>3</sup>).
2. ASTM D1556 - Standard Test Method for Density and Unit Weight of Soil in Place by the Sand-Cone Method.
3. ASTM D1557 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft<sup>3</sup> (2,700 kN-m/m<sup>3</sup>).
4. ASTM D2167 - Standard Test Method for Density and Unit Weight of Soil in Place by the Rubber Balloon Method.
5. ASTM D2922 - Standard Test Method for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).
6. ASTM D3017 - Standard Test Method for Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth).





#### 1.4 DEFINITIONS

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

#### 1.5 SUBMITTALS

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

#### 1.6 QUALITY ASSURANCE

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

#### 1.7 FIELD MEASUREMENTS

- A. Verify field measurements prior to fabrication.

#### 1.8 COORDINATION

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

### PART 2 - PRODUCTS

### PART 3 - EXECUTION

#### 3.1 LINES AND GRADES

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



### 3.2 PREPARATION

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

### 3.3 TRENCHING

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



### 3.4 BACKFILLING

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

### 3.5 TOLERANCES

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

### 3.6 PROTECTION OF FINISHED WORK

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

END OF SECTION 312316.13



## SECTION 312500 - EROSION AND SEDIMENTATION CONTROLS

### PART 1 - GENERAL

#### 1.1 SUMMARY

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

#### 1.2 REFERENCES

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

#### 1.3 SUBMITTALS

- A. Submit, in accordance with Division 011000 – General Requirements: Submittal Procedures ten (10) days after award of Contract, technical product literature for all commercial products to be used for erosion and sedimentation control.
- B. If a NPDES General Permit is required, Contractor shall, prior to the start of construction:
- C. Prepare and submit the EPA NPDES Notice of Intent to Discharge to the applicable EPA office in accordance with EPA regulations. Submit one copy of the permit to Owner's Representative for informational purposes only.



1. Prepare and submit a Stormwater Pollution Prevention Plan (SWPPP) in accordance with the U.S. Environmental Protection Agency (EPA) National Pollution Discharge Elimination System (NPDES) General Permit for this work. Submit one copy of the permit to Owner's Representative for informational purposes only.

#### 1.4 QUALITY ASSURANCE

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

#### PART 2 - PRODUCTS

##### 2.1 MATERIALS

- A. When work is performed outside of normal seeding window straw mulch shall be utilized on all newly graded areas to protect areas against washouts and erosion. Straw mulch shall be comprised of threshed straw of oats, wheat, barley, or rye that is free from noxious weeds, mold or other objectionable material. The straw mulch shall contain at least 50 percent by weight of material to be 10-in or longer. Straw shall be in an air-dry condition and suitable for placement with blower equipment.
- B. Compost Filter Sock
- C. Machine produced.
  1. Straw filled tubes of compacted straw of rice, wheat or barley.
  2. Compost filter sock to be certified as weed free.
  3. Netting for tubes to be seamless, high density polyethylene with ultra violet inhibitors.
  4. Roll length to be 10.0 feet to 25.0 feet.
  5. Weight per linear foot, 12-inch: 2.5 lbs. minimum 9-inch: 1.5 lbs. minimum



6. Stakes shall be wooden, 1 1/8-inch x 1 1/8-inch x 2.5 feet long, with lower ends tapered to facilitate driving into compacted soil. Rebar may be substituted for wooden stakes

### PART 3 - EXECUTION

#### 3.1 INSTALLATION

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

#### 3.2 MAINTENANCE AND INSPECTION

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

#### 3.3 REMOVAL AND FINAL CLEANUP

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



- E. Clean channels when depth of sediment reaches approximately one half channel depth.

END OF SECTION 312500



## SECTION 321216 - ASPHALT PAVING

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

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

#### 1.2 SUMMARY

- A. Section Includes:

- 1. Hot-mix asphalt paving.
- 2. Hot-mix asphalt overlay.

- B. Related Requirements:

- 1. Section 024119 "Selective Demolition" for demolition and removal of existing asphalt pavement.
- 2. Section 312000 "Earth Moving" for subgrade preparation, fill material, separation geotextiles, unbound-aggregate subbase and base courses, and aggregate pavement shoulders.
- 3. Section 321313 "Concrete Paving" for concrete pavement and for separate concrete curbs, gutters, and driveway aprons.
- 4. Section 321373 "Concrete Paving Joint Sealants" for joint sealants and fillers at pavement terminations.
- 5. Section 321400 "Unit Paving" for bituminous setting bed for pavers and for stone and precast concrete curbs.

#### 1.3 UNIT PRICES

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

#### 1.4 PREINSTALLATION MEETINGS

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

- 1. Review methods and procedures related to hot-mix asphalt paving including, but not limited to, the following:





- a. Review proposed sources of paving materials, including capabilities and location of plant that will manufacture hot-mix asphalt.
- b. Review requirements for protecting paving work, including restriction of traffic during installation period and for remainder of construction period.

#### 1.5 ACTION SUBMITTALS

A. Product Data: For each type of product.

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

#### 1.6 INFORMATIONAL SUBMITTALS

A. Qualification Data: For manufacturer .

B. Material Certificates: For each paving material. Include statement that mixes containing recycled materials will perform equal to mixes produced from all new materials.

C. Material Test Reports: For each paving material, by a qualified testing agency.

#### 1.7 QUALITY ASSURANCE

A. Manufacturer Qualifications: A paving-mix manufacturer registered with and approved by authorities having jurisdiction or the DOT of state in which Project is located .

B. Regulatory Requirements: Comply with materials, workmanship, and other applicable requirements of of RIDOT Standards for Road & Bridge Construction for asphalt paving work.

1. Measurement and payment provisions and safety program submittals included in standard specifications do not apply to this Section.

#### 1.8 FIELD CONDITIONS

A. Environmental Limitations: Do not apply asphalt materials if subgrade is wet or excessively damp, if rain is imminent or expected before time required for adequate cure, or if the following conditions are not met:

1. Asphalt Base Course: Minimum surface temperature of **40 deg F** and rising at time of placement.
2. Asphalt Surface Course: Minimum surface temperature of **60 deg F** at time of placement.



## PART 2 - PRODUCTS

### 2.1 AGGREGATES

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

### 2.2 ASPHALT MATERIALS

- A. Asphalt Binder: ASTM D 6373 binder designation PG 64-22.
- B. Asphalt Cement: ASTM D 3381/D 3381M for viscosity-graded material ASTM D 946/D 946M for penetration-graded material.
- C. Cutback Prime Coat: ASTM D 2027/D 2027M, medium-curing cutback asphalt, MC-30 or MC-70.
- D. Emulsified Asphalt Prime Coat: ASTM D 977 emulsified asphalt, or ASTM D 2397/D 2397M cationic emulsified asphalt, slow setting, diluted in water, of suitable grade and consistency for application.
- E. Fog Seal: ASTM D 977 or emulsified asphalt, or ASTM D 2397/D 2397M or cationic emulsified asphalt, slow setting, factory diluted in water, of suitable grade and consistency for application.
- F. Water: Potable.
- G. Undersealing Asphalt: ASTM D 3141/D 3141M; pumping consistency.

### 2.3 AUXILIARY MATERIALS

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



## 2.4 MIXES

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

## PART 3 - EXECUTION

### 3.1 EXAMINATION

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

### 3.2 PREPARATION

- A. Protection: Provide protective materials, procedures, and worker training to prevent asphalt materials from spilling, coating, or building up on curbs, driveway aprons, manholes, and other surfaces adjacent to the Work.

### 3.3 REPAIRS

### 3.4 SURFACE PREPARATION

- A. Immediately before placing asphalt materials, remove loose and deleterious material from substrate surfaces. Ensure that prepared subgrade is ready to receive paving.
- B. Cutback Prime Coat: Apply uniformly over surface of compacted unbound-aggregate base course at a rate of **0.15 to 0.50 gal./sq. yd.**. Apply enough material to penetrate and seal, but not flood, surface. Allow prime coat to cure.
1. If prime coat is not entirely absorbed within 24 hours after application, spread sand over surface to blot excess asphalt. Use enough sand to prevent pickup under traffic. Remove loose sand by sweeping before pavement is placed and after volatiles have evaporated.
  2. Protect primed substrate from damage until ready to receive paving.
- C. Tack Coat: Apply uniformly to surfaces of existing pavement at a rate of **0.05 to 0.15 gal./sq. yd.**.



1. Allow tack coat to cure undisturbed before applying hot-mix asphalt paving.
2. Avoid smearing or staining adjoining surfaces, appurtenances, and surroundings. Remove spillages and clean affected surfaces.

### 3.5 PLACING HOT-MIX ASPHALT

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

### 3.6 COMPACTION

- A. General: Begin compaction as soon as placed hot-mix paving will bear roller weight without excessive displacement. Compact hot-mix paving with hot, hand tampers or with vibratory-plate compactors in areas inaccessible to rollers.
  1. Complete compaction before mix temperature cools to **185 deg F**.
- B. Breakdown Rolling: Complete breakdown or initial rolling immediately after rolling joints and outside edge. Examine surface immediately after breakdown rolling for indicated crown, grade, and smoothness. Correct laydown and rolling operations to comply with requirements.



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

### 3.7 INSTALLATION TOLERANCES

- A. Pavement Thickness: Compact each course to produce the thickness indicated within the following tolerances:
  - 1. Base Course: Plus or minus **1/4 inch**.
  - 2. Surface Course: Plus **1/8 inch**, no minus.
- B. Pavement Surface Smoothness: Compact each course to produce a surface smoothness within the following tolerances as determined by using a **10-foot** straightedge applied transversely or longitudinally to paved areas:
  - 1. Base Course: **1/4 inch** .
  - 2. Surface Course: **1/8 inch** .

### 3.8 SURFACE TREATMENTS

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



3.9 FIELD QUALITY CONTROL

- A. Testing Agency: Owner will engage a qualified testing agency to perform tests and inspections.
- B. Thickness: In-place compacted thickness of hot-mix asphalt courses will be determined according to ASTM D 3549/D 3549M.
- C. Surface Smoothness: Finished surface of each hot-mix asphalt course will be tested for compliance with smoothness tolerances.

3.10 WASTE HANDLING

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

END OF SECTION 321216



## SECTION 321220.10 - BASKETBALL COURT FINISHING

### PART 1 - GENERAL

#### 1.1 DESCRIPTION OF WORK

- A. The Work of this Section consists affecting the finishing of basketball court surfaces, as indicated on the Contract Documents and as specified herein.
- B. The Contractor is responsible for reviewing the existing conditions of the outdoor basketball courts.
- C. The scope of work is three-fold and shall consist of 1) a thorough inspection of the exiting outdoor court(s) by an authorized Sport Surfacing Contractor 2) repaving according to Section 321216 – Asphalt Paving and 3) the application of the new acrylic sealer and surface color material, including court lines.
- D. The work involved in the following specifications must be performed in a safe and workmanlike manner by a Contractor possessing suitable professional qualifications as submitted and as approved under Project Owner's criteria as set forth herein.
- E. The Contractor and workers who will complete the designated work shall be well aquatinted with the requirements of the scope of work, be competent in their trade, and have sufficient experience to properly perform this work. Qualified supervision shall be on the job site during all working hours.

#### 1.2 RELATED DOCUMENTS

- A. Drawings and General Requirements apply to the Work of this section.
- B. The Contractor shall examine all Contract Documents and all other Sections of the Specifications for requirements therein affecting the Work specified herein.

#### 1.3 RELATED WORK UNDER OTHER SECTIONS

- A. Refer to Section 011000 – General Requirements
- B. Refer to Section 321216 – Asphalt Paving



#### 1.4 REFERENCES

- A. The following standards shall apply to the work of this Section.
  - 1. American Sports Builders Association (ASBA) Sports Courts Standards.
  - 2. American Society for Testing and Materials (ASTM).

#### 1.5 SAMPLES AND SUBMITTALS

- A. Submit Contractor Qualifications as per Section 1.6 of this specification and in accordance with Section 011000 – General Requirements: Submittal Procedures.
- B. Contractor shall submit all materials proposed for use in performing this work in accordance with Section 011000 – General Requirements: Submittal Procedures.
- C. The acrylic products proposed for use and submitted shall include all proposed component mixing ratios.
- D. No un-approved materials will be allowed at the job-site.

#### 1.6 QUALITY ASSURANCE

- A. The Contractor conducting the court finishing shall provide proof of ten (10) years of experience in evaluating and conducting court surface preservation, repairs and beautification to asphalt paved sports courts. Proof shall be provided by furnishing and submitting a written list of completed past projects and the dates of service.
- B. In addition to the requirement above, the Contractor shall provide proof of relevant project experience conducting effective and durable work by providing three (3) client references (Name, email and telephone number) for similar projects that included conducting long-term asphalt paved sports courts crack repairs and new surface finishes.
- C. The Contractor conducting the court repairs shall show proof of being a member in good standing of the American Sports Builders Association (ASBA).
- D. The Contractor is responsible for secure and proper storage of all of the products approved for use and associated with this project.
- E. Protect the surfaces of the courts to be repaired from damage until Final Acceptance by the Owner. Any damaged or defaced portion of the surface shall be repaired and/or replaced to full satisfaction of the Owner's Representative and at no additional cost to the Owner.
- F. Provide the Owner with a minimum of a three year warranty against widening of cracks for crack repair work performed.





## PART 2 - PRODUCTS

### 2.1 PRODUCT COMPATABILITY

- A. All products submitted to be utilized for conducting this work shall be manufactured to be compatible and effective in providing lasting and durable athletic court surface finishes. Products shall be as specified or as per 'Approved Equivalent' as required per Section 013300 Submittal Procedures.

### 2.2 COURT LAMINATING & BINDING AGENT

- A. The Laminating & Binding Agent shall be an acrylic polymer emulsion developed specifically to coat, laminate and bond court repairs and fill small voids to create a uniform court surface. The product shall be selected and mixed to work on asphalt court surfaces as part of a comprehensive athletic court patching, coating and resurfacing system.
- B. A product that meets these requirements is 'NOVABOND', as manufactured by Nova Sports USA, 8 Commercial Way, Milford, MA 01757. 1.508.473.6540. [www.novasports.com](http://www.novasports.com) or approved equivalent.

### 2.3 ACRYLIC RESURFACER

- A. The resurfacer product shall be purpose blended and be designed to be applied to paved surfaces prior to the application of the final acrylic color surfacing system. The resurfacer shall be designed for filling voids and smoothing and levelling surfaces. The heavy bodied 100% acrylic concentrate shall be designed to be mixed at set ratios of fine graded (50-60 mesh) sand and water at the jobsite. The sand filled mixture shall be shown to be effective at filling and sealing porous asphalt paving surfaces. Additive agents such as asphaltic or tar emulsions, vinyl, alkyd and non-acrylic resins are not permitted. The product shall be selected and mixed to work on asphalt court surfaces as part of a comprehensive athletic court patching, coating and resurfacing system.
- B. A product that meets these requirements is 'NOVASURFACE' as manufactured by Nova Sports USA, 8 Commercial Way, Milford, MA 01757. 1.508.473.6540. [www.novasports.com](http://www.novasports.com) or approved equivalent.

### 2.4 COLORIZED ACRYLIC SURFACER

- A. Product shall be 100% acrylic latex, full depth color material for use on all-weather asphalt paved tennis courts, basketball courts or other 'combination' exterior athletic court surfaces. The colorized acrylic surfacer shall have integral rounded aggregate that create a light, non-slip texture when dry. The surface Color shall be packaged factory mixed. The surfacer may be a concentrated emulsion and may be mixed to the approved manufacturer's ratios on site. The product shall be



selected and mixed to work on asphalt court surfaces as part of a comprehensive athletic court patching, coating and resurfacing system.

- B. The courts shall be finished in two (2) colors, Navy and Orange, as selected from the manufacturer's standard color range.
- C. A product that meets these requirements is 'NOVACRYLIC COMBINATION SURFACE' as manufactured by Nova Sports USA, 8 Commercial Way, Milford, MA 01757. 1.508.473.6540. [www.novasports.com](http://www.novasports.com) or approved equivalent.

## 2.5 WHITE LINE PAINT

- A. Line paint shall be 100% acrylic fast drying emulsion line marking paint, highly pigmented for 1 coat coverage non-glaring, and highly reflective. Paint shall be sand textured and fast drying, without crazing, cracking or peeling. Paint shall be designated for use defining areas of play on basketball courts and/or other recreational sports requiring court markings.
- B. A product that meets these specifications is NOVATEX as manufactured by Nova Sports USA, 8 Commercial Way, Milford, MA 01757. 1.508.473.6540. [www.novasports.com](http://www.novasports.com) or approved equivalent.

## PART 3 - EXECUTION

### 3.1 COURT RESURFACING

- A. Application of new surface: Surface must be dry and temperature 50°Fahrenheit and rising. Utilizing a neoprene rubber squeegee apply the coat of resurfacer. Note all areas that have been patched shall be coated once with the acrylic re-surfacer, following all manufactures recommendations and guidelines. Once the acrylic re-surfacer applied to the patched areas has properly dried and cured, the areas should be scraped and cleaned with debris removed prior to the full court applications of acrylic coatings.
- B. Once all repairs have properly dried and cured, the entire court surface should receive one (1) application of the acrylic resurfacer prior to the application of court color.
- C. The court color surfaces shall be as follows: Court Area, Border, Three Point Area, shall be Blue in color. Key, Top of Key, and Center Court Circle shall be Orange in color.
- D. Color application shall cover the court surface entirely. Using a neoprene rubber squeegee, apply two (2) full coats of the acrylic color to each court. All acrylic resurfacer and acrylic color must be mixed per the approved manufacturer's recommendations and specifications.
- E. At every step, each acrylic material product applied must be allowed to fully cure, and completely dry. Surfaces shall be gently cleaned as per acrylic surfacing material manufacturer's



recommendations. Court surfaces shall be blown clean and all debris removed prior to the application of any successive application.

### 3.2 COURT LINE MARKINGS

- A. Refer to the court layout plans for court painted line-work locations and dimensions.
- B. Upon completion and with acceptance of the court surface from the Owner's Representative, the Contractor shall lay out court lines for basketball. Lay out the lines in chalk, defining the edges with masking tape.
- C. The playing lines shall be 2" wide, and shall be painted white with a brush.
- D. The playing lines shall be painted utilizing white line paint (or color selected by owner). Application of this product should be in accordance with the manufacturer's specifications.
- E. Allow to dry. Protect work while setting up. When dry remove all tape. Lines shall appear sharp and crisp, cleanly defining colorized areas.

### 3.3 COMPLETION OF THE WORK

- A. The Contractor is responsible for protecting all finished work from damage until Final Acceptance. Remove or otherwise secure all paints, sealers and surfacing agents at the close of site operations each day.
- B. Protect the surrounding environment adjacent to the courts from spills, drips and overspray. The Contractor is responsible for any damage or discoloration of adjacent surfaces.
- C. Upon completion of the crack and related surface repairs, the Contractor shall review the court surfaces for imperfections or flaws in the surface. The Contractor shall note any areas requiring repair and/or re-work and shall identify any issues discovered.
- D. Upon completion of inspection, the Contractor shall submit to the Owner's Representative a request in writing for a walk-thru site inspection for Acceptance of the Court Repairs to the existing Basketball Courts. The request shall include identification of any known issues found and shall include a description of the proposed remedy.
- E. The Contractor shall conduct the walk-thru with the Owner's Representative. Locations of necessary repairs and the approach to conducting the necessary repairs if so required shall be agreed at the time of the walk-thru.
- F. No additional payment will be made by the Owner to affect any repair work.



- G. Upon final review by the Owner's Representative and issuance of a formal Acceptance of the Court Repairs, the Contractor shall commence with the resurfacing, color finishing and painting of the line striping.
- H. At the completion of all work operations the Contractor shall provide a three (3) year materials and labor warrantee for the work performed.
- I. At the completion of all work operations the Contractor shall remove all containers, surplus debris, materials and temporary barriers protecting the work on the courts. The portions of the site occupied by the courts shall be left in a clean and orderly condition

END OF SECTION 321220.10



## SECTION 321313 - CONCRETE PAVING

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

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

#### 1.2 SUMMARY

- A. Section Includes Concrete Paving Including the Following:
  - 1. Walks
- B. Related Requirements:
  - 1. Section 033000 "Cast-in-Place Concrete" for general building applications of concrete.

#### 1.3 DEFINITIONS

- A. Cementitious Materials: Portland cement alone or in combination with one or more of blended hydraulic cement, fly ash, slag cement, and other pozzolans.
- B. W/C Ratio: The ratio by weight of water to cementitious materials.

#### 1.4 PREINSTALLATION MEETINGS

#### 1.5 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Samples for Initial Selection: For each type of product, ingredient, or admixture requiring color selection.
- C. Samples for Verification: For each type of product or exposed finish, prepared as Samples of size indicated below:
  - 1. Exposed Aggregate: 5 lb Sample of each mix.



- D. Design Mixtures: For each concrete paving mixture. Include alternate design mixtures when characteristics of materials, Project conditions, weather, test results, or other circumstances warrant adjustments.

#### 1.6 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For qualified ready-mix concrete manufacturer .
- B. Material Certificates: For the following, from manufacturer:
1. Cementitious materials.
  2. Fiber reinforcement and reinforcement accessories.
  3. Aggregate
  4. Admixtures.
  5. Curing compounds.
  6. Applied finish materials.
  7. Bonding agent or epoxy adhesive.
- C. Material Test Reports: For each of the following:
1. Aggregates: Include service-record data indicating absence of deleterious expansion of concrete due to alkali-aggregate reactivity.

#### 1.7 QUALITY ASSURANCE

- A. Ready-Mix-Concrete Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products and that complies with ASTM C 94/C 94M requirements for production facilities and equipment.
1. Manufacturer certified according to NRMCA's "Certification of Ready Mixed Concrete Production Facilities" (Quality Control Manual - Section 3, "Plant Certification Checklist").
- B. Mockups: Build mockups to verify selections made under Sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.
1. Build mockups of full-thickness sections of concrete paving to demonstrate typical joints; surface finish, texture, and color; curing; and standard of workmanship.
  2. Build mockups of concrete paving in the location and of the size indicated or, if not indicated, build mockups where directed by Architect and not less than 24" x 60" .
  3. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.



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

## 1.8 PRECONSTRUCTION TESTING

## 1.9 FIELD CONDITIONS

- A. Traffic Control: Maintain access for vehicular and pedestrian traffic as required for other construction activities.
- B. Cold-Weather Concrete Placement: Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing, or low temperatures. Comply with ACI 306.1 and the following:
  1. When air temperature has fallen to or is expected to fall below **40 deg F**, uniformly heat water and aggregates before mixing to obtain a concrete mixture temperature of not less than **50 deg F** and not more than **80 deg F** at point of placement.
  2. Do not use frozen materials or materials containing ice or snow.
  3. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators unless otherwise specified and approved in design mixtures.
- C. Hot-Weather Concrete Placement: Comply with **ACI 301** and as follows when hot-weather conditions exist:
  1. Cool ingredients before mixing to maintain concrete temperature below **90 deg F** at time of placement. Chilled mixing water or chopped ice may be used to control temperature, provided water equivalent of ice is calculated in total amount of mixing water. Using liquid nitrogen to cool concrete is Contractor's option.

## PART 2 - PRODUCTS

### 2.1 CONCRETE, GENERAL

- A. ACI Publications: Comply with **ACI 301** unless otherwise indicated.

### 2.2 FORMS

- A. Form Materials: Plywood, metal, metal-framed plywood, or other approved panel-type materials to provide full-depth, continuous, straight, and smooth exposed surfaces.



- B. Form-Release Agent: Commercially formulated form-release agent that will not bond with, stain, or adversely affect concrete surfaces and that will not impair subsequent treatments of concrete surfaces.

### 2.3 CONCRETE MATERIALS

- A. Cementitious Materials: Use the following cementitious materials, of same type, brand, and source throughout Project:
  - 1. Portland Cement: ASTM C 150/C 150M, gray portland cement Type I .
  - B. Normal-Weight Aggregates: ASTM C 33/C 33M, Class 4M , uniformly graded. Provide aggregates from a single source with documented service-record data of at least 10 years' satisfactory service in similar paving applications and service conditions using similar aggregates and cementitious materials.
    - 1. Maximum Coarse-Aggregate Size: **3/4 inch** nominal.
    - 2. Fine Aggregate: Free of materials with deleterious reactivity to alkali in cement.
  - C. Chemical Admixtures: Admixtures certified by manufacturer to be compatible with other admixtures and to contain not more than 0.1 percent water-soluble chloride ions by mass of cementitious material.
    - 1. High-Range, Water-Reducing Admixture: ASTM C 494/C 494M, Type F.
  - D. Color Pigment: ASTM C 979/C 979M, synthetic mineral-oxide pigments or colored water-reducing admixtures; color stable, free of carbon black, nonfading, and resistant to lime and other alkalis.
    - 1. **Manufacturers:** Subject to compliance with requirements, provide products by the following:
      - a. Brickform; a division of Solomon Colors.
    - 2. Color: Sterling UMX-140 .
  - E. Water: Potable and complying with ASTM C 94/C 94M.

### 2.4 FIBER REINFORCEMENT

- A. Synthetic Fiber: Monofilament polypropylene fibers engineered and designed for use in decorative concrete paving, complying with ASTM C 1116/C 1116M, Type III, **1/2 to 1-1/2 inches** long.
- B. GFRC Glass Fiber: 200-400 individual glass filaments which are lightly bonded to make up a stand





## 2.5 CURING MATERIALS

- A. Absorptive Cover: AASHTO M 182, Class 3, burlap cloth made from jute or kenaf, weighing approximately 9 oz./sq. yd. dry or cotton mats.
- B. Moisture-Retaining Cover: ASTM C 171, polyethylene film or white burlap-polyethylene sheet.
- C. Water: Potable.

## 2.6 CONCRETE MIXTURES

- A. Prepare design mixtures, proportioned according to ACI 301, for each type and strength of normal-weight concrete, and as determined by either laboratory trial mixtures or field experience.
  - 1. Use a qualified independent testing agency for preparing and reporting proposed concrete design mixtures for the trial batch method.
  - 2. When automatic machine placement is used, determine design mixtures and obtain laboratory test results that comply with or exceed requirements.
- B. Cementitious Materials: Limit percentage, by weight, of cementitious materials other than portland cement in concrete as follows:
  - 1. Combined Fly Ash or Pozzolan, and Slag Cement: 40 percent, with fly ash or pozzolan not exceeding 22 percent.
- C. 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:
  - 1. Air Content: 5 percent plus or minus 1-1/2 percent for 3/4-inch nominal maximum aggregate size.
- D. Limit water-soluble, chloride-ion content in hardened concrete to 0.15 percent by weight of cement.
- E. Chemical Admixtures: Use admixtures according to manufacturer's written instructions.
  - 1. Use in concrete as required for placement and workability.
- F. Synthetic Fiber: Uniformly disperse in concrete mixture at manufacturer's recommended rate, but not less than .
- G. Color Pigment: Add color pigment to concrete mixture according to manufacturer's written instructions and to result in hardened concrete color consistent with approved mockup.
- H. Concrete Mixtures: Normal-weight concrete.



1. Compressive Strength (28 Days): **4000 psi** .
2. Maximum W/C Ratio at Point of Placement: 0.45 .
3. Slump Limit: **4 inches** , plus or minus **1 inch**.

## 2.7 CONCRETE MIXING

- A. Project-Site Mixing: Measure, batch, and mix concrete materials and concrete according to ASTM C 94/C 94M. Mix concrete materials in appropriate drum-type batch machine mixer.
  1. For concrete batches of **1 cu. yd.** or smaller, continue mixing at least 1-1/2 minutes, but not more than 5 minutes after ingredients are in mixer, before any part of batch is released.
  2. For concrete batches larger than **1 cu. yd.**, increase mixing time by 15 seconds for each additional **1 cu. yd.**.
  3. Provide batch ticket for each batch discharged and used in the Work, indicating Project identification name and number, date, mixture type, mixing time, quantity, and amount of water added.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Examine exposed subgrades and subbase surfaces for compliance with requirements for dimensional, grading, and elevation tolerances.
- B. Proof-roll prepared subbase surface below concrete paving to identify soft pockets and areas of excess yielding.
  1. Completely proof-roll subbase in one direction and repeat in perpendicular direction. Limit vehicle speed to **3 mph**.
  2. Proof-roll with a pneumatic-tired and loaded, 10-wheel, tandem-axle dump truck weighing not less than **15 tons**.
  3. Correct subbase with soft spots and areas of pumping or rutting exceeding depth of **1/2 inch** according to requirements in Section 312000 "Earth Moving."
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

### 3.2 PREPARATION

- A. Remove loose material from compacted subbase surface immediately before placing concrete.



### 3.3 EDGE FORMS AND SCREED CONSTRUCTION

- A. Set, brace, and secure edge forms, bulkheads, and intermediate screed guides to required lines, grades, and elevations. Install forms to allow continuous progress of work and so forms can remain in place at least 24 hours after concrete placement.
- B. Clean forms after each use and coat with form-release agent to ensure separation from concrete without damage.

### 3.4 JOINTS

- A. General: Form construction, isolation, and contraction joints and tool edges true to line, with faces perpendicular to surface plane of concrete. Construct transverse joints at right angles to centerline unless otherwise indicated.
- B. Construction Joints: Set construction joints at side and end terminations of paving and at locations where paving operations are stopped for more than one-half hour unless paving terminates at isolation joints.
- C. Edging: After initial floating, tool edges of paving, and joints in concrete with an edging tool to a **1/4-inch** radius. Repeat tooling of edges after applying surface finishes. Eliminate edging-tool marks on concrete surfaces.

### 3.5 CONCRETE PLACEMENT

- A. Before placing concrete, inspect and complete formwork installation and items to be embedded or cast-in.
- B. Remove snow, ice, or frost from subbase surface before placing concrete. Do not place concrete on frozen surfaces.
- C. Moisten subbase to provide a uniform dampened condition at time concrete is placed. Do not place concrete around manholes or other structures until they are at required finish elevation and alignment.
- D. Comply with **ACI 301** requirements for measuring, mixing, transporting, and placing concrete.
- E. Do not add water to concrete during delivery or at Project site. Do not add water to fresh concrete after testing.
- F. Deposit and spread concrete in a continuous operation between transverse joints. Do not push or drag concrete into place or use vibrators to move concrete into place.
- G. Consolidate concrete according to **ACI 301** by mechanical vibrating equipment supplemented by hand spading, rodding, or tamping.



- H. Screed paving surface with a straightedge and strike off.
- I. Commence initial floating using bull floats or darbies to impart an open-textured and uniform surface plane before excess moisture or bleedwater appears on the surface. Do not further disturb concrete surfaces before beginning finishing operations or spreading surface treatments.

### 3.6 FLOAT FINISHING

- A. General: Do not add water to concrete surfaces during finishing operations.
- B. Float Finish: Begin the second floating operation when bleedwater sheen has disappeared and concrete surface has stiffened sufficiently to permit operations. Float surface with power-driven floats or by hand floating if area is small or inaccessible to power units. Finish surfaces to true planes. Cut down high spots and fill low spots. Refloat surface immediately to uniform granular texture.
  - 1. Medium-to-Fine-Textured Broom Finish: Draw a soft-bristle broom across float-finished concrete surface, perpendicular to line of traffic, to provide a uniform, fine-line texture.

### 3.7 SPECIAL FINISHES

- A. Seeded Exposed-Aggregate Finish: Immediately after initial floating, spread a single layer of aggregate uniformly on paving surface. Tamp aggregate into plastic concrete and float finish to entirely embed aggregate with mortar cover of **1/16 inch**.
  - 1. Spray-apply chemical surface retarder to paving according to manufacturer's written instructions.
  - 2. Cover paving surface with plastic sheeting, sealing laps with tape, and remove sheeting when ready to continue finishing operations.
  - 3. Without dislodging aggregate, remove mortar concealing the aggregate by lightly brushing surface with a stiff, nylon-bristle broom. Do not expose more than one-third of the average diameter of the aggregate and not more than one-half of the diameter of the smallest aggregate.
  - 4. Fine-spray surface with water and brush. Repeat cycle of water flushing and brushing until cement film is removed from aggregate surfaces to depth required.

### 3.8 CONCRETE PROTECTION AND CURING

- A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures.
- B. Comply with ACI 306.1 for cold-weather protection.



- C. Evaporation Retarder: Apply evaporation retarder to concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching **0.2 lb/sq. ft. x h** before and during finishing operations. Apply according to manufacturer's written instructions after placing, screeding, and bull floating or darbying concrete but before float finishing.
- D. Begin curing after finishing concrete but not before free water has disappeared from concrete surface.
- E. Curing Methods: Cure concrete by moisture-retaining-cover curing curing compound or a combination of these as follows:
  - 1. Moisture-Retaining-Cover Curing: Cover concrete surfaces with moisture-retaining cover, placed in widest practicable width, with sides and ends lapped at least **12 inches**, and sealed by waterproof tape or adhesive. Immediately repair any holes or tears occurring during installation or curing period, using cover material and waterproof tape.
  - 2. Curing Compound: Apply uniformly in continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Maintain continuity of coating, and repair damage during curing period.

### 3.9 PAVING TOLERANCES

- A. Comply with tolerances in **ACI 117** and as follows:
  - 1. Elevation: **1/8 inch**.
  - 2. Thickness: Plus **3/8 inch**, minus **1/4 inch**.
  - 3. Surface: Gap below **10-feet-** long; unlevelled straightedge not to exceed **1/2 inch**.
  - 4. Joint Spacing: **3 inches**.
  - 5. Contraction Joint Depth: Plus **1/4 inch**, no minus.
  - 6. Joint Width: Plus **1/8 inch**, no minus.

### 3.10 REPAIR AND PROTECTION

- A. Remove and replace concrete paving that is broken, damaged, or defective or that does not comply with requirements in this Section. Remove work in complete sections from joint to joint unless otherwise approved by Architect.
- B. Drill test cores, where directed by Architect, when necessary to determine magnitude of cracks or defective areas. Fill drilled core holes in satisfactory paving areas with portland cement concrete bonded to paving with epoxy adhesive.
- C. Protect concrete paving from damage. Exclude traffic from paving for at least 14 days after placement. When construction traffic is permitted, maintain paving as clean as possible by removing surface stains and spillage of materials as they occur.



- D. Maintain concrete paving free of stains, discoloration, dirt, and other foreign material. Sweep paving not more than two days before date scheduled for Substantial Completion inspections.

END OF SECTION 321313



## SECTION 321823.10 - INFIELD SKIN SURFACE

### PART 1 - GENERAL

#### 1.1 SUMMARY

- A. This section includes the material and labor requirements for construction of a complete infield skin surface using the following material:
  - 1. DuraEdge Classic Infield Mix
- B. Related Sections:
  - 1. Site Preparation
  - 2. Earthwork

#### 1.2 SUBMITTALS

- A. Product Data: For the product specified, submit a 5-pound sample along with a private lab test result indicating the particle size analysis of the material specified. All tests shall be performed in accordance with ASTM F-1632.
- B. Approved Testing Lab
  - 1. Turf & Soil Diagnostics: 35 King Street, Trumansburg, NY 14886. (607) 387-5694

#### 1.3 PROJECT/SITE CONDITIONS

- A. All site work and earthwork shall be performed in accordance with the preceding sections. Sub-base material shall compact to 90 percent. If conditions do not warrant such compaction then an imported select granular fill shall be installed. Furthermore, the compacted sub-grade shall be installed in accordance with the final slope and shall mirror finish grade in order to ensure an even depth of material once placement has occurred.
- B. Under no circumstances are perforated pipe under drains necessary or recommended for use under any infield skin material. Geotextile fabric is not recommended between the compacted sub-base and the infield skin material.
- C. In certain instances, and where warranted, a survey of the sub-grade elevations shall occur prior to placement of the infield skin material.



#### 1.4 QUALITY ASSURANCE

- A. Installer Qualifications: Installers of materials specified shall have, at minimum, five successful installations of similar projects and materials. Installers shall be in possession of and demonstrate knowledge of the use of laser guided finishing equipment.
- B. Material: If quality control samples are specified, they shall be completed at a rate of one per 250 tons of material delivered to the jobsite. All tests shall be conducted by the lab specified in Section 1.2 (B). All testing will be compared to and be in accordance with the material specifications provided in Section 2.2.

### PART 2 - MATERIALS

#### 2.1 MANUFACTURER

- A. DuraEdge Classic Infield Mix is produced in various locations throughout the United States of America by and at the direction of the following manufacturer:
  - 1. DuraEdge Products, Inc. 149 South Broad Street, Grove City, PA 16127. Phone: (866) 867-0052, Fax: (724) 264-4174, Email: info@duraedge.com, Website: www.duraedge.com.
  - 2. Approved Equal

#### 2.2 MATERIALS

- A. DuraEdge Classic Infield Mix is an engineered soil product which is mechanically mixed offsite in a controlled environment using a pugmill-type mixer. This process ensures thorough mixing of the sand and clay components to exact specifications.
- B. Performance Specification
  - 1. Infield mix shall be clean, dry clay mixed with washed mason-type sand resulting in a weed-free mixture that is reddish brown in color having a yield of 1.35 tons per cubic yard when placed loose or 1.5 tons per cubic yard when compacted 85% - 90% on a Standard Proctor Test (ASTM D 689-07). The material possesses the following particle size analysis:
    - a. Total sand content shall be 70-75 percent.
    - b. The combined amount of sand retained on the medium, coarse and very coarse sieves shall be greater than or equal to 50 percent.
    - c. The combined amount of silt and clay shall be 25-30 percent.
    - d. The ratio of silt divided by clay, otherwise known as the SCR, shall be 0.5 – 1.0.
    - e. No particles greater than 3 millimeters.
    - f. Equal to or less than 5 percent of particles shall be retained on the 2 millimeter.





2. Materials meeting this specification would be DuraEdge Classic Infield Mix as manufactured by DuraEdge Products, Inc., Grove City, PA, (866) 867-0052, or an approved equal.

C. Amendments

1. Certain amendments are approved for use with DuraEdge Classic Infield Mix and shall be installed at the architect's discretion in accordance with the manufacturer's recommendations. Contact the manufacturer for further instructions.

2.3 EXCESS MATERIALS

- A. Provide the owners' authorized representative with a 10-ton stockpile of material for future use.

PART 3 - EXECUTION

3.1 SUB-BASE PREPARATION

- A. Compact sub-base to 90% or greater. If that compaction cannot be achieved, a select granular fill must be imported and placed that will fulfill the compaction requirement.
- B. The compacted sub-grade should mirror finish grade to ensure that and even depth of material has been placed.

3.2 PLACEMENT

- A. Place the material in lifts of 2 to 3 inches and lightly compact until an optimum compaction between 85 and 90 percent is achieved on a standard proctor test (ASTM D 689-07). Scarify the surface to facilitate bonding of the next lift and repeat until finish grade elevation is achieved. Completing this process as described will minimize settling and improve the performance of the product. See diagram in 3.1.C.
- B. Depth of the material shall be 4 inches for new construction when finished and compacted. Achieve 85% to 90% compaction based on a standard proctor test (ASTM D 689-07).

3.3 WATERING

- A. In most cases, the material is delivered with optimum moisture and adding water is not necessary. If unable to achieve optimum compaction, a light application of water may be needed.



### 3.4 FINISH GRADING

- A. For best results the material shall be finish graded with a laser device that allows accuracy to +/- 1/8 inch. A slope of 1/2 percent to 1 percent shall be placed on the infield surface in order to facilitate surface drainage.

### 3.5 INSPECTION

- A. The finished surface of the infield shall be smooth and free from any visible dips, humps, bumps or other blemishes which would hinder the removal of water through positive surface drainage. Where warranted, a finished elevation survey shall be conducted to assure proper installation.

### 3.6 TOPDRESSING

- A. Following successful inspection, topdressing shall be applied to the surface for optimum product performance. This topdressing is either expanded shale or calcined clay product and shall be added at a rate of 0.5 pounds per 1 square foot for maintenance, or 1 pound per 1 square foot for new construction.
- B. Topdressing shall be 1/8 - 1/4" thick.
- C. Product is either ProSlide Engineered Topdressing (expanded shale) or Turface Pro League Heritage Red Conditioner (calcined clay). Both products are available through DuraEdge Products, Inc., Grove City, PA, (866) 867-0052. Turface is also available through Profile Products LLC, 750 Lake Cook Rd, Suite 440, Buffalo Grove, Ill., (800) 207-6457.

END OF SECTION 321823.10



## SECTION 323113 - CHAIN LINK FENCES AND GATES

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

#### 1.2 SUMMARY

- A. Section Includes:

- 1. Chain-link fences.
- 2. Swing gates.

- B. Related Requirements:

- 1. Section 033053 "Miscellaneous Cast-in-Place Concrete" for cast-in-place concrete and post footings.

#### 1.3 PREINSTALLATION MEETINGS

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

- 1. Review Scope of Work for repairs and new installation of fences and gates .

#### 1.4 ACTION SUBMITTALS

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

- 1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for the following:
  - a. Fence and gate posts, rails, and fittings.
  - b. Chain-link fabric, reinforcements, and attachments.
  - c. Accessories: Fence-top Protection Device .
  - d. Gates and hardware.



## 1.5 INFORMATIONAL SUBMITTALS

- A. Product Data Sheet .

## 1.6 FIELD CONDITIONS

- A. Field Measurements: Verify layout information for chain-link fences and gates shown on Drawings in relation to property survey and existing structures. Verify dimensions by field measurements.

## 1.7 WARRANTY

- A. Special Warranty: Installer agrees to repair or replace components of chain-link fences and gates that fail in materials or workmanship within specified warranty period.
  - 1. Failures include, but are not limited to, the following:
    - a. Failure to comply with performance requirements.
    - b. Deterioration of metals, metal finishes, and other materials beyond normal weathering.
  - 2. Warranty Period: Five years from date of Substantial Completion.

## PART 2 - PRODUCTS

### 2.1 CHAIN-LINK FENCE FABRIC

- A. General: Provide fabric in one-piece heights measured between top and bottom of outer edge of selvage knuckle or twist according to "CLFMI Product Manual" and requirements indicated below:
  - 1. Fabric Height: As indicated on Drawings.
  - 2. Steel Wire for Fabric: Wire diameter of **0.148 inch** 9 Gauge .
    - a. Mesh Size: **2 inches** .
    - b. Zinc-Coated Fabric: ASTM A 392, Type II, Class 2, **2.0 oz./sq. ft.** with zinc coating applied after weaving.
  - 3. Selvage: Knuckled at both selvages .

### 2.2 FENCE FRAMEWORK

- A. Posts and Rails : ASTM F 1043 for framework, including rails, braces, and line; terminal; and corner posts. Provide members with minimum dimensions and wall thickness according to ASTM F 1043 or ASTM F 1083 based on the following:



1. Fence Height: As indicated on Drawings .
2. Horizontal Framework Members: top and bottom rails according to ASTM F 1043.
  - a. Top Rail: 1- 5/8" Diameter .
3. Metallic Coating for Steel Framework:
  - a. Coatings: Any coating above.

## 2.3 TENSION WIRE

- A. Metallic-Coated Steel Wire: **7 Gauge** diameter, marcelled tension wire according to ASTM A 817 or ASTM A 824, with the following metallic coating:
  1. Type II: Zinc coated (galvanized) by hot-dip process, with the following minimum coating weight:
    - a. Matching chain-link fabric coating weight.

## 2.4 SWING GATES

- A. General: ASTM F 900 for gate posts and double swing gate types.
  1. Gate Leaf Width: As indicated .
  2. Framework Member Sizes and Strength: Based on gate fabric height as indicated .
- B. Pipe and Tubing:
  1. Zinc-Coated Steel: ASTM F 1043 and ASTM F 1083; protective coating and finish to match fence framework .
  2. Gate Posts: Round tubular steel .
  3. Gate Frames and Bracing: Round tubular steel .
- C. Frame Corner Construction: Welded .
- D. Hardware:
  1. Hinges: 360-degree inward and outward swing.
  2. Latch: Permitting operation from both sides of gate.
  3. Padlock and Chain: provided by owner .

## 2.5 FITTINGS

- A. Provide fittings according to ASTM F 626.
- B. Post Caps: Provide for each post.
  1. Provide line post caps with loop to receive tension wire or top rail.



- C. Rail and Brace Ends: For each gate, corner, pull, and end post.
- D. Rail Fittings: Provide the following:
  - 1. Rail Clamps: Line and corner boulevard clamps for connecting bottom rails to posts.
- E. Tension and Brace Bands: Pressed steel .
- F. Tension Bars: length not less than **2 inches** shorter than full height of chain-link fabric. Provide one bar for each gate and end post, and two for each corner and pull post, unless fabric is integrally woven into post.
- G. Truss Rod Assemblies: Steel, hot-dip galvanized after threading rod and turnbuckle or other means of adjustment.
- H. Tie Wires, Clips, and Fasteners: According to ASTM F 626.
  - 1. Standard Round Wire Ties: For attaching chain-link fabric to posts, rails, and frames, according to the following:
    - a. Hot-Dip Galvanized Steel: 9 Gauge diameter wire ; galvanized coating thickness matching coating thickness of chain-link fence fabric.
- I. Finish:
  - 1. Metallic Coating for Pressed Steel or Cast Iron: Not less than **1.2 oz./sq. ft.** of zinc.

## 2.6 GROUT AND ANCHORING CEMENT

- A. Nonshrink, Nonmetallic Grout: Factory-packaged, nonstaining, noncorrosive, nongaseous grout complying with ASTM C 1107/C 1107M. Provide grout, recommended in writing by manufacturer, for exterior applications.
- B. Anchoring Cement: Factory-packaged, nonshrink, nonstaining, hydraulic-controlled expansion cement formulation for mixing with water at Project site to create pourable anchoring, patching, and grouting compound. Provide formulation that is resistant to erosion from water exposure without needing protection by a sealer or waterproof coating, and that is recommended in writing by manufacturer for exterior applications.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Examine areas and conditions, with Installer present, for compliance with requirements for site clearing, earthwork, pavement work, and other conditions affecting performance of the Work.



1. Do not begin installation before final grading is completed unless otherwise permitted by Architect.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

### 3.2 PREPARATION

- A. Stake locations of fence lines, gates, and terminal posts. Do not exceed intervals of **500 feet** or line of sight between stakes. Indicate locations of utilities, lawn sprinkler system, underground structures, benchmarks, and property monuments.

### 3.3 CHAIN-LINK FENCE INSTALLATION

- A. Install chain-link fencing according to ASTM F 567 and more stringent requirements specified.
  1. Install fencing on established boundary lines inside property line.
- B. Post Excavation: Drill or hand-excavate holes for posts to diameters and spacings indicated, in firm, undisturbed soil.
- C. Post Setting: Set posts in concrete at indicated spacing into firm, undisturbed soil.
  1. Verify that posts are set plumb, aligned, and at correct height and spacing, and hold in position during setting with concrete or mechanical devices.
  2. Concrete Fill: Place concrete around posts to dimensions indicated and vibrate or tamp for consolidation. Protect aboveground portion of posts from concrete splatter.
    - a. Concealed Concrete: Place top of concrete **2 inches** below grade to allow covering with surface material.
- D. Terminal Posts: Install terminal end, corner, and gate posts according to ASTM F 567 and terminal pull posts at changes in horizontal or vertical alignment of 15 degrees or more as indicated on Drawings . For runs exceeding **500 feet**, space pull posts an equal distance between corner or end posts.
- E. Line Posts: Space line posts uniformly at **10 feet** o.c.
- F. Post Bracing and Intermediate Rails: Install according to ASTM F 567, maintaining plumb position and alignment of fence posts. Diagonally brace terminal posts to adjacent line posts with truss rods and turnbuckles. Install braces at end and gate posts and at both sides of corner and pull posts.
  1. Locate horizontal braces at midheight of fabric **72 inches** or higher, on fences with top rail, and at two-third fabric height on fences without top rail. Install so posts are plumb when diagonal rod is under proper tension.



- G. Tension Wire: Install according to ASTM F 567, maintaining plumb position and alignment of fence posts. Pull wire taut, without sags. Fasten fabric to tension wire with **0.120-inch**- diameter hog rings of same material and finish as fabric wire, spaced a maximum of **24 inches** o.c. Install tension wire in locations indicated before stretching fabric. Provide horizontal tension wire at the following locations:
1. As indicated on Drawings .
- H. Top Rail: Install according to ASTM F 567, maintaining plumb position and alignment of fence posts. Run rail continuously through line post caps, bending to radius for curved runs and terminating into rail end attached to posts or post caps fabricated to receive rail at terminal posts. Provide expansion couplings as recommended in writing by fencing manufacturer.
- I. Intermediate and Bottom Rails: Secure to posts with fittings.
- J. Chain-Link Fabric: Apply fabric to outside of enclosing framework. Leave **1-inch** bottom clearance between finish grade or surface and bottom selvage unless otherwise indicated. Pull fabric taut and tie to posts, rails, and tension wires. Anchor to framework so fabric remains under tension after pulling force is released.
- K. Tension or Stretcher Bars: Thread through fabric and secure to end, corner, pull, and gate posts, with tension bands spaced not more than **15 inches** o.c.
- L. Tie Wires: Use wire of proper length to firmly secure fabric to line posts and rails. Attach wire at one end to chain-link fabric, wrap wire around post a minimum of 180 degrees, and attach other end to chain-link fabric according to ASTM F 626. Bend ends of wire to minimize hazard to individuals and clothing.
1. Maximum Spacing: Tie fabric to line posts at **12 inches** o.c. and to braces at **24 inches** o.c.
- M. Fasteners: Install nuts for tension bands and carriage bolts on the side of fence opposite the fabric side. Peen ends of bolts or score threads to prevent removal of nuts.
- N. Fence-Top Protection: White Line Standard Fence Guard #01923 - Color: Yellow or approved equal
1. Install per manufacturer's recommendations using Fence Ties #03023
  2. Provide Product Data Sheet and Sample if using alternate product

### 3.4 GATE INSTALLATION

- A. Install gates according to manufacturer's written instructions, level, plumb, and secure for full opening without interference. Attach fabric as for fencing. Attach hardware using tamper-resistant or concealed means. Install ground-set items in concrete for anchorage. Adjust hardware for smooth operation.





3.5 ADJUSTING

- A. Gates: Adjust gates to operate smoothly, easily, and quietly, free of binding, warp, excessive deflection, distortion, nonalignment, misplacement, disruption, or malfunction, throughout entire operational range. Confirm that latches and locks engage accurately and securely without forcing or binding.
- B. Lubricate hardware and other moving parts.

END OF SECTION 323113



## SECTION 323119.53 - SINGLE SWING GATE

### PART 1 - GENERAL

#### 1.1 SECTION INCLUDES

- A. Requirements for 12' Single Swing Gate.

### PART 2 - PRODUCTS

#### 2.1 GENERAL

- A. All materials shall be galvanized steel or aluminum.

#### 2.2 POSTS

- A. Posts shall schedule 40, galvanized steel
- B. Posts shall be set 4'2" above grade.
- C. Posts shall be buried a 36-inches into the ground.
- D. Posts shall have a 4" aluminum cap of the tops of the posts.

#### 2.3 Barrier Arm

- A. Posts shall be schedule 40, galvanized steel
- B. Posts shall be set 4'2" above grade.
- C. Posts shall be buried a 32-inches into the ground.

#### 2.4 Hardware

- A. Hinges shall be commercial grade, galvanized box hinges.
- B. Hinges shall be galvanized prior to welding to posts.



- C. Gate hold back shall be a Duckbill hold back as manufactured by Hoover Fence or approved equal.
- D. Hold back height shall be verified in the field.
- E. Locking post shall include a welded locking eye for a padlock.

### PART 3 - EXECUTION

#### 3.1 LAYOUT OF WORK

- A. Swing gate post locations shall be approved by the owner's representative prior to installation.
- B. Swing gate shall be centered on existing service entry and as shown in the plans.

#### 3.2 INSTALLATION OF POSTS AND BARRIER ARM

- A. Posts shall be set plumb and true to line and grade.
- B. Posts require concrete footings.
- C. Post footings shall be constructed with 3000 psi concrete.
- D. Barrier arm shall be set true in height, line and parallel to the grade.

#### 3.3 PAINTING OF SWING GATE

- A. The posts and barrier arm gate shall be painted.
- B. (1) One coat of primer
- C. (2) Two coats of black paint

END OF SECTION 323119.53



## SECTION 323300 - SITE FURNISHINGS

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

#### 1.2 SUMMARY

- A. Section Includes:
  - 1. Seating.
  - 2. Tables.
  - 3. Trash receptacles.

#### 1.3 ACTION SUBMITTALS

- A. A. Manufacturer's Literature: Submit copies of each of manufacturer's material descriptions, dimensions, details, and installation instructions for the following. Submit manufacturer's material descriptions for primer coat and finish coat.

#### 1.4 INFORMATIONAL SUBMITTALS

- A. Complete Shop Drawings for the installation of 6' backless bench
- B. Complete Shop Drawings for the installation of ADA picnic table
- C. Complete Shop Drawings for the installation of 6' picnic table with benches
- D. Complete Shop Drawings for the installation of trash receptacle with metal hood

#### 1.5 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For site furnishings to include in maintenance manuals.
- B. The Contractor shall furnish and deliver standard written manufacturer's guarantee in Owner's name covering all materials and workmanship under this Section 323300, Site Furnishings, in addition to, and not in lieu of, guarantee requirements set forth under Section 010000, GENERAL



REQUIREMENTS, and other liabilities which the Contractor may have by law or other provisions of the Contract Documents.

- C. Supplier shall pay for repairs of any damage to any part of the project caused by defects in his work and for any repair to the materials or equipment caused by replacement. All repairs are to be done to the satisfaction of the Owner's Representative.
- D. Any part of the work installed under this contract requiring excessive maintenance shall be considered as being defective, and shall be replaced by the Supplier during the one year guarantee period at no cost to the Owner.

## PART 2 - PRODUCTS

### 2.1 SEATING

- A. 6' long backless Bench, Thermally Modified Red Oak wood slats with black supports, (model #34 TMR) surface mount on concrete pad, as manufactured by Dumor, Inc P.O. Box 142 Mifflintown, PA 17059 or approved equal
- B. 92" long backless players bench, surface mount, TenderTuff coated steel (model #141683) as manufactured by Landscape Structures Inc., 601 7th Street South, Delano, MN 55328 or approved equal.

### 2.2 TABLES

- A. 8' long ADA picnic table, surface mount, Thermally Modified Red Oak wood slats with Black supports, (model #67-079-68-1) as manufactured by DuMor, Inc., P.O. Box 142, Mifflintown, PA 17059 800.598.4018, or approved equal.
- B. 6' long picnic table, surface mount, Thermally Modified Red Oak wood slats with Black supports (model 67-079-6) as manufactured by DuMor, Inc. P.O. Box 142, Mifflintown, PA 17059 800.598.018 or approved equal.

### 2.3 TRASH RECEPTACLES

- A. 55gal. (26"x 36") round steel Trash Receptacle with Dome Lid in black powder-coat finish, as manufactured by Pilot Rock Model # CN-R/R-55 (Perforated Steel Receptacle), Model #CN-2755 (Dome Lid), and Model # CN/B-1829 (Heavy Duty Plastic Liner) surface mount on concrete pad.
- B. Approved Equal



## 2.4 FABRICATION

- A. Factory Assembly: Factory assemble components to greatest extent possible to minimize field assembly. Clearly mark units for assembly in the field.

## 2.5 GENERAL FINISH REQUIREMENTS

- A. Appearance of Finished Work: Noticeable variations in same piece are unacceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Examine areas and conditions, with Installer present, for compliance with requirements for correct and level finished grade, mounting surfaces, installation tolerances, and other conditions affecting performance of the Work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

### 3.2 INSTALLATION

- A. Comply with manufacturer's written installation instructions unless more stringent requirements are indicated. Complete field assembly of site furnishings where required.
- B. All metal inserts, anchor slots, anchors, anchor bolts, fastenings, and other fastening devices, for attachment of site improvement items to pavements, except as otherwise specified under other Sections of this Specification, shall be in specified, provided, delivered installed and paid for under the work of this Section 02800, Site Furnishings.
- C. Unless otherwise indicated, install site furnishings after landscaping and paving have been completed.
- D. Free-standing site improvement items shall be set plumb and horizontal regardless of the pitch of the finished surrounding grade unless otherwise shown on the Contract Documents.
- E. The Contractor shall be responsible for timing the delivery of site improvement items so as to minimize the on-site storage time prior to installation. All stored materials are the responsibility of the Contractor and shall be protected from weather, careless handling and vandalism.
- F. Contractor shall be responsible for the correct location of site improvement items. Take particular care to maintain shapes, plumb and level during the pouring of concrete.



- G. All Work shall be accurately set to established lines and elevations and rigidly set in place to supporting construction.
- H. Install site furnishings level, plumb, true, and positioned at locations after final approval in the field by Owner's Representative.
- I. Post Setting: Set cast-in support posts in concrete footing with smooth top, shaped to shed water. Protect portion of posts above footing from concrete splatter. Verify that posts are set plumb or at correct angle and are aligned and at correct height and spacing. Hold posts in position during placement and finishing operations until concrete is sufficiently cured.

END OF SECTION 323300



## SECTION 328400 - PLANTING IRRIGATION

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

#### 1.2 SUMMARY

- A. Section Includes:

1. Piping.
2. Encasement for piping.
3. Pressure-reducing valves.
4. Automatic control valves.
5. Automatic drain valves.
6. Transition fittings.
7. Miscellaneous piping specialties.
8. Quick couplers.
9. Drip irrigation specialties.
10. Controllers.
11. Boxes for automatic control valves.
12. Glass.

- B. Sprinklers.

- C. Related Sections:

1. Section 220519 "Meters and Gages for Plumbing Piping" for water metering requirements.
2. Section 230923.14 "Flow Instruments" for water metering equipment.

#### 1.3 DEFINITIONS

- A. Circuit Piping: Downstream from control valves to sprinklers, specialties, and drain valves. Piping is under pressure during flow.
- B. Drain Piping: Downstream from circuit-piping drain valves. Piping is not under pressure.





- C. ET Controllers: EvapoTranspiration Controllers. Irrigation controllers which use some method of weather-based adjustment of irrigation. These adjusting methods include use of historical monthly averages of ET; broadcasting of ET measurements; or use of on-site sensors to track ET.
- D. Main Piping: Downstream from point of connection to water distribution piping to, and including, control valves. Piping is under water-distribution-system pressure.
- E. Low Voltage: As defined in NFPA 70 for circuits and equipment operating at less than 50 V or for remote-control, signaling power-limited circuits.

#### 1.4 PERFORMANCE REQUIREMENTS

- A. Irrigation zone control shall be automatic operation with controller and automatic control manual operation with manual valves.
- B. Location of Sprinklers and Specialties: Design location is approximate. Make minor adjustments necessary to avoid plantings and obstructions such as signs and light standards. Maintain 100 percent irrigation coverage of areas indicated.
- C. Minimum Working Pressures: The following are minimum pressure requirements for piping, valves, and specialties unless otherwise indicated:
  - 1. Irrigation Main Piping: 200 PSI.
  - 2. Circuit Piping: 150 PSI.

#### 1.5 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated. Include rated capacities, operating characteristics, and furnished specialties and accessories.
- B. Wiring Diagrams: For power, signal, and control wiring.

#### 1.6 INFORMATIONAL SUBMITTALS

- A. Coordination Drawings: Irrigation systems, drawn to scale, on which components are shown and coordinated with each other, using input from Installers of the items involved. Also include adjustments necessary to avoid plantings and obstructions such as signs and light standards.
- B. Qualification Data: For qualified Installer.
- C. Zoning Chart: Show each irrigation zone and its control valve.
- D. Controller Timing Schedule: Indicate timing settings for each automatic controller zone.



#### 1.7 CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Data: For sprinklers controllers and automatic control valves to include in operation and maintenance manuals.

#### 1.8 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
  - 1. Spray Sprinklers: 5 units.
  - 2. Bubblers: 5 units.
  - 3. Emitters: 5 units.
  - 4. Drip-Tube System Tubing: Equal to five percent (5%) of total length installed for each type and size indicated, but not less than **100 feet** .
  - 5. Soaker Tubes: Equal to five percent (5%) of total length installed for each type and size indicated, but not less than **100 feet** .

#### 1.9 QUALITY ASSURANCE

- A. Installer Qualifications: An employer of workers that include a Licensed Master Irrigator .
- B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

#### 1.10 DELIVERY, STORAGE, AND HANDLING

- A. Deliver piping with factory-applied end caps. Maintain end caps through shipping, storage, and handling to prevent -end damage and to prevent entrance of dirt, debris, and moisture.
- B. Store plastic piping protected from direct sunlight. Support to prevent sagging and bending.

#### 1.11 PROJECT CONDITIONS

- A. Interruption of Existing Water Service: Do not interrupt water service to facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary water service according to requirements indicated:
  - 1. Notify Construction Manager no fewer than two days in advance of proposed interruption of water service.
  - 2. Do not proceed with interruption of water service without Owner's written permission.



## PART 2 - PRODUCTS

### 2.1 PIPES, TUBES, AND FITTINGS

- A. Comply with requirements in the piping schedule for applications of pipe, tube, and fitting materials, and for joining methods for specific services, service locations, and pipe sizes.
- B. Galvanized-Steel Pipe: ASTM A 53/A 53M, Standard Weight, Type E, Grade B.
  - 1. Galvanized-Steel Pipe Nipples: ASTM A 733, made of ASTM A 53/A 53M or ASTM A 106/A 106M, Standard Weight, seamless-steel pipe with threaded ends.
  - 2. Galvanized, Gray-Iron Threaded Fittings: ASME B16.4, Class 125, standard pattern.
  - 3. Malleable-Iron Unions: ASME B16.39, Class 150, hexagonal-stock body with ball-and-socket, metal-to-metal, bronze seating surface, and female threaded ends.
  - 4. Cast-Iron Flanges: ASME B16.1, Class 125.
- C. Ductile-Iron Pipe with Mechanical Joints: AWWA C151, with mechanical-joint bell and spigot ends.
  - 1. Mechanical-Joint, Ductile-Iron Fittings: AWWA C110, ductile- or gray-iron standard pattern or AWWA C153, ductile-iron compact pattern.
    - a. Glands, Gaskets, and Bolts: AWWA C111, ductile- or gray-iron glands, rubber gaskets, and steel bolts.
- D. Ductile-Iron Pipe with Push-on Joint: AWWA C151, with push-on-joint bell and spigot ends.
  - 1. Push-on-Joint, Ductile-Iron Fittings: AWWA C110, ductile- or gray-iron standard pattern or AWWA C153, ductile-iron compact pattern.
    - a. Gaskets: AWWA C111, rubber.
- E. Soft Copper Tube: , water tube, annealed temper.
  - 1. Copper Pressure Fittings: ASME B16.18, cast-copper-alloy or ASME B16.22, wrought-copper solder-joint fittings. Furnish wrought-copper fittings if indicated.
  - 2. Bronze Flanges: ASME B16.24, Class 150, with solder-joint end.
  - 3. Copper Unions: MSS SP-123, cast-copper-alloy, hexagonal-stock body, with ball-and-socket, metal-to-metal seating surfaces and solder-joint or threaded ends.
- F. Hard Copper Tube: **ASTM B 88, Type M** , water tube, drawn temper.
  - 1. Copper Pressure Fittings: ASME B16.18, cast-copper-alloy or ASME B16.22, wrought-copper solder-joint fittings. Furnish wrought-copper fittings if indicated.
  - 2. Bronze Flanges: ASME B16.24, Class 150, with solder-joint end.
  - 3. Copper Unions: MSS SP-123, cast-copper-alloy, hexagonal-stock body, with ball-and-socket, metal-to-metal seating surfaces and solder-joint or threaded ends.



- G. PE Pipe with Controlled ID: ASTM F 771, PE 3408 compound; SDR 15.
  - 1. Insert Fittings for PE Pipe: ASTM D 2609, nylon or propylene plastic with barbed ends. Include bands or other fasteners.
- H. PE Pipe with Controlled OD: ASTM F 771, PE 3408 compound, SDR 11.
  - 1. PE Butt, Heat-Fusion Fittings: ASTM D 3261.
  - 2. PE Socket-Type Fittings: ASTM D 2683.
- I. PE Pressure Pipe: AWWA C906, with DR of 7.3, 9, or 9.3 and PE compound number required to give pressure rating not less than **160 psig** .
  - 1. PE Socket-Type Fittings: ASTM D 2683.
- J. PVC Pipe: ASTM D 1785, PVC 1120 compound, Schedule 40 .
  - 1. PVC Socket Fittings: ASTM D 2466, Schedules 40 and 80.
  - 2. PVC Threaded Fittings: ASTM D 2464, Schedule 80.
  - 3. PVC Socket Unions: Construction similar to MSS SP-107, except both headpiece and tailpiece shall be PVC with socket ends.
- K. PVC Pipe, Pressure Rated: ASTM D 2241, PVC 1120 compound, SDR 21 and SDR 26.
  - 1. PVC Socket Fittings: ASTM D 2467, Schedule 80.
  - 2. PVC Socket Unions: Construction similar to MSS SP-107, except both headpiece and tailpiece shall be PVC with socket or threaded ends.

## 2.2 PIPING JOINING MATERIALS

- A. Pipe-Flange Gasket Materials: AWWA C110, rubber, flat face, **1/8 inch** thick unless otherwise indicated; full-face or ring type unless otherwise indicated.
- B. Metal, Pipe-Flange Bolts and Nuts: ASME B18.2.1, carbon steel unless otherwise indicated.
- C. Brazing Filler Metals: AWS A5.8/A5.8M, BCuP Series, copper-phosphorus alloys for general-duty brazing unless otherwise indicated.
- D. Solder Filler Metals: ASTM B 32, lead-free alloys. Include water-flushable flux according to ASTM B 813.
- E. Solvent Cements for Joining PVC Piping: ASTM D 2564. Include primer according to ASTM F 656.
- F. Plastic, Pipe-Flange Gasket, Bolts, and Nuts: Type and material recommended by piping system manufacturer unless otherwise indicated.



## 2.3 MANUAL VALVES

### A. Bronze Ball Valves:

1. **Manufacturers:** Subject to compliance with requirements, undefined:
  - a. Apollo Flow Controls; Conbraco Industries, Inc.
  - b. NIBCO INC.
  - c. WATTS.
  - d. Zurn Industries, LLC.
  - e. Or Approved Equal
2. **Description:**
  - a. Standard: MSS SP-110.
  - b. SWP Rating: **150 psig**.
  - c. CWP Rating: **600 psig**.
  - d. Body Design: Two piece.
  - e. Body Material: Bronze.
  - f. Ends: Threaded or solder joint if indicated.
  - g. Seats: PTFE or TFE.
  - h. Stem: Bronze.
  - i. Ball: Chrome-plated brass.
  - j. Port: Full or regular, but not reduced.

### B. Plastic Ball Valves:

1. **Manufacturers:** Subject to compliance with requirements, undefined:
  - a. NIBCO INC.
  - b. Spears Manufacturing Company.
  - c. WATTS.
  - d. Or Approved Equal
2. **Description:**
  - a. Standard: MSS SP-122.
  - b. Pressure Rating: **125 psig** minimum .
  - c. Body Material: PVC.
  - d. Type: Union.
  - e. End Connections: Socket or threaded.
  - f. Port: Full.

### C. Iron Gate Valves, NRS:

1. **Manufacturers:** Subject to compliance with requirements, undefined:
  - a. NIBCO INC.
  - b. WATTS.
  - c. Or Approved Equal
2. **Description:**
  - a. Standard: MSS SP-70, Type I.
  - b. CWP Rating: **200 psig**.



- c. Body Material: ASTM A 126, gray iron with bolted bonnet.
- d. Ends: Flanged.
- e. Trim: All bronze.
- f. Disc: Solid wedge.
- g. Packing and Gasket: Asbestos free.

## 2.4 PRESSURE-REDUCING VALVES

### A. Water Regulators:

1. **Manufacturers:** Subject to compliance with requirements, undefined:
  - a. Apollo Flow Controls; Conbraco Industries, Inc.
  - b. WATTS.
  - c. Or Approved Equal
2. Description:
  - a. Standard: ASSE 1003.
  - b. Body Material: Bronze for **NPS 2** and smaller; cast iron for **NPS 2-1/2** and **NPS 3**.
  - c. Pressure Rating: Initial pressure of **150 psig**.
  - d. End Connections: Threaded for **NPS 2** and smaller; flanged for **NPS 2-1/2** and **NPS 3**.
3. Capacities and Characteristics:
  - a. Size: **NPS**.
  - b. Design Flow Rate: **gpm**.
  - c. Design Inlet Pressure: **psig**.
  - d. Design Outlet Pressure Setting: **psig**.

### B. Water Control Valves:

1. **Manufacturers:** Subject to compliance with requirements, provide products by one of the following:
  - a. WATTS.
  - b. Zurn Industries, LLC.
  - c. Or Approved Equal
2. Description: Pilot-operation, diaphragm-type, single-seated main water control valve. Include small pilot control valve, restrictor device, specialty fittings, and sensor piping.
  - a. Main Valve Body: Cast- or ductile-iron body with AWWA C550 or FDA-approved, interior epoxy coating; or stainless-steel body.
  - b. Pattern: Angle -valve design.
  - c. Trim: Stainless steel.
  - d. Pressure Rating: Initial pressure of **150 psig** minimum.
  - e. End Connections: Threaded for **NPS 2** and smaller; Gasket Joint for **NPS 2-1/2** and larger.



## 2.5 AUTOMATIC CONTROL VALVES

### A. Plastic, Automatic Control Valves:

1. **Manufacturers:** Subject to compliance with requirements, provide products by one of the following:
  - a. Hunter Industries Incorporated.
  - b. Rain Bird PGA or Approved Equal
2. Description: Molded-plastic body, normally closed, diaphragm type with manual-flow adjustment, and operated by 24-V ac solenoid.

## 2.6 AUTOMATIC DRAIN VALVES

- ### A. Description: Spring-loaded-ball type of corrosion-resistant construction and designed to open for drainage if line pressure drops below 2-1/2 to 3 psig.

## 2.7 TRANSITION FITTINGS

- ### A. General Requirements: Same size as, and with pressure rating at least equal to and with ends compatible with, piping to be joined.

### B. Transition Couplings:

1. **Manufacturers:** Subject to compliance with requirements, provide products by one of the following:
  - a. Ford Meter Box Company, Inc. (The).
  - b. JCM Industries, Inc.
  - c. Smith-Blair, Inc.
  - d. Or Approved Equal
2. Description: AWWA C219, metal sleeve-type coupling for underground pressure piping.

## 2.8 MISCELLANEOUS PIPING SPECIALTIES

- ### A. Water Hammer Arresters: ASSE 1010 or PDI WH 201, with bellows or piston-type pressurized cushioning chamber and in sizes complying with PDI WH 201, Sizes A to F.
- ### B. Pressure Gages: ASME B40.1. Include 4-1/2-inch- diameter dial, dial range of two times system operating pressure, and bottom outlet.

## 2.9 SPRINKLERS

- ### A. General Requirements: Designed for uniform coverage over entire spray area indicated at available water pressure.



B. Plastic, Pop-up, Gear-Drive Rotary Sprinklers:

1. **Manufacturers:** Subject to compliance with requirements, provide products by one of the following:
  - a. Hunter Industries Incorporated.
  - b. Rain Bird Corporation.
  - c. Or Approved Equal
2. Description:
  - a. Body Material: ABS.
  - b. Nozzle: ABS .
  - c. Retraction Spring: Stainless steel.
  - d. Internal Parts: Corrosion resistant.

C. Metal, Pop-up, Impact-Drive Rotary Sprinklers:

1. **Manufacturers:** Subject to compliance with requirements, provide products by the following :
  - a. Rain Bird.
  - b. Or Approved Equal
2. Description:
  - a. Case: Brass.
  - b. Body Material: Brass.
  - c. Pop-up Height: **4 inches** aboveground to nozzle.
  - d. Sprinkler Construction: Brass and other corrosion-resistant metals.

D. Plastic, Surface Spray Sprinklers:

1. **Manufacturers:** Subject to compliance with requirements, provide products by the following:
  - a. Champion Irrigation Products.
  - b. Or Approved Equal
2. Description:
  - a. Body Material and Flange: ABS.
  - b. Pattern: Fixed, with flow adjustment.

E. Metal, Surface, Pop-up Spray Sprinklers:

1. **Manufacturers:** Subject to compliance with requirements, provide products by one of the following:
  - a. Hunter.
  - b. Rain Bird.
  - c. Or Approved Equal
2. Description:
  - a. Body Material and Flange: Brass.
  - b. Nozzle: Brass.
  - c. Pattern: Fixed, with flow adjustment.





F. Plastic, Surface, Pop-up Spray Sprinklers:

1. **Manufacturers:** Subject to compliance with requirements, provide products by one of the following:
  - a. Hunter.
  - b. Rain Bird.
  - c. Or Approved Equal
2. Description:
  - a. Body Material and Flange: ABS.
  - b. Pattern: Fixed, with flow adjustment.

G. Plastic, Pop-up Spray Sprinklers:

1. **Manufacturers:** Subject to compliance with requirements, provide products by one of the following:
  - a. Hunter Industries Incorporated.
  - b. Rain Bird Corporation.
  - c. Or Approved Equal
2. Description:
  - a. Body Material: ABS.
  - b. Nozzle: ABS .
  - c. Retraction Spring: Stainless steel.
  - d. Internal Parts: Corrosion resistant.
  - e. Pattern: Fixed, with flow adjustment.

H. Plastic Shrub Sprinklers:

1. **Manufacturers:** Subject to compliance with requirements, provide products by one of the following:
  - a. Hunter Industries Incorporated.
  - b. Rain Bird.
  - c. Or Approved Equal
2. Description:
  - a. Body Material: ABS or other plastic.
  - b. Pattern: Fixed, with flow adjustment.

2.10 QUICK COUPLERS

A. **Manufacturers:** Subject to compliance with requirements, provide products by the following:

1. Rain Bird Corporation.
2. Or Approved Equal



- B. Description: Factory-fabricated, bronze or brass, two-piece assembly. Include coupler water-seal valve; removable upper body with spring-loaded or weighted, rubber-covered cap; hose swivel with ASME B1.20.7, 3/4-11.5NH threads for garden hose on outlet; and operating key.
1. Locking-Top Option: Vandal-resistant locking feature. Include one matching key(s).

## 2.11 DRIP IRRIGATION SPECIALTIES

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
1. Netafim USA.
  2. Rain Bird Corporation.
  3. Or Approved Equal
- B. Freestanding Emitters: Device to deliver water at approximately **20 psig**.
1. Body Material: PE or vinyl, with flow control.
  2. Riser to Emitter: PE or PVC flexible tubing.
- C. Manifold Emitter Systems: Manifold with tubing and emitters.
1. Manifold: With multiple outlets to deliver water to emitters.
    - a. Body Material: Plastic.
    - b. Outlet Caps: Plastic, for outlets without installed tubing.
    - c. Operation: Automatic pressure compensating.
  2. Tubing: PE or PVC; **1/8-inch** minimum ID.
  3. Emitter: Device to deliver water at approximately **20 psig**.
    - a. Body Material: PE or vinyl, with flow control.
- D. Multiple-Outlet Emitter Systems: Emitter with tubing and button-type outlets.
1. Emitter: With multiple outlets to deliver water to remote outlets.
    - a. Body Material: Plastic, with flow control.
    - b. Outlet Caps: Plastic, for outlets without installed tubing.
    - c. Operation: Automatic pressure compensating.
    - d. Emitters: Devices to deliver water at approximately **20 psig**
  2. Tubing: PE or PVC; **1/8-inch** minimum ID.
- E. Drip Tubes with Direct-Attached Emitters:
1. Tubing: Flexible PE or PVC with plugged end.
  2. Emitters: Devices to deliver water at approximately **20 psig**.
    - a. Body Material: PE or vinyl, with flow control.
    - b. Mounting: Inserted into tubing at set intervals.



- F. Drip Tubes with Remote Discharge:
1. Tubing: Flexible PE or PVC with plugged end.
  2. Emitters: Devices to deliver water at approximately **20 psig**.
    - a. Body Material: PE or vinyl, with flow control.
    - b. Mounting: Inserted into tubing at set intervals.
  3. Capacities and Characteristics:
    - a. Tubing Size: **NPS 3/4** .
    - b. Length: **12inches**.
    - c. Emitter Spacing: **12inches**.
    - d. Emitter Flow: **1/2 gph** .
    - e. Branch Tubing Size: **NPS 1/4** with button-type outlet.
    - f. Branch Tubing Length: **12inches**.
- G. Off-Ground Supports: Plastic stakes.
- H. Application Pressure Regulators: Brass or plastic housing, **NPS 3/4**, with corrosion-resistant internal parts; capable of controlling outlet pressure to approximately **20 psig**.
- I. Filter Units: Brass or plastic housing, with corrosion-resistant internal parts; of size and capacity required for devices downstream from unit.
- J. Air Relief Valves: Brass or plastic housing, with corrosion-resistant internal parts.
- K. Vacuum Relief Valves: Brass or plastic housing, with corrosion-resistant internal parts.

## 2.12 CONTROLLERS

- A. **Manufacturers:** Subject to compliance with requirements, provide products by one of the following:
1. Hunter Industries Incorporated.
  2. Rain Bird Corporation.
  3. Or Approved Equal
- B. Description:
1. Controller Stations for Automatic Control Valves: Each station is variable from approximately 5 to 60 minutes. Include switch for manual or automatic operation of each station.
  2. Exterior Control Enclosures: NEMA 250, Type 4, weatherproof, with locking cover and two matching keys; include provision for grounding.
    - a. Body Material: Enameled-steel sheet metal .
    - b. Mounting: Freestanding type for concrete base .



3. Interior Control Enclosures: NEMA 250, Type 12, dripproof, with locking cover and two matching keys.
  - a. Body Material: Molded plastic.
  - b. Mounting: Surface type for wall.
4. Control Transformer: 24-V secondary, with primary fuse.
5. Timing Device: Adjustable, 24-hour, 14-day clock, with automatic operations to skip operation any day in timer period, to operate every other day, or to operate two or more times daily.
  - a. Manual or Semiautomatic Operation: Allows this mode without disturbing preset automatic operation.
  - b. Nickel-Cadmium Battery and Trickle Charger: Automatically powers timing device during power outages.
  - c. Surge Protection: Metal-oxide-varistor type on each station and primary power.
6. Moisture Sensor: Adjustable from one to seven days, to shut off water flow during rain.
7. Smart Controllers: Use ET, tested in accordance with IA SWAT Climatological Based Controllers 8th Draft Testing Protocol and compliant with ASHRAE Standard 189.1.
8. Wiring: UL 493, Type UF multiconductor, with solid-copper conductors; insulated cable; suitable for direct burial.
  - a. Feeder-Circuit Cables: No. 12 AWG minimum, between building and controllers.
  - b. Low-Voltage, Branch-Circuit Cables: No. 14 AWG minimum, between controllers and automatic control valves; color-coded different from feeder-circuit-cable jacket color; with jackets of different colors for multiple-cable installation in same trench.
  - c. Splicing Materials: Manufacturer's packaged kit consisting of insulating, spring-type connector or crimped joint and epoxy resin moisture seal; suitable for direct burial.
9. Concrete Base: Reinforced precast concrete not less than **36 by 24 by 4 inches** thick, and **6 inches** greater in each direction than overall dimensions of controller. Include opening for wiring.

## 2.13 BOXES FOR AUTOMATIC CONTROL VALVES

### A. Plastic Boxes:

1. **Manufacturers:** Subject to compliance with requirements, provide products by one of the following:
  - a. Ametec.
  - b. Armorcast Products Company.
  - c. Carson.
  - d. Or Approved Equal
2. Description: Box and cover, with open bottom and openings for piping; designed for installing flush with grade.
  - a. Size: As required for valves and service.
  - b. Shape: Rectangular.
  - c. Sidewall Material: PE, ABS, or FRP .
  - d. Cover Material: PE, ABS, or FRP .
    - 1) Lettering: " IRRIGATION ."



- B. Drainage Backfill: Cleaned gravel or crushed stone, graded from **3/4 inch** minimum to **3 inches** maximum.

### PART 3 - EXECUTION

#### 3.1 EARTHWORK

- A. Excavating, trenching, and backfilling are specified in Section 312000 "Earth Moving."
- B. Drain Pockets: Excavate to sizes indicated. Backfill with cleaned gravel or crushed stone, graded from **3/4 to 3 inches** , to **12 inches** below grade. Cover gravel or crushed stone with sheet of asphalt-saturated felt and backfill remainder with excavated material.
- C. Provide minimum cover over top of underground piping according to the following:
  - 1. Irrigation Main Piping: Minimum depth of 18 inches below finished grade, or not less than
  - 2. Circuit Piping: **12 inches** .
  - 3. Drain Piping: **12 inches** .
  - 4. Sleeves: 18 inches

#### 3.2 PREPARATION

- A. Set stakes to identify locations of proposed irrigation system. Obtain Architect's approval before excavation.

#### 3.3 PIPING INSTALLATION

- A. Location and Arrangement: Drawings indicate location and arrangement of piping systems. Install piping as indicated unless deviations are approved on Coordination Drawings.
- B. Install piping at minimum uniform slope of 0.5 percent down toward drain valves.
- C. Install piping free of sags and bends.
- D. Install groups of pipes parallel to each other, spaced to permit valve servicing.
- E. Install fittings for changes in direction and branch connections.
- F. Install unions adjacent to valves and to final connections to other components with **NPS 2** or smaller pipe connection.
- G. Install flanges adjacent to valves and to final connections to other components with **NPS 2-1/2** or larger pipe connection.



- H. Install underground thermoplastic piping according to ASTM D 2774.
- I. Install expansion loops in control-valve boxes for plastic piping.
- J. Lay piping on solid subbase, uniformly sloped without humps or depressions.
- K. Install ductile-iron piping according to AWWA C600.
- L. Install PVC piping in dry weather when temperature is above 40 deg F. Allow joints to cure at least 24 hours at temperatures above 40 deg F before testing.
- M. Install water regulators with shutoff valve and strainer on inlet and pressure gage on outlet. Install shutoff valve on outlet. Install aboveground or in control-valve boxes.
- N. Water Hammer Arresters: Install between connection to building main and circuit valves aboveground or in control-valve boxes.
- O. Install piping in sleeves under parking lots, roadways, and sidewalks.
- P. Install sleeves made of Schedule 40 PVC pipe and socket fittings, and solvent-cemented joints.
- Q. Install transition fittings for plastic-to-metal pipe connections according to the following:
  - 1. Underground Piping:
    - a. NPS 1-1/2 and Smaller: Plastic-to-metal transition fittings.
    - b. NPS 2 and Larger: AWWA transition couplings.
  - 2. Aboveground Piping:
    - a. NPS 2 and Smaller: Plastic-to-metal transition fittings .
    - b. NPS 2 and Larger: Use dielectric flange kits with one plastic flange.

### 3.4 JOINT CONSTRUCTION

- A. Ream ends of pipes and tubes and remove burrs. Bevel plain ends of steel pipe.
- B. Remove scale, slag, dirt, and debris from inside and outside of pipe and fittings before assembly.
- C. Threaded Joints: Thread pipe with tapered pipe threads according to ASME B1.20.1. Cut threads full and clean using sharp dies. Ream threaded pipe ends to remove burrs and restore full ID. Join pipe fittings and valves as follows:
  - 1. Apply appropriate tape or thread compound to external pipe threads unless dry seal threading is specified.
  - 2. Damaged Threads: Do not use pipe or pipe fittings with threads that are corroded or damaged. Do not use pipe sections that have cracked or open welds.



- D. Flanged Joints: Select rubber gasket material, size, type, and thickness for service application. Install gasket concentrically positioned. Use suitable lubricants on bolt threads.
- E. Ductile-Iron Piping Gasketed Joints: Comply with AWWA C600 and AWWA M41.
- F. Copper-Tubing Brazed Joints: Construct joints according to CDA's "Copper Tube Handbook," using copper-phosphorus brazing filler metal.
- G. Copper-Tubing Soldered Joints: Apply ASTM B 813 water-flushable flux to tube end unless otherwise indicated. Construct joints according to ASTM B 828 or CDA's "Copper Tube Handbook," using lead-free solder alloy (0.20 percent maximum lead content) complying with ASTM B 32.
- H. PE Piping Fastener Joints: Join with insert fittings and bands or fasteners according to piping manufacturer's written instructions.
- I. PE Piping Heat-Fusion Joints: Clean and dry joining surfaces by wiping with clean cloth or paper towels. Join according to ASTM D 2657.
  - 1. Plain-End PE Pipe and Fittings: Use butt fusion.
  - 2. Plain-End PE Pipe and Socket Fittings: Use socket fusion.
- J. PVC Piping Solvent-Cemented Joints: Clean and dry joining surfaces. Join pipe and fittings according to the following:
  - 1. Comply with ASTM F 402 for safe-handling practice of cleaners, primers, and solvent cements.
  - 2. PVC Pressure Piping: Join schedule number, ASTM D 1785, PVC pipe and PVC socket fittings according to ASTM D 2672. Join other-than-schedule-number PVC pipe and socket fittings according to ASTM D 2855.
  - 3. PVC Nonpressure Piping: Join according to ASTM D 2855.

### 3.5 VALVE INSTALLATION

- A. Underground Curb Valves: Install in curb-valve casings with tops flush with grade.
- B. Underground Iron Gate Valves, Resilient Seat: Comply with AWWA C600 and AWWA M44. Install in valve casing with top flush with grade.
  - 1. Install valves and PVC pipe with restrained, gasketed joints.
- C. Aboveground Valves: Install as components of connected piping system.
- D. Pressure-Reducing Valves: Install in boxes for automatic control valves or aboveground between shutoff valves.



- E. Throttling Valves: Install in underground piping in boxes for automatic control valves.
- F. Drain Valves: Install in underground piping in boxes for automatic control valves.

### 3.6 SPRINKLER INSTALLATION

- A. Install sprinklers after hydrostatic test is completed.
- B. Install sprinklers at manufacturer's recommended heights.
- C. Locate part-circle sprinklers to maintain a minimum distance of **4 inches** from walls and **2 inches** from other boundaries unless otherwise indicated.

### 3.7 DRIP IRRIGATION SPECIALTY INSTALLATION

- A. Install freestanding emitters on pipe riser to mounting height indicated.
- B. Install manifold emitter systems with tubing to emitters. Plug unused manifold outlets. Install emitters on off-ground supports at height indicated.
- C. Install multiple-outlet emitter systems with tubing to outlets. Plug unused emitter outlets. Install outlets on off-ground supports at height indicated.
- D. Install drip tubes with direct-attached emitters on ground.
- E. Install drip tubes with remote-discharge on ground with outlets on off-ground supports at height indicated.
- F. Install off-ground supports of length required for indicated mounted height of device.
- G. Install application pressure regulators and filter units in piping near device being protected, and in control-valve boxes.
- H. Install air relief valves and vacuum relief valves in piping, and in control-valve boxes.

### 3.8 AUTOMATIC IRRIGATION-CONTROL SYSTEM INSTALLATION

- A. Equipment Mounting: Install interior controllers on wall.
  - 1. Place and secure anchorage devices. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
  - 2. Install anchor bolts to elevations required for proper attachment to supported equipment.
- B. Equipment Mounting: Install exterior freestanding controllers on precast concrete bases.





1. Place and secure anchorage devices. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
  2. Install anchor bolts to elevations required for proper attachment to supported equipment.
- C. Install control cable in same trench as irrigation piping and at least **2 inches** below or beside piping. Provide conductors of size not smaller than recommended by controller manufacturer. Install cable in separate sleeve under paved areas.

### 3.9 CONNECTIONS

- A. Comply with requirements for piping specified in Section 221113 "Facility Water Distribution Piping" for water supply from exterior water service piping, water meters, protective enclosures, and backflow preventers. Drawings indicate general arrangement of piping, fittings, and specialties.
- B. Install piping adjacent to equipment, valves, and devices to allow service and maintenance.
- C. Connect wiring between controllers and automatic control valves.

### 3.10 IDENTIFICATION

- A. Identify system components. Comply with requirements for identification specified in Section 220553 "Identification for Plumbing Piping and Equipment."
- B. Equipment Nameplates and Signs: Install engraved plastic-laminate equipment nameplates and signs on each automatic controller.
  1. Text: In addition to identifying unit, distinguish between multiple units, inform operator of operational requirements, indicate safety and emergency precautions, and warn of hazards and improper operations.
- C. Warning Tapes: Arrange for installation of continuous, underground, detectable warning tapes over underground piping during backfilling of trenches. See Section 312000 "Earth Moving" for warning tapes.

### 3.11 FIELD QUALITY CONTROL

- A. Perform tests and inspections.
  1. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect components, assemblies, and equipment installations, including connections, and to assist in testing.
- B. Tests and Inspections:



1. Leak Test: After installation, charge system and test for leaks. Repair leaks and retest until no leaks exist.
  2. Operational Test: After electrical circuitry has been energized, operate controllers and automatic control valves to confirm proper system operation.
  3. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
- C. Any irrigation product will be considered defective if it does not pass tests and inspections.
- D. Prepare test and inspection reports.

### 3.12 STARTUP SERVICE AND WINTERIZATION

- A. Perform startup service.
1. Complete installation and startup checks according to manufacturer's written instructions.
  2. Verify that controllers are installed and connected according to the Contract Documents.
  3. Verify that electrical wiring installation complies with manufacturer's submittal.
- B. Perform winterization Service
1. Complete (1) system shut-down with training

### 3.13 ADJUSTING

- A. Adjust settings of controllers.
- B. Adjust automatic control valves to provide flow rate at rated operating pressure required for each sprinkler circuit.
- C. Adjust sprinklers and devices, except those intended to be mounted aboveground, so they will be flush with, or not more than 1/4 inch above, finish grade.

### 3.14 CLEANING

- A. Flush dirt and debris from piping before installing sprinklers and other devices.

### 3.15 DEMONSTRATION

- A. Train Owner's maintenance personnel to adjust, operate, and maintain automatic control valves and controllers.



### 3.16 PIPING SCHEDULE

- A. Install components having pressure rating equal to or greater than system operating pressure.
- B. Piping in control-valve boxes and aboveground may be joined with flanges or unions instead of joints indicated.
- C. Underground irrigation main piping, 3 inch to 2-1/2 inch , shall be the following:
  - 1. Schedule 40, PVC Gasket Joint pipe and socket fittings
- D. Circuit piping, 1 inch to 2 inch , shall be one of the following:
  - 1. PE, controlled ID pipe; insert fittings for PE pipe; and fastener joints.
  - 2. PE, controlled OD pipe; PE butt, heat-fusion, or PE socket-type fittings; and heat-fusion joints.
  - 3. Schedule 40, PVC pipe and socket fittings; and solvent-cemented joints.
  - 4. SDR 26, PVC, pressure-rated pipe; Schedule 40, PVC socket fittings; and solvent-cemented joints.
- E. Underground Branches and Offsets at Sprinklers and Devices: Schedule 80, PVC pipe; threaded PVC fittings; and threaded joints.
  - 1. Option: Plastic swing-joint assemblies, with offsets for flexible joints, manufactured for this application.
- F. Risers to Aboveground Sprinklers and Specialties: hard copper tube, wrought-copper fittings, and soldered joints.
- G. Risers to Aboveground Sprinklers and Specialties: Schedule 80, PVC pipe and socket fittings; and solvent-cemented joints.
- H. Drain piping shall be one of the following:
  - 1. SDR 21, 26, or 32.5, PVC, pressure-rated pipe; Schedule 40, PVC socket fittings; and solvent-cemented joints.

### 3.17 VALVE SCHEDULE

- A. Underground, Shutoff-Duty Valves: Use the following:
  - 1. **NPS 2** and Smaller: Curb valve, curb-valve casing, and shutoff rod.
  - 2. **NPS 3** and Larger: Iron gate valve, resilient seated; iron gate valve casing; and operating wrench(es).
- B. Drain Valves:



1. **NPS 1/2 and NPS 3/4:** Plastic ball valve.
2. **NPS 1 to NPS 2:** Plastic ball valve.

END OF SECTION 328400



## SECTION 329113 - SOIL PREPARATION

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

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

#### 1.2 SUMMARY

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

#### 1.3 ALLOWANCES

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

#### 1.4 UNIT PRICES

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

#### 1.5 DEFINITIONS

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



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

#### 1.6 PREINSTALLATION MEETINGS

#### 1.7 ACTION SUBMITTALS

- A. Product Data: For each type of product.
  - 1. Include recommendations for application and use.
  - 2. Include test data substantiating that products comply with requirements.
  - 3. Include sieve analyses for aggregate materials.
  - 4. Material Certificates: For each type of soil amendment and fertilizer topsoil before delivery to the site, according to the following:
    - a. Manufacturer's qualified testing agency's certified analysis of standard products.
    - b. Analysis of fertilizers, by a qualified testing agency, made according to AAPFCO methods for testing and labeling and according to AAPFCO's SU1P #25.
    - c. Analysis of nonstandard materials, by a qualified testing agency, made according to SSSA methods, where applicable.

#### 1.8 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For each testing agency.



- B. Preconstruction Test Reports: For preconstruction soil analyses specified in "Preconstruction Testing" Article.

#### 1.9 QUALITY ASSURANCE

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

#### 1.10 PRECONSTRUCTION TESTING

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

#### 1.11 SOIL-SAMPLING REQUIREMENTS

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



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

#### 1.12 TESTING REQUIREMENTS

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





5. Nitrogen ppm.
6. Phosphorous ppm.
7. Potassium ppm.
8. Manganese ppm.
9. Manganese-availability ppm.
10. Zinc ppm.
11. Zinc availability ppm.
12. Copper ppm.
13. Sodium ppm and sodium absorption ratio.
14. Soluble-salts ppm.
15. Presence and quantities of problem materials including salts and metals cited in the Standard protocol. If such problem materials are present, provide additional recommendations for corrective action.
16. Other deleterious materials, including their characteristics and content of each.

E. Organic-Matter Content: Analysis using loss-by-ignition method according to SSSA's "Methods of Soil Analysis - Part 3- Chemical Methods."

F. Recommendations: Based on the test results, state recommendations for soil treatments and soil amendments to be incorporated to produce satisfactory planting soil suitable for healthy, viable plants indicated. Include, at a minimum, recommendations for nitrogen, phosphorous, and potassium fertilization, and for micronutrients.

1. Fertilizers and Soil Amendment Rates: State recommendations in weight per 1000 sq. ft. for 6-inch depth of soil .
2. Soil Reaction: State the recommended liming rates for raising pH or sulfur for lowering pH according to the buffered acidity or buffered alkalinity in weight per 1000 sq. ft. for 6-inch depth of soil .

### 1.13 DELIVERY, STORAGE, AND HANDLING

A. Packaged Materials: Deliver packaged materials in original, unopened containers showing weight, certified analysis, name and address of manufacturer, and compliance with state and Federal laws if applicable.

B. Bulk Materials:

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



## PART 2 - PRODUCTS

### 2.1 MATERIALS

### 2.2 ORGANIC SOIL AMENDMENTS

- A. Compost: Well-composted, stable, and weed-free organic matter produced by composting feedstock, and bearing USCC's "Seal of Testing Assurance," and as follows:
1. Reaction: pH of 5.5 to 8 .
  2. Soluble-Salt Concentration: Less than 4 dS/m.
  3. Moisture Content: 35 to 55 percent by weight.
  4. Organic-Matter Content: 50 to 60 percent of dry weight.
  5. Particle Size: Minimum of 98 percent passing through a **1/2-inch** sieve.

## PART 3 - EXECUTION

### 3.1 GENERAL

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

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

- A. General: Apply and mix unamended soil with amendments on-site to produce required planting soil. Do not apply materials or till if existing soil or subgrade is frozen, muddy, or excessively wet.
- B. Subgrade Preparation: Till subgrade to a minimum depth of **4 inches** . Remove stones larger than **1-1/2 inches** in any dimension and sticks, roots, rubbish, and other extraneous matter and legally dispose of them off Owner's property.
1. Apply, add soil amendments, and mix approximately half the thickness of unamended soil over prepared, loosened subgrade according to "Mixing" Paragraph below. Mix thoroughly into top **2 inches 4 inches** of subgrade. Spread remainder of planting soil.



- C. Mixing: Spread unamended soil to total depth indicated on Drawings , but not less than required to meet finish grades after mixing with amendments and natural settlement. Do not spread if soil or subgrade is frozen, muddy, or excessively wet.
  - 1. Amendments: Apply soil amendments and fertilizer, if required, evenly on surface, and thoroughly blend them with unamended soil to produce planting soil.
  - 2. Lifts: Apply and mix unamended soil and amendments in lifts not exceeding **8 inches** in loose depth for material compacted by compaction equipment, and not more than **6 inches** in loose depth for material compacted by hand-operated tampers.
- D. Compaction: Compact each blended lift of planting soil to 75 to 82 percent of maximum Standard Proctor density according to ASTM D 698 and tested in-place except where a different compaction value is indicated on Drawings.
- E. Finish Grading: Grade planting soil to a smooth, uniform surface plane with loose, uniformly fine texture. Roll and rake, remove ridges, and fill depressions to meet finish grades.

### 3.3 FIELD QUALITY CONTROL

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

### 3.4 PROTECTION

- A. Protection Zone: Identify protection zones according to Section 015639 "Temporary Tree and Plant Protection."
- B. Protect areas of in-place soil from additional compaction, disturbance, and contamination. Prohibit the following practices within these areas except as required to perform planting operations:
  - 1. Storage of construction materials, debris, or excavated material.
  - 2. Parking vehicles or equipment.
  - 3. Vehicle traffic.
  - 4. Foot traffic.
  - 5. Erection of sheds or structures.
  - 6. Impoundment of water.
  - 7. Excavation or other digging unless otherwise indicated.



- C. If planting soil or subgrade is overcompacted, disturbed, or contaminated by foreign or deleterious materials or liquids, remove the planting soil and contamination; restore the subgrade as directed by Architect and replace contaminated planting soil with new planting soil.

### 3.5 CLEANING

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

END OF SECTION 329113



## SECTION 329119 - LANDSCAPE GRADING

### PART 1 - GENERAL

#### 1.1 SUMMARY

A. Section Includes:

1. Final grade topsoil for finish landscaping.

B. Related Sections:

1. Section 312200 - Earth Moving.
2. Section 329200 - Turf and Grasses
3. Section 334200 - Stormwater Conveyance

#### 1.2 UNIT PRICE - MEASUREMENT AND PAYMENT

A. Topsoil:

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

#### 1.3 SUBMITTALS

A. Section 013300 - Submittal Procedures: Submittal procedures

B. Samples: Submit, in air-tight containers, 1 cup sample of loam to testing laboratory.

C. Materials Source: Submit name of imported materials source.

#### 1.4 QUALITY ASSURANCE

A. Furnish each topsoil material from single source throughout the Work.

B. Perform Work in accordance with RIDOT Standard Specifications for Road & Bridge Construction, latest edition .



## PART 2 - PRODUCTS

### 2.1 MATERIAL

#### A. Topsoil:

1. Seeded areas outside Infiltration basin: High quality loam, blended with compost and screened to be free of rocks and other debris with a 3/4 inch sieve
2. Slopes and bottom of Infiltration basin: High quality sandy loam, screened to be free of rocks and other debris with a 3/4 inch sieve.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Section 010000 - General Requirements: Verification of existing conditions before starting work.
- B. Verify substrate base has been contoured and compacted.

### 3.2 PREPARATION

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

### 3.3 SUBSTRATE PREPARATION

- A. Eliminate uneven areas and low spots.
- B. Remove debris, loose roots, branches, stones, in excess of **1/2 inch** in size. Remove contaminated subsoil.
- C. Scarify surface to depth of **3 inches** where topsoil is scheduled. Scarify in areas where equipment used for hauling and spreading topsoil has compacted subsoil.

### 3.4 PLACING TOPSOIL

- A. Place topsoil in areas where seeding, to thickness as scheduled. Place topsoil during dry weather.
- B. Fine grade topsoil to eliminate rough or low areas. Maintain profiles and contour of subgrade.



- C. Remove roots, weeds, rocks, and foreign material while spreading.
- D. Manually spread topsoil close to plant material, and path to prevent damage.
- E. Roll placed topsoil.
- F. Remove surplus subsoil and topsoil from site.
- G. Leave stockpile area and site clean and raked, ready to receive landscaping.

### 3.5 TOLERANCES

- A. Section 01000 - General Requirements: Tolerances.
- B. Top of Topsoil: Plus or minus **1/2 inch**.

### 3.6 PROTECTION OF INSTALLED WORK

- A. Section 010000 - General Requirements: Requirements for protecting finished Work.
- B. Prohibit construction traffic over topsoil.

### 3.7 SCHEDULES

- A. Compacted topsoil thicknesses:
  - 1. Seeded Grass: **6 inches**.
  - 2. When meeting existing grade, gradually reduce depth of topsoil so that an even gradient is achieved

END OF SECTION 329119



## SECTION 329200 - TURF AND GRASSES

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

#### 1.2 SUMMARY

- A. Section Includes:

1. Seeding.
2. Hydroseeding.
3. Sodding.
4. Erosion-control material(s).

- B. Related Requirements:

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

#### 1.3 DEFINITIONS

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





1.4 PREINSTALLATION MEETINGS

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

1.5 INFORMATIONAL SUBMITTALS

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

1.6 CLOSEOUT SUBMITTALS

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

1.7 QUALITY ASSURANCE

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Seed and Other Packaged Materials: Deliver packaged materials in original, unopened containers showing weight, certified analysis, name and address of manufacturer, and indication of compliance with state and Federal laws, as applicable.
- B. Sod: Harvest, deliver, store, and handle sod according to requirements in "Specifications for Turfgrass Sod Materials" and "Specifications for Turfgrass Sod Transplanting and Installation" sections in TPI's "Guideline Specifications to Turfgrass Sodding." Deliver sod within 24 hours of harvesting and in time for planting promptly. Protect sod from breakage and drying.
- C. Bulk Materials:
  - 1. Do not dump or store bulk materials near structures, utilities, walkways and pavements, or on existing turf areas or plants.
  - 2. Provide erosion-control measures to prevent erosion or displacement of bulk materials; discharge of soil-bearing water runoff; and airborne dust reaching adjacent properties, water conveyance systems, or walkways.
  - 3. Accompany each delivery of bulk materials with appropriate certificates.



## 1.9 FIELD CONDITIONS

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

## PART 2 - PRODUCTS

### 2.1 SEED MIXES

- A. Seed Species:
- B. Quality: Seed of grass species as listed below for solar exposure, with not less than 85 percent germination, not less than 95 percent pure seed, and not more than 0.5 percent weed seed:
- C. Description: Sport Field Mix for Irrigated Lawn
  - 1. Improved Kentucky Blue Grass: 30% percent.
  - 2. Chewing Fescue: 35% percent.
  - 3. 3way Perennial Rye: 30% percent
  - 4. Micro Clover: 5% percent or approved equal
- D. Description: Non-Sports Field Mix for Non-Irrigated Lawn
  - 1. Improved Kentucky Blue Grass: 10% percent
  - 2. Turf Type Tall Fescue: 25% percent
  - 3. Chewing Fescue: 15% percent
  - 4. 3-way Perennial Rue: 30% percent
  - 5. Creeping Red Fescue: 15% percent
  - 6. Micro Clover: 5% percent
- E. Products may be acquired from the following source (or approved equal) :
- F. Allen's Seed Store : 693 S County Trail Exeter, RI 02822 Phone: 401-294-2722



## 2.2 FERTILIZERS

- A. Slow-Release Fertilizer: Granular or pelleted fertilizer consisting of 50 percent water-insoluble nitrogen, phosphorus, and potassium in the following composition:
  - 1. Composition: fertilizer to have a ratio of 18 Nitrogen (N) - 0 Phosphorous (P) - 12 Potassium (K)

## 2.3 EROSION-CONTROL MATERIALS

- A. Bedding Straw: clean, dry and free of weed seeds
- B. Non-asphaltic tackifier: guar gum or approved equal

## PART 3 - EXECUTION

### 3.1 EXAMINATION

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

### 3.2 PREPARATION

- A. Protect structures; utilities; sidewalks; pavements; and other facilities, trees, shrubs, and plantings from damage caused by planting operations.
  - 1. Protect adjacent and adjoining areas from hydroseeding and hydromulching overspray.
  - 2. Protect grade stakes set by others until directed to remove them.



- B. Install erosion-control measures to prevent erosion or displacement of soils and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways.

### 3.3 TURF AREA PREPARATION

- A. General: Prepare planting area for soil placement and mix planting soil according to Section 32 91 19 - Landscape Grading
- B. Placing Planting Soil: Place and mix planting soil in place over exposed subgrade .
  - 1. Reduce elevation of planting soil to allow for soil thickness of sod.
- C. Moisten prepared area before planting if soil is dry. Water thoroughly and allow surface to dry before planting. Do not create muddy soil.
- D. Before planting, obtain Architect's acceptance of finish grading; restore planting areas if eroded or otherwise disturbed after finish grading.

### 3.4 PREPARATION FOR EROSION-CONTROL MATERIALS

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

### 3.5 HYDROSEEDING

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



seed component is deposited at not less than the specified seed-sowing rate (5-7 lbs/1000 sq ft).

### 3.6 SODDING

- A. Lay sod within 24 hours of harvesting. Do not lay sod if dormant or if ground is frozen or muddy.
- B. Lay sod to form a solid mass with tightly fitted joints. Butt ends and sides of sod; do not stretch or overlap. Stagger sod strips or pads to offset joints in adjacent courses. Avoid damage to soil or sod during installation. Tamp and roll lightly to ensure contact with soil, eliminate air pockets, and form a smooth surface. Work sifted soil or fine sand into minor cracks between pieces of sod; remove excess to avoid smothering sod and adjacent grass.
  1. Lay sod across slopes exceeding 1:3.
- C. Saturate sod with fine water spray within two hours of planting. During first week after planting, water daily or more frequently as necessary to maintain moist soil to a minimum depth of **1-1/2 inches** below sod.

### 3.7 TURF MAINTENANCE

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



- C. Mow turf as soon as top growth is tall enough to cut. Repeat mowing to maintain specified height without cutting more than one-third of grass height. Remove no more than one-third of grass-leaf growth in initial or subsequent mowings. Do not delay mowing until grass blades bend over and become matted. Do not mow when grass is wet. Schedule initial and subsequent mowings to maintain the following grass height:

1. Mow Lawn Areas to a height of **2 to 3 inches** .

### 3.8 SATISFACTORY TURF

- A. Turf installations shall meet the following criteria as determined by Architect:

1. Satisfactory Seeded Turf: At end of maintenance period, a healthy, uniform, close stand of grass has been established, free of weeds and surface irregularities, with coverage exceeding 90 percent over any **10 sq. ft.** and bare spots not exceeding **5 by 5 inches** .
2. Satisfactory Sodded Turf: At end of maintenance period, a healthy, well-rooted, even-colored, viable turf has been established, free of weeds, open joints, bare areas, and surface irregularities.

- B. Use specified materials to reestablish turf that does not comply with requirements, and continue maintenance until turf is satisfactory.

### 3.9 CLEANUP AND PROTECTION

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

END OF SECTION 329200



## SECTION 329223 - SODDING

### PART 1 - GENERAL

#### 1.1 SUMMARY

##### A. Section Includes:

1. Preparation of subsoil.
2. Placement of topsoil.
3. Fertilization.
4. Sod installation.
5. Maintenance.

##### B. Related Requirements:

1. Section 312316.13 - Trenching: Rough grading over cut.
2. Section 312323 - Fill: Rough grading of Site.
3. Section 320513 - Soils for Exterior Improvements: Topsoil material.
4. Section 328400 - Planting Irrigation: Piped underground irrigation systems.
5. Section 329119 - Landscape Grading: Preparation of subsoil and placement of topsoil in preparation for Work of this Section.
6. Section 329219 - Seeding: Seeding and soil supplements.
7. Section 329300 - Plants: Interior and exterior landscaping.

#### 1.2 DEFINITIONS

A. Weeds: Dandelion, Jimsonweed, Quackgrass, Horsetail, Morning Glory, Rush Grass, Mustard, Lambsquarter, Chickweed, Cress, Crabgrass, Canadian Thistle, Nutgrass, Poison Oak, Blackberry, Tansy Ragwort, Bermuda Grass, Johnson Grass, Poison Ivy, Nut Sedge, Nimble Will, Bindweed, Bent Grass, Wild Garlic, Perennial Sorrel, and Brome Grass.

B. Weeds: Vegetative species other than specified species to be established in given area.

#### 1.3 UNIT PRICE - MEASUREMENT AND PAYMENT

A. Section 012000 - Price and Payment Procedures: Contract Sum/Price modification procedures.

##### B. Sodded Areas:

1. Basis of Measurement: By square **[yard]** < \_\_\_\_\_ >.
2. Basis of Payment:



- a. Includes [preparation of subsoil] [, preparation of topsoil] [, and] [placement of topsoil].
- b. Includes sodding and watering.
- c. Includes maintenance based on specified [time limit] [mowings].

#### 1.4 REFERENCE STANDARDS

##### A. ASTM International:

1. ASTM C602 - Standard Specification for Agricultural Liming Materials.

##### B. Turfgrass Producers International:

1. TPI - Guideline Specifications To Turfgrass Sodding.

#### 1.5 COORDINATION

##### A. Section 013000 - Administrative Requirements: Requirements for coordination.

- ##### B. Coordinate Work of this Section with installation of underground sprinkler system piping and watering heads.

#### 1.6 SUBMITTALS

##### A. Section 013300 - Submittal Procedures: Requirements for submittals.

##### B. Product Data:

1. Submit sod producer's information for sod grass species.
2. Submit manufacturer information for fertilizer, mulch, < \_\_\_\_\_ >, and other accessories.

##### C. Samples:

1. Submit [two] < \_\_\_\_\_ > [10] < \_\_\_\_\_ >-oz. samples of topsoil proposed.
2. Forward samples to approved testing laboratory in sealed containers to prevent contamination.

##### D. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

##### E. Sod Producer's Certificate: Certify that sod grass meets or exceeds specified requirements.

##### F. Test and Evaluation Reports: Indicate topsoil nutrient and pH levels, with recommended soil supplements and application rates.





G. Source Quality-Control Submittals: Indicate results of [**shop**] [**factory**] tests and inspections.

H. Qualifications Statements:

1. Submit qualifications for sod producer, manufacturer, and installer.
2. Submit sod producer's approval of installer.

#### 1.7 SUSTAINABLE DESIGN SUBMITTALS

A. Section 018113 - Sustainable Design Requirements: Requirements for sustainable design submittals.

B. Manufacturer's Certificate:

1. Certify that products meet or exceed specified sustainable design requirements.
2. Materials Resources Certificates:
  - a. Certify source for regional materials and distance from Project Site.

C. Product Cost Data:

1. Submit cost of products to verify compliance with Project sustainable design requirements.
2. Exclude cost of labor and equipment to install products.
3. Provide cost data for following products:
  - a. Regional products.
  - b. <\_\_\_\_\_>.

#### 1.8 CLOSEOUT SUBMITTALS

A. Section 017000 - Execution and Closeout Requirements: Requirements for submittals.

B. Operation and Maintenance Data:

1. Submit maintenance instructions, cutting method, and maximum grass height.
2. Submit fertilizer types, application frequency, and recommended coverage.

#### 1.9 QUALITY ASSURANCE

A. Sod: Ensure root development capable of supporting its own weight without tearing when suspended vertically by holding upper two corners.

B. Perform Work according to <\_\_\_\_\_> standards.

C. Maintain <\_\_\_\_\_> [**copy**] [**copies**] of each standard affecting Work of this Section on Site.



#### 1.10 QUALIFICATIONS

- A. Sod Producer: Company specializing in products as specified in this Section with minimum [three] <\_\_\_\_\_> years' [documented] experience.
- B. Manufacturer: Company specializing in manufacturing products specified in this Section with minimum [three] <\_\_\_\_\_> years' [documented] experience.
- C. Installer: Company specializing in performing Work of this Section with minimum [three] <\_\_\_\_\_> years' [documented] experience [and approved by sod producer].

#### 1.11 DELIVERY, STORAGE, AND HANDLING

- A. Section 016000 - Product Requirements: Requirements for transporting, handling, storing, and protecting products.
- B. Delivery:
  - 1. Deliver sod [on pallets] [in rolls].
  - 2. Do not deliver more sod than can be laid within [24] <\_\_\_\_\_> hours.
- C. Inspection: Accept materials on Site in manufacturer's original packaging and inspect for damage.
- D. Store materials according to manufacturer instructions.
- E. Protection:
  - 1. Protect materials from moisture and dust by storing in clean, dry location remote from construction operations areas.
  - 2. Protect exposed roots from dehydration.
  - 3. Provide additional protection according to manufacturer instructions.

#### 1.12 AMBIENT CONDITIONS

- A. Section 015000 - Temporary Facilities and Controls: Requirements for ambient condition control facilities for product storage and installation.
- B. Minimum Conditions: Do not place sod when temperature is lower than [32] <\_\_\_\_\_> deg.  
F.



## PART 2 - PRODUCTS

### 2.1 SOD

#### A. Sod Growers:

1. < \_\_\_\_\_ >.
2. < \_\_\_\_\_ >.
3. Substitutions: [As specified in Section 016000 - Product Requirements] [Not permitted].
4. Furnish materials according to < \_\_\_\_\_ > standards.

#### B. Description:

1. Cultivated grass sod with strong fibrous root system, free of stones and burned or bare spots.
2. Grade: [TPI recognized] [TPI certified] [Nursery grown] [Field grown] < \_\_\_\_\_ >.
3. Type: As indicated [in plant schedule on Drawings] [below] [in schedule following END OF SECTION].
4. Weed Density: No more than [five] [10] < \_\_\_\_\_ > weeds per [1,000] < \_\_\_\_\_ > sq. ft.
5. Percentage Grass Type:
  - a. [St. Augustine] < \_\_\_\_\_ >: < \_\_\_\_\_ > percent.
  - b. [Floratam] < \_\_\_\_\_ >: < \_\_\_\_\_ > percent.
  - c. [Kentucky Blue] < \_\_\_\_\_ >: < \_\_\_\_\_ > percent.
  - d. Clover: < \_\_\_\_\_ > to < \_\_\_\_\_ > percent.

#### C. Harvesting of Sod:

1. Machine-cut sod [and load on pallets] according to [TPI] < \_\_\_\_\_ >.
2. Cut sod in area not exceeding [1] < \_\_\_\_\_ > sq. yd., with minimum [1/2] < \_\_\_\_\_ >-inch and maximum [1] < \_\_\_\_\_ >-inch topsoil base.

### 2.2 SUSTAINABILITY CHARACTERISTICS

#### A. Section 018113 - Sustainable Design Requirements: Requirements for sustainable design compliance.

#### B. Material and Resource Characteristics:

1. Regional Materials: Furnish materials extracted, processed, and manufactured within 500 miles of Project Site [including:] [.]
  - a. < \_\_\_\_\_ >.



## 2.3 MATERIALS

### A. Topsoil:

1. As specified in Section 320513 - Soils for Exterior Improvements.
2. Type: <\_\_\_\_\_>.

### B. Topsoil:

1. Description: Fertile, agricultural soil typical for locality, capable of sustaining vigorous plant growth, and taken from drained Site.
2. Free of subsoil, clay, impurities, plants, weeds, and roots.
3. pH:
  - a. Minimum: [5.4] <\_\_\_\_\_>.
  - b. Maximum: [7.0] <\_\_\_\_\_>.

### C. Topsoil: Excavated from Site and free of weeds.

## 2.4 ACCESSORIES

### A. Fertilizer:

1. Grade: Commercial.
2. Description: As recommended for grass, with 50 percent of elements derived from organic sources.
3. Proportions: As necessary to eliminate deficiencies of topsoil.
4. Proportions:
  - a. Nitrogen: <\_\_\_\_\_> percent.
  - b. Phosphoric Acid: <\_\_\_\_\_> percent.
  - c. Soluble Potash: <\_\_\_\_\_> percent.

### B. Lime:

1. Description: Agricultural limestone containing a minimum of 80 percent calcium carbonate equivalent.
2. Comply with ASTM C602.
3. Class: [T] [O] <\_\_\_\_\_>.

### C. Water: Clean, fresh, and free of substances or matter capable of inhibiting vigorous growth of grass.

### D. Wood Pegs: Softwood, sufficient size and length to anchor sod on slope.

### E. Wire Mesh:

1. Description: Interwoven hexagonal [metal wire] [plastic] mesh.



2. Size: [2] <\_\_\_\_\_> inches.

F. Edging: [Galvanized steel] [Plastic] [Wood of <\_\_\_\_\_> species] <\_\_\_\_\_>.

G. Herbicide: <\_\_\_\_\_>.

## 2.5 SOURCE QUALITY CONTROL

A. Section 014000 - Quality Requirements: Requirements for testing, inspection, and analysis.

B. Analysis: Ascertain pH and percentage of nitrogen, phosphorus, potash, <\_\_\_\_\_>, soluble salt content, and organic matter.

C. Provide recommendation for fertilizer and lime application rates for specified sod grass species based on testing.

D. Prior Tests:

1. Testing is not required if recent tests are available for imported topsoil.
2. Submit such test results to testing laboratory.
3. Indicate, based on test results, information necessary to determine suitability.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

A. Section 017000 - Execution and Closeout Requirements: Requirements for installation examination.

B. Verify that prepared soil base is ready to receive Work of this Section.

### 3.2 INSTALLATION

A. Subsoil Preparation:

1. Eliminate uneven areas and low spots.
2. Maintain indicated lines, levels, profiles, and contours.
3. Slopes:
  - a. Make gradual changes in grade.
  - b. Blend slopes into level areas.
4. Foreign Materials:
  - a. Remove foreign materials and undesirable plants and their roots.
  - b. Do not bury foreign materials beneath areas to be sodded.



5. Remove contaminated subsoil.
6. Scarify subsoil to depth of [4] < \_\_\_\_\_ > inches where topsoil is to be placed.
7. Repeat cultivation in areas where equipment used for hauling and spreading topsoil has compacted subsoil.

B. Placing of Topsoil:

1. Spread topsoil to minimum depth of [3] < \_\_\_\_\_ > inches over area to be sodded.
2. Place topsoil during dry weather and on dry unfrozen subgrade.
3. Remove vegetable matter and foreign nonorganic material from topsoil while spreading.
4. Grade topsoil to eliminate rough, low, or soft areas, and to ensure positive drainage.
5. Install edging at periphery of sodded areas in straight lines to consistent depth.

C. Fertilizing:

1. Apply lime at application rate [recommended by soil analysis] [of < \_\_\_\_\_ >].
2. Work lime into top [6] < \_\_\_\_\_ > inches of soil.
3. Apply fertilizer at application rate [recommended by soil analysis] [of < \_\_\_\_\_ >].
4. Apply fertilizer after smooth raking of topsoil and prior to installation of sod.
5. Apply fertilizer no more than [48] < \_\_\_\_\_ > hours before laying sod.
6. Mix fertilizer thoroughly into upper [4] < \_\_\_\_\_ > inches of topsoil.
7. Lightly water soil to aid dissipation of fertilizer.

D. Laying of Sod:

1. Moisten prepared surface immediately prior to laying sod.
2. Lay sod [immediately after delivery to Site] [within 24 hours after harvesting] [within < \_\_\_\_\_ > hours after harvesting] to prevent deterioration.
3. Joints:
  - a. Lay sod tightly with no open joints visible and no overlapping.
  - b. Stagger end joints minimum 12 inches.
  - c. Do not stretch or overlap sod pieces.
4. Lay smooth [and align with adjoining grass areas].
5. Place top elevation of sod [1/2] < \_\_\_\_\_ > inch below adjoining [edging] [paving] [curbs] < \_\_\_\_\_ >.
6. Slopes:
  - a. On slopes [6] < \_\_\_\_\_ > in./ft. and steeper, lay sod perpendicular to slope and secure every row with wooden pegs at maximum [2] < \_\_\_\_\_ > feet o.c.
  - b. If using "big roll," lay sod parallel to slope.
  - c. Drive pegs flush with soil portion of sod.
  - d. Prior to placing sod on slopes exceeding [8] < \_\_\_\_\_ > in./ft. [or where indicated], place wire mesh over topsoil and securely anchor wire mesh in place with wood pegs sunk firmly into ground.
7. Watering:
  - a. Water sodded areas immediately after installation.
  - b. Saturate sod to [4] < \_\_\_\_\_ > inches of soil.



8. Rolling:
  - a. After sod and soil have dried, roll sodded areas to bond sod to soil and to remove minor depressions and irregularities.
  - b. **[Roll sodded areas with roller not exceeding <\_\_\_\_\_> lb. .]**
  - c. Roll before first watering.

### 3.3 MAINTENANCE

- A. Section 017000 - Execution and Closeout Requirements: Requirements for maintenance service.
- B. Provide service and maintenance of sodded areas for **[three]** <\_\_\_\_\_> months from date of Substantial Completion.
- C. Maintain sodded areas immediately after placement **[until grass is well established and exhibits vigorous growing condition]** **[for two cuttings]** **[for <\_\_\_\_\_> cuttings]**.
- D. Mowing:
  1. Mow grass at regular intervals to maintain at maximum height of **[2-1/2]** <\_\_\_\_\_> inches.
  2. Do not cut more than 1/3 of grass blade at each mowing.
  3. Neatly trim edges and hand-clip where necessary.
  4. Immediately remove clippings after mowing and trimming.
- E. Water to prevent grass and soil from drying out.
- F. **[Roll surface to remove irregularities.]**
- G. Weed Control:
  1. Control growth of weeds by applying herbicides.
  2. Remedy damage resulting from improper use of herbicides.
- H. Immediately replace sod on areas showing deterioration or bare spots.
- I. Protect sodded areas with warning signs during maintenance period.

### 3.4 ATTACHMENTS

- A. Front Sodded Area:
  1. Sod: As specified.
  2. Topsoil Thickness: **3 inches.**
- B. Rear Sodded Area:



1. Sod: Grass mixture as specified except substitute clover for Kentucky blue grass.
2. Topsoil Thickness: **2 inches**.

END OF SECTION 329223





## SECTION 329300 - PLANTS

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

#### 1.2 SUMMARY

##### A. Section Includes:

1. Plants.
2. Tree stabilization.
3. Landscape edgings.

##### B. Related Requirements:

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

#### 1.3 DEFINITIONS

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



- E. Finish Grade: Elevation of finished surface of planting soil.
- F. Pesticide: A substance or mixture intended for preventing, destroying, repelling, or mitigating a pest. Pesticides include insecticides, miticides, herbicides, fungicides, rodenticides, and molluscicides. They also include substances or mixtures intended for use as a plant regulator, defoliant, or desiccant. Some sources classify herbicides separately from pesticides.
- G. Pests: Living organisms that occur where they are not desired or that cause damage to plants, animals, or people. Pests include insects, mites, grubs, mollusks (snails and slugs), rodents (gophers, moles, and mice), unwanted plants (weeds), fungi, bacteria, and viruses.
- H. Planting Area: Areas to be planted.
- I. Planting Soil: Existing, on-site soil; imported soil; or manufactured soil that has been modified with soil amendments and perhaps fertilizers to produce a soil mixture best for plant growth. See Section 329113 "Soil Preparation" for drawing designations for planting soils.
- J. Plant; Plants; Plant Material: These terms refer to vegetation in general, including trees, shrubs, vines, ground covers, ornamental grasses, bulbs, corms, tubers, or herbaceous vegetation.
- K. Root Flare: Also called "trunk flare." The area at the base of the plant's stem or trunk where the stem or trunk broadens to form roots; the area of transition between the root system and the stem or trunk.
- L. Stem Girdling Roots: Roots that encircle the stems (trunks) of trees below the soil surface.
- M. Subgrade: The surface or elevation of subsoil remaining after excavation is complete, or the top surface of a fill or backfill before planting soil is placed.

#### 1.4 COORDINATION

- A. Coordination with Turf Areas (Lawns): Plant trees, shrubs, and other plants after finish grades are established and before planting turf areas unless otherwise indicated.
  - 1. When planting trees, shrubs, and other plants after planting turf areas, protect turf areas, and promptly repair damage caused by planting operations.

#### 1.5 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site 65 Dexter St., Providence, RI 02909 RI 02909 .



## 1.6 ACTION SUBMITTALS

- A. Product Data: For each type of product.
  - 1. Plant Materials: Include quantities, sizes, quality, and sources for plant materials.
  - 2. Plant Photographs:
    - a. Include color photographs in digital format of each required species and size of plant material as it will be furnished to Project.
    - b. Take photographs from an angle depicting true size and condition of the typical plant to be furnished. Include a scale rod or other measuring device in each photograph.
    - c. For species where more than 20 plants are required, include a minimum of three photographs showing the average plant, the best quality plant, and the worst quality plant to be furnished.
    - d. Identify each photograph with the full scientific name of the plant, plant size, and name of the growing nursery.

## 1.7 INFORMATIONAL SUBMITTALS

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

## 1.8 CLOSEOUT SUBMITTALS

## 1.9 QUALITY ASSURANCE

- A. Installer Qualifications: A qualified landscape installer whose work has resulted in successful establishment of plants.
  - 1. Professional Membership: Installer shall be a member in good standing of either the Professional Landcare Network or the American Nursery and Landscape Association.
  - 2. Experience: Five years' experience in landscape installation in addition to requirements in Section 014000 "Quality Requirements."
  - 3. Installer's Field Supervision: Require Installer to maintain an experienced full-time supervisor on Project site when work is in progress.



4. Personnel Certifications: Installer's field supervisor or personnel assigned to the Work shall have certification in one or all of the following categories from the Professional Landcare Network:
    - a. Landscape Industry Certified Technician - Exterior.
    - b. Landscape Industry Certified Interior.
    - c. Landscape Industry Certified Horticultural Technician.
  5. Pesticide Applicator: State licensed, commercial.
- B. Provide quality, size, genus, species, and variety of plants indicated, complying with applicable requirements in ANSI Z60.1.
1. Selection of plants purchased under allowances is made by Architect, who tags plants at their place of growth before they are prepared for transplanting.
- C. Measurements: Measure according to ANSI Z60.1. Do not prune to obtain required sizes.
1. Trees and Shrubs: Measure with branches and trunks or canes in their normal position. Take height measurements from or near the top of the root flare for field-grown stock and container-grown stock. Measure main body of tree or shrub for height and spread; do not measure branches or roots tip to tip. Take caliper measurements **6 inches** above the root flare for trees up to **4-inch** caliper size, and **12 inches** above the root flare for larger sizes.
  2. Other Plants: Measure with stems, petioles, and foliage in their normal position.
- D. Plant Material Observation: Architect may observe plant material either at place of growth or at site before planting for compliance with requirements for genus, species, variety, cultivar, size, and quality. Architect may also observe trees and shrubs further for size and condition of balls and root systems, pests, disease symptoms, injuries, and latent defects and may reject unsatisfactory or defective material at any time during progress of work. Remove rejected trees or shrubs immediately from Project site.
1. Notify Architect of sources of planting materials seven days in advance of delivery to site.
- 1.10 DELIVERY, STORAGE, AND HANDLING
- A. Packaged Materials: Deliver packaged materials in original, unopened containers showing weight, certified analysis, name and address of manufacturer, and indication of compliance with state and Federal laws if applicable.
- B. Bulk Materials:
1. Do not dump or store bulk materials near structures, utilities, walkways and pavements, or on existing turf areas or plants.
  2. Provide erosion-control measures to prevent erosion or displacement of bulk materials; discharge of soil-bearing water runoff; and airborne dust reaching adjacent properties, water conveyance systems, or walkways.



3. Accompany each delivery of bulk materials with appropriate certificates.
- C. Deliver bare-root stock plants within 24 hours of digging. Immediately after digging up bare-root stock, pack root system in wet straw, hay, or other suitable material to keep root system moist until planting. Transport in covered, temperature-controlled vehicles, and keep plants cool and protected from sun and wind at all times.
- D. Do not prune trees and shrubs before delivery. Protect bark, branches, and root systems from sun scald, drying, wind burn, sweating, whipping, and other handling and tying damage. Do not bend or bind-tie trees or shrubs in such a manner as to destroy their natural shape. Provide protective covering of plants during shipping and delivery. Do not drop plants during delivery and handling.
- E. Handle planting stock by root ball.
- F. Store bulbs, corms, and tubers in a dry place at **60 to 65 deg F** until planting.
- G. Apply antidesiccant to trees and shrubs using power spray to provide an adequate film over trunks (before wrapping), branches, stems, twigs, and foliage to protect during digging, handling, and transportation.
  1. If deciduous trees or shrubs are moved in full leaf, spray with antidesiccant at nursery before moving and again two weeks after planting.
- H. Wrap trees and shrubs with burlap fabric over trunks, branches, stems, twigs, and foliage to protect from wind and other damage during digging, handling, and transportation.
- I. Deliver plants after preparations for planting have been completed, and install immediately. If planting is delayed more than six hours after delivery, set plants and trees in their appropriate aspect (sun, filtered sun, or shade), protect from weather and mechanical damage, and keep roots moist.
  1. Heel-in bare-root stock. Soak roots that are in less than moist condition in water for two hours. Reject plants with dry roots.
  2. Set balled stock on ground and cover ball with soil, peat moss, sawdust, or other acceptable material.
  3. Do not remove container-grown stock from containers before time of planting.
  4. Water root systems of plants stored on-site deeply and thoroughly with a fine-mist spray. Water as often as necessary to maintain root systems in a moist, but not overly wet condition.

#### 1.11 FIELD CONDITIONS

- A. Field Measurements: Verify actual grade elevations, service and utility locations, irrigation system components, and dimensions of plantings and construction contiguous with new plantings by field measurements before proceeding with planting work.



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

## 1.12 WARRANTY

- A. Special Warranty: Installer agrees to repair or replace plantings and accessories that fail in materials, workmanship, or growth within specified warranty period.
  - 1. Failures include, but are not limited to, the following:
    - a. Death and unsatisfactory growth, except for defects resulting from abuse, lack of adequate maintenance, or neglect by Owner.
    - b. Structural failures including plantings falling or blowing over.
    - c. Faulty performance of tree stabilization edgings and tree grates .
    - d. Deterioration of metals, metal finishes, and other materials beyond normal weathering.
  - 2. Warranty Periods: From date of planting completion .
    - a. Trees, Shrubs, Vines, and Ornamental Grasses: 12 months.
    - b. Ground Covers, Biennials, Perennials, and Other Plants: 12 months.
    - c. Annuals: Three months.
  - 3. Include the following remedial actions as a minimum:
    - a. Immediately remove dead plants and replace unless required to plant in the succeeding planting season.
    - b. Replace plants that are more than 25 percent dead or in an unhealthy condition at end of warranty period.
    - c. A limit of one replacement of each plant is required except for losses or replacements due to failure to comply with requirements.
    - d. Provide extended warranty for period equal to original warranty period, for replaced plant material.

## PART 2 - PRODUCTS

### 2.1 PLANT MATERIAL

- A. General: Furnish nursery-grown plants true to genus, species, variety, cultivar, stem form, shearing, and other features indicated in Plant List, Plant Schedule, or Plant Legend indicated on Drawings and complying with ANSI Z60.1; and with healthy root systems developed by transplanting or root pruning. Provide well-shaped, fully branched, healthy, vigorous stock,



densely foliated when in leaf and free of disease, pests, eggs, larvae, and defects such as knots, sun scald, injuries, abrasions, and disfigurement.

1. Trees with damaged, crooked, or multiple leaders; tight vertical branches where bark is squeezed between two branches or between branch and trunk ("included bark"); crossing trunks; cut-off limbs more than **3/4 inch** in diameter; or with stem girdling roots are unacceptable.
  2. Collected Stock: Do not use plants harvested from the wild, from native stands, from an established landscape planting, or not grown in a nursery unless otherwise indicated.
- B. Provide plants of sizes, grades, and ball or container sizes complying with ANSI Z60.1 for types and form of plants required. Plants of a larger size may be used if acceptable to Architect, with a proportionate increase in size of roots or balls.
- C. Root-Ball Depth: Furnish trees and shrubs with root balls measured from top of root ball, which begins at root flare according to ANSI Z60.1. Root flare shall be visible before planting.
- D. Labeling: Label each plant of each variety, size, and caliper with a securely attached, waterproof tag bearing legible designation of common name and full scientific name, including genus and species. Include nomenclature for hybrid, variety, or cultivar, if applicable for the plant.
- E. If formal arrangements or consecutive order of plants is indicated on Drawings, select stock for uniform height and spread, and number the labels to assure symmetry in planting.

## 2.2 MULCHES

- A. Organic Mulch: Free from deleterious materials and suitable as a top dressing of trees and shrubs, consisting of one of the following:
1. Type: Shredded hardwood .
  2. Size Range: 3 inches minimum. .
  3. Color: Natural. No color dyed mulch.
- B. Compost Mulch: Well-composted, stable, and weed-free organic matter, pH of 5.5 to 8; moisture content 35 to 55 percent by weight; 100 percent passing through a **1-inch** sieve; soluble-salt content of 2 to 5 dS/m; not exceeding 0.5 percent inert contaminants and free of substances toxic to plantings; and as follows:
1. Organic Matter Content: 50 to 60 percent of dry weight.
  2. Feedstock: Agricultural, food, or industrial residuals; biosolids; yard trimmings; or source-separated or compostable mixed solid waste.

## 2.3 TREE-STABILIZATION MATERIALS

- A. Root-Ball Stabilization Materials:



1. Upright Stakes and Horizontal Hold-Down: Rough-sawn, sound, new hardwood or softwood, free of knots, holes, cross grain, and other defects, **2-by-2-inch nominal** by length indicated; stakes pointed at one end.
2. Wood Screws: ASME B18.6.1.

## 2.4 LANDSCAPE EDGINGS

## 2.5 MISCELLANEOUS PRODUCTS

- A. Mycorrhizal Fungi: Dry, granular inoculant containing at least 5300 spores per **lb** of vesicular-arbuscular mycorrhizal fungi and 95 million spores per **lb** of ectomycorrhizal fungi, 33 percent hydrogel, and a maximum of 5.5 percent inert material.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

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

### 3.2 PREPARATION

- A. Protect structures, utilities, sidewalks, pavements, and other facilities and turf areas and existing plants from damage caused by planting operations.





- B. Install erosion-control measures to prevent erosion or displacement of soils and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways.

### 3.3 PLANTING AREA ESTABLISHMENT

- A. General: Prepare planting area for soil placement and mix planting soil according to Section 329113 "Soil Preparation." Section 329115 "Soil Preparation (Performance Specification)."
- B. Placing Planting Soil: Place and mix planting soil in-place over exposed subgrade Place manufactured planting soil over exposed subgrade Blend planting soil in place .
- C. Before planting, obtain Architect's acceptance of finish grading; restore planting areas if eroded or otherwise disturbed after finish grading.
- D. Application of Mycorrhizal Fungi: At time directed by Architect, broadcast dry product uniformly over prepared soil at application rate according to manufacturer's written recommendations .

### 3.4 EXCAVATION FOR TREES AND SHRUBS

- A. Planting Pits and Trenches: Excavate circular planting pits.
  - 1. Excavate planting pits with sides sloping inward at a 45-degree angle. Excavations with vertical sides are unacceptable. Trim perimeter of bottom leaving center area of bottom raised slightly to support root ball and assist in drainage away from center. Do not further disturb base. Ensure that root ball will sit on undisturbed base soil to prevent settling. Scarify sides of planting pit smeared or smoothed during excavation.
  - 2. Excavate approximately three times as wide as ball diameter for balled and burlapped container-grown stock.
  - 3. Do not excavate deeper than depth of the root ball, measured from the root flare to the bottom of the root ball.
  - 4. If area under the plant was initially dug too deep, add soil to raise it to the correct level and thoroughly tamp the added soil to prevent settling.
  - 5. Maintain angles of repose of adjacent materials to ensure stability. Do not excavate subgrades of adjacent paving, structures, hardscapes, or other new or existing improvements.
  - 6. Maintain supervision of excavations during working hours.
  - 7. Keep excavations covered or otherwise protected overnight, after working hours, and when unattended by Installer's personnel.
  - 8. If drain tile is indicated on Drawings or required under planting areas, excavate to top of porous backfill over tile.
- B. Backfill Soil: Subsoil and topsoil removed from excavations may be used as backfill soil unless otherwise indicated.



- C. Obstructions: Notify Architect if unexpected rock or obstructions detrimental to trees or shrubs are encountered in excavations.
  - 1. Hardpan Layer: Drill **6-inch-** diameter holes, **24 inches** apart, into free-draining strata or to a depth of **10 feet**, whichever is less, and backfill with free-draining material.
- D. Drainage: Notify Landscape Architect if subsoil conditions evidence unexpected water seepage or retention in tree or shrub planting pits.
- E. Fill excavations with water and allow to percolate away before positioning trees and shrubs.

### 3.5 TREE, SHRUB, AND VINE PLANTING

- A. Inspection: At time of planting, verify that root flare is visible at top of root ball according to ANSI Z60.1. If root flare is not visible, remove soil in a level manner from the root ball to where the top-most root emerges from the trunk. After soil removal to expose the root flare, verify that root ball still meets size requirements.
- B. Roots: Remove stem girdling roots and kinked roots. Remove injured roots by cutting cleanly; do not break.
- C. Balled and Burlapped Stock: Set each plant plumb and in center of planting pit or trench with root flare **2 inches** above adjacent finish grades.
  - 1. Backfill: Planting soil . For trees, use excavated soil for backfill.
  - 2. After placing some backfill around root ball to stabilize plant, carefully cut and remove burlap, rope, and wire baskets from tops of root balls and from sides, but do not remove from under root balls. Remove pallets, if any, before setting. Do not use planting stock if root ball is cracked or broken before or during planting operation.
  - 3. Backfill around root ball in layers, tamping to settle soil and eliminate voids and air pockets. When planting pit is approximately one-half filled, water thoroughly before placing remainder of backfill. Repeat watering until no more water is absorbed.
  - 4. Continue backfilling process. Water again after placing and tamping final layer of soil.
- D. Balled and Potted and Container-Grown Stock: Set each plant plumb and in center of planting pit or trench with root flare **2 inches** above adjacent finish grades.
  - 1. Backfill: Planting soil . For trees, use excavated soil for backfill.
  - 2. Carefully remove root ball from container without damaging root ball or plant.
  - 3. Backfill around root ball in layers, tamping to settle soil and eliminate voids and air pockets. When planting pit is approximately one-half filled, water thoroughly before placing remainder of backfill. Repeat watering until no more water is absorbed.
  - 4. Continue backfilling process. Water again after placing and tamping final layer of soil.



- E. Slopes: When planting on slopes, set the plant so the root flare on the uphill side is flush with the surrounding soil on the slope; the edge of the root ball on the downhill side will be above the surrounding soil. Apply enough soil to cover the downhill side of the root ball.

### 3.6 TREE, SHRUB, AND VINE PRUNING

- A. Remove only dead, dying, or broken branches. Do not prune for shape.
- B. Do not apply pruning paint to wounds.

### 3.7 TREE STABILIZATION

- A. Trunk Stabilization by Upright Staking and Tying: Install trunk stabilization as follows unless otherwise indicated:
  - 1. Upright Staking and Tying: Stake trees of **2- through 5-inch** caliper. Stake trees of less than **2-inch** caliper only as required to prevent wind tip out. Use a minimum of two stakes of length required to penetrate at least **18 inches** below bottom of backfilled excavation and to extend to the dimension indicated on Drawings above grade. Set vertical stakes and space to avoid penetrating root balls or root masses.
  - 2. Upright Staking and Tying: Stake trees with two stakes for trees up to **12 feet** high and **2-1/2 inches** or less in caliper; three stakes for trees less than **14 feet** high and up to **4 inches** in caliper. Space stakes equally around trees.
  - 3. Support trees with bands of flexible ties at contact points with tree trunk. Allow enough slack to avoid rigid restraint of tree.
  - 4. Support trees with two strands of tie wire, connected to the brass grommets of tree-tie webbing at contact points with tree trunk. Allow enough slack to avoid rigid restraint of tree.
- B. Trunk Stabilization by Staking and Guying: Install trunk stabilization as follows unless otherwise indicated on Drawings. Stake and guy trees more than **14 feet** in height and more than **3 inches** in caliper unless otherwise indicated.
  - 1. Site-Fabricated, Staking-and-Guying Method: Install no fewer than three guys spaced equally around tree.
    - a. Securely attach guys to stakes **30 inches** long, driven to grade. Adjust spacing to avoid penetrating root balls or root masses. Provide turnbuckle for each guy wire and tighten securely.
    - b. For trees more than **6 inches** in caliper, anchor guys to wood deadmen buried at least **36 inches** below grade. Provide turnbuckle for each guy wire and tighten securely.
    - c. Support trees with bands of flexible ties at contact points with tree trunk and reaching to turnbuckle. Allow enough slack to avoid rigid restraint of tree.



- d. Support trees with guy cable or multiple strands of tie wire, connected to the brass grommets of tree-tie webbing at contact points with tree trunk and reaching to turnbuckle . Allow enough slack to avoid rigid restraint of tree.
  - e. Attach flags to each guy wire, **30 inches** above finish grade.
  - f. Paint turnbuckles with luminescent white paint.
  2. Proprietary Staking and Guying Device: Install staking and guying system sized and positioned as recommended by manufacturer unless otherwise indicated and according to manufacturer's written instructions.
- C. Root-Ball Stabilization: Install at- or below-grade stabilization system to secure each new planting by the root ball unless otherwise indicated.
1. Wood Hold-Down Method: Place vertical stakes against side of root ball and drive them into subsoil; place horizontal wood hold-down stake across top of root ball and screw at each end to one of the vertical stakes.
    - a. Install stakes of length required to penetrate at least to the dimension indicated on Drawings below bottom of backfilled excavation. Saw stakes off at horizontal stake.
    - b. Install screws through horizontal hold-down and penetrating at least **1 inch** into stakes. Predrill holes if necessary to prevent splitting wood.
    - c. Install second set of stakes on other side of root trunk for larger trees.
  2. Proprietary Root-Ball Stabilization Device: Install root-ball stabilization system sized and positioned as recommended by manufacturer unless otherwise indicated and according to manufacturer's written instructions.
- D. Palm Bracing: Install bracing system at three or more places equally spaced around perimeter of trunk to secure each palm until established unless otherwise indicated.
1. Site-Fabricated Palm-Bracing Method:
    - a. Place battens over padding and secure battens in place around trunk perimeter with at least two straps, tightened to prevent displacement. Ensure that straps do not contact trunk.
    - b. Place diagonal braces and cut to length. Secure upper ends of diagonal braces with galvanized nails into battens or into nail-attached blocks on battens. Do not drive nails, screws, or other securing devices into palm trunk; do not penetrate palm trunk in any fashion. Secure lower ends of diagonal braces with stakes driven into ground to prevent outward slippage of braces.
  2. Proprietary Palm-Bracing Device: Install palm-bracing system sized and positioned as recommended by manufacturer unless otherwise indicated and according to manufacturer's written instructions.

### 3.8 GROUND COVER AND PLANT PLANTING

- A. Set out and space ground cover and plants other than trees, shrubs, and vines as indicated on Drawings in even rows with triangular spacing.



- B. Use planting soil for backfill.
- C. Dig holes large enough to allow spreading of roots.
- D. For rooted cutting plants supplied in flats, plant each in a manner that minimally disturbs the root system but to a depth not less than two nodes.
- E. Work soil around roots to eliminate air pockets and leave a slight saucer indentation around plants to hold water.
- F. Water thoroughly after planting, taking care not to cover plant crowns with wet soil.
- G. Protect plants from hot sun and wind; remove protection if plants show evidence of recovery from transplanting shock.

### 3.9 PLANTING AREA MULCHING

- A. Mulch backfilled surfaces of planting areas and other areas indicated.
  - 1. Trees and Treelike Shrubs in Turf Areas: Apply organic mulch ring of **3-inch** average thickness, with **12-inch** radius around trunks or stems. Do not place mulch within **6 inches** of trunks or stems.
  - 2. Organic Mulch in Planting Areas: Apply **3-inch** average thickness of organic mulch extending **12 inches** beyond edge of individual planting pit or trench and over whole surface of planting area, and finish level with adjacent finish grades. Do not place mulch within **3 inches** of trunks or stems.
  - 3. Mineral Mulch in Planting Areas: Apply **3-inch** average thickness of mineral mulch extending **12 inches** beyond edge of individual planting pit or trench and over whole surface of planting area, and finish level with adjacent finish grades. Do not place mulch within **3 inches** of trunks or stems.

### 3.10 EDGING INSTALLATION

- A. Shovel-Cut Edging: Separate mulched areas from turf areas, curbs, and paving with a 45-degree, **4- to 6-inch-** deep, shovel-cut edge as indicated on Drawings.

### 3.11 PLANT MAINTENANCE

- A. Maintain plantings by pruning, cultivating, watering, weeding, fertilizing, mulching, restoring planting saucers, adjusting and repairing tree-stabilization devices, resetting to proper grades or vertical position, and performing other operations as required to establish healthy, viable plantings.



- B. Fill in, as necessary, soil subsidence that may occur because of settling or other processes. Replace mulch materials damaged or lost in areas of subsidence.
- C. Apply treatments as required to keep plant materials, planted areas, and soils free of pests and pathogens or disease. Use integrated pest management practices when possible to minimize use of pesticides and reduce hazards. Treatments include physical controls such as hosing off foliage, mechanical controls such as traps, and biological control agents.

### 3.12 REPAIR AND REPLACEMENT

- A. General: Repair or replace existing or new trees and other plants that are damaged by construction operations, in a manner approved by Architect.
  - 1. Submit details of proposed pruning and repairs.
  - 2. Perform repairs of damaged trunks, branches, and roots within 24 hours, if approved.
  - 3. Replace trees and other plants that cannot be repaired and restored to full-growth status, as determined by Architect.

### 3.13 CLEANING AND PROTECTION

- A. During planting, keep adjacent paving and construction clean and work area in an orderly condition. Clean wheels of vehicles before leaving site to avoid tracking soil onto roads, walks, or other paved areas.
- B. Remove surplus soil and waste material including excess subsoil, unsuitable soil, trash, and debris and legally dispose of them off Owner's property.
- C. Protect plants from damage due to landscape operations and operations of other contractors and trades. Maintain protection during installation and maintenance periods. Treat, repair, or replace damaged plantings.
- D. After installation and before Substantial Completion, remove nursery tags, nursery stakes, tie tape, labels, wire, burlap, and other debris from plant material, planting areas, and Project site.
- E. At time of Substantial Completion, verify that tree-watering devices are in good working order and leave them in place. Replace improperly functioning devices.

### 3.14 MAINTENANCE SERVICE

END OF SECTION 329300



## SECTION 331413 - PUBLIC WATER UTILITY DISTRIBUTION PIPING

### PART 1 - GENERAL

#### 1.1 SUMMARY

##### A. Section Includes:

1. Pipe and fittings for public line, including piping to and from new water distribution pit .
2. Valves, valve boxes and related fittings.
3. Water Line Distribution Vault
4. Bedding and cover materials.

##### B. Related Sections:

1. Section 31213 - Rough Grading.
2. Section 312316.13 - Trenching: Execution requirements for trenching as required by this Section.

#### 1.2 UNIT PRICE - MEASUREMENT AND PAYMENT

##### A. Pipe and Fittings:

1. Basis of Measurement: By linear foot.
2. Basis of Payment: Includes excavation and backfill; pipe, fittings, and appurtenances; bedding; connection and tap to Site service piping; connection to municipal utility water source .

##### B. Valves:

1. Basis of Measurement: By each.
2. Basis of Payment: Includes excavation, bedding, backfill, valve, fittings, and accessories.

##### C. Vaults:

1. Basis of Measurement: By each.
2. Basis of Payment: Includes excavation, bedding, backfill, & grading.

#### 1.3 REFERENCE STANDARDS

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



1. AASHTO T 180 - Standard Method of Test for Moisture-Density Relations of Soils Using a 4.54-kg (10-lb) Rammer and a 457-mm (18-in.) Drop.

B. ASTM International:

1. ASTM D698 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12 400 ft-lbf/ft<sup>3</sup> (600 kN-m/m<sup>3</sup>).
2. ASTM D1785 - Standard Specification for Poly(Vinyl Chloride) (PVC) Plastic Pipe, Schedules 40, 80, and 120.
3. ASTM D2241 - Standard Specification for Poly(Vinyl Chloride) (PVC) Pressure-Rated Pipe (SDR Series).
4. ASTM D3139 - Standard Specification for Joints for Plastic Pressure Pipes Using Flexible Elastomeric Seals.
5. ASTM D6938 - Standard Test Method for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth).
6. ASTM F477 - Standard Specification for Elastomeric Seals (Gaskets) for Joining Plastic Pipe.

C. Manufacturers Standardization Society of the Valve and Fittings Industry:

1. MSS SP-60 - Connecting Flange Joints between Tapping Sleeves and Tapping Valves.

D. NSF International:

1. NSF 61 - Drinking Water System Components - Health Effects.
2. NSF 372 - Drinking Water System Components - Lead Content.

#### 1.4 COORDINATION

- A. Coordinate Work of this Section with termination of water main connection at Site boundary, connection to municipal water utility service , and trenching.

#### 1.5 PREINSTALLATION MEETINGS

- A. Convene minimum one week prior to commencing Work of this Section.

#### 1.6 SUBMITTALS

- A. Product Data: Submit manufacturer information regarding pipe materials, pipe fittings, and valves and valve boxes. .
- B. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.
- C. Field Quality-Control Submittals: Indicate results of Contractor-furnished tests and inspections.





- D. Preconstruction Photographs: Submit digital files of color photographs of Work areas and material storage areas.
- E. Qualifications Statements:
  - 1. Submit qualifications for manufacturer and installer.

#### 1.7 CLOSEOUT SUBMITTALS

- A. Project Record Documents: Record actual locations of piping mains, valves, connections, and centerline elevations via production of As-built Drawings and deliver to scale Plan to the Owner's Representative.
- B. Identify and describe unexpected variations to subsoil conditions or discovery of uncharted utilities.

#### 1.8 QUALITY ASSURANCE

- A. Valves: Mark valve body with manufacturer's name and pressure rating.
- B. Perform Work according to Providence Water standards.

#### 1.9 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing products specified in this Section with minimum three 3 years' documented experience.
- B. Installer: Company specializing in performing Work of this Section with minimum three 3 years' documented experience in installation of liner materials.

#### 1.10 DELIVERY, STORAGE, AND HANDLING

- A. Inspection: Accept materials on Site in manufacturer's original packaging and inspect for damage.
- B. Storage:
  - 1. Store materials according to manufacturer instructions.
  - 2. Block individual and stockpiled pipe lengths to prevent moving.
  - 3. Do not place pipe or pipe materials on private property or in areas obstructing pedestrian or vehicle traffic.
  - 4. Store PE and PVC materials out of sunlight.
- C. Protection:



1. Protect materials from moisture and dust by storing in clean, dry location remote from construction operations areas.
2. Provide additional protection according to manufacturer instructions.

#### 1.11 EXISTING CONDITIONS

##### A. Field Measurements:

1. Verify field measurements and topography shown on the plan. Report any discrepancies which will affect the work of this contract to the Owner's Representative in writing. Commencement of the work will be implied to mean acceptance. No adjustments will be made for discrepancies brought to the Owner's Representative's attention after work has begun.
2. Indicate field measurements on Shop Drawings.
3. The Contractor shall carefully protect from disturbance or damage all land monuments until an authorized agent has witnessed or otherwise referenced their location, and shall not remove or destroy them without proper authorization from the Owner's Representative.
4. Existing buried utilities are indicated in the vicinity of new construction. The Contractor shall examine all contract drawings, and seek additional information if necessary of the existing site conditions. Take care to avoid damage to, or interruption of, utilities scheduled to remain.
5. Should unexpected soil or subsurface conditions or discrepancies between plans and layout work occur, contact the Owner's Representative before proceeding with any work in the area.
6. Protect open excavations with fencing, and/or other suitable safeguards.
7. Contractor shall include in his/her Bid all fees required for installing and connection to water distribution system.

#### 1.12 WARRANTY

- ##### A. Furnish five 5 -year manufacturer's warranty for valves and hardware .

### PART 2 - PRODUCTS

#### 2.1 TAPPING SLEEVES AND VALVES

- ##### A. HDPE piping, valves, couplings and adapters, as part of a potable water delivery system.

##### B. Water Line Distribution Vault:

1. Model 446-13 as manufactured by :
  - a. Columbia Precast Products 1765 Howard Way Woodland, WA 98674 Phone: 360-335-8400



2. Approved Equal

C. Tapping Sleeves:

1. Furnish materials according to Providence Water Supply Board standards.

D. Tapping Valves:

1. Furnish materials according to Providence Water Supply Board standards.

## 2.2 MATERIALS

A. Bedding and Cover:

1. Soil Backfill from above Pipe to Finish Grade:

a. Soil Type S1 as specified in Section .

b. Subsoil with no rocks greater than **6 inches** in diameter, frozen earth, or foreign matter.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

A. Verify that existing utility water main size, location, and invert are as indicated on Drawings.

### 3.2 PREPARATION

A. Preconstruction Site Photos:

1. Take photographs along centerline of proposed pipe trench; minimum one photograph for each of pipe trench.

2. Show curbing, lawns, driveways, signs, culverts, and other existing Site features.

3. Include Project description, date taken, and sequential number on back of each photograph.

B. Pipe Cutting:

1. Use only equipment specifically designed for pipe cutting; use of chisels or hand saws is not permitted.

C. Remove scale and dirt on inside and outside before assembly.

D. Prepare pipe connections to equipment with flanges or unions.



### 3.3 INSTALLATION

#### A. Bedding:

1. Excavation:
  - a. Hand trim for accurate placement of pipe to elevations as indicated on Drawings.
2. Dewater excavations to maintain dry conditions and to preserve final grades at bottom of excavation.
3. Place bedding material at trench bottom, level fill materials in one continuous layer not exceeding of compacted depth, and compact to 95 percent of maximum density.

#### B. Vault:

1. Excavate to depth and size required to easily maneuver vault into place, allowing for bedding material.
2. Dewater excavations to maintain dry conditions and to preserve final grades at bottom of excavation.
3. Place bedding material at trench bottom, level fill materials in one continuous layer not exceeding 6 inches of compacted depth, and compact to 95 percent of minimum density.
4. Remove knockouts as needed to accommodate piping.
5. Lower vault into place using lifting anchors and check grades before backfilling.

#### C. Piping:

1. Flanged Joints: Do not use in underground installations except within structures.
2. Route pipe in straight line, and re-lay pipe that is out of alignment or grade.
3. High Points:
  - a. Install pipe with no high points.
4. Bearing:
  - a. Do not lay pipe in wet or frozen trench.
5. Prevent foreign material from entering pipe during placement.
6. Close pipe openings with watertight plugs during Work stoppages.

#### D. Testing: After pipe has been laid, the joints completed and the trench partially backfilled, leaving the joints exposed for the examination, the newly laid piping, or any valved section of piping, shall unless otherwise specified, be subjected to hydrostatic pressure test of 150 pounds per square inch for one hour. Defective pipes, joints, fittings, valves and hydrants disclosed in the pressure test shall be replaced by the Contractor with sound material and the test shall be repeated until the rest results are satisfactory to Providence Water Standards.

#### E. Backfilling:

1. Backfill around sides and to top of pipe with cover fill in minimum lifts of , tamp in place, and compact to 95 percent of maximum density.
2. Maintain optimum moisture content of bedding material to attain required compaction density.



F. Installation Standards: Install Work according to Providence Water standards.

END OF SECTION 331413